FULL CONFERENCE
FINAL PROGRAM

THE 36TH INTERNATIONAL CONFERENCE AND EXHIBITION
ON COMPUTER GRAPHICS AND INTERACTIVE TECHNIQUES

SIGGRAPH 2009 NEW ORLEANS

www.siggraph.org/s2009

Conference 3 – 7 August 2009   Exhibition 4 – 6 August 2009
Ernest N. Morial Convention Center, New Orleans, Louisiana

Sponsored by ACM SIGGRAPH

Last Updated: 28 July 2009

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Conference at a Glance

Conference schedule subject to change.

SIGGRAPH2009

Conference Registration Categories

■ Full Conference Access   ● Basic Access   ▲ Computer Animation Festival

		SUN 2 AUG	MON 3 AUG	TUE 4 AUG	WED 5 AUG	THU 6 AUG	FRI 7 AUG
	Registration/ Merchandise Pickup	2 - 6 pm	7:30 am - 6 pm	8 am - 6 pm	8 am - 6 pm	8 am - 6 pm	8 am - 3:30 pm
■ ● ▲	Exhibition			9:30 am - 6 pm	9:30 am - 6 pm	9:30 am - 3:30 pm	
■ ● ▲	Job Fair			10 am - 4 pm	10 am - 4 pm	10 am - 1 pm	
■ ●	International Resources	2 - 6 pm	8 am - 6 pm	8 am - 6 pm	8 am - 6 pm	8 am - 6 pm	8 am - 2 pm
■	Reception					8 - 10 pm	
■ ● ▲	Birds of a Feather		11 am - 11 pm	8:30 am - 11 pm	8 am - 9 pm	10:30 am - 6 pm	

Sessions

		SUN 2 AUG	MON 3 AUG	TUE 4 AUG	WED 5 AUG	THU 6 AUG	FRI 7 AUG
■ ●	ACM SIGGRAPH Award Talks		1:45 - 3:30 pm				
■	Art Papers			3:45 - 5:30 pm	1:45 - 3:30 pm		
■	Courses		8:30 am - 5:30 pm	8:30 am - 5:30 pm	8:30 am - 5:30 pm	8:30 am - 5:30 pm	8:30 am - 5:30 pm
■ ● ▲	Exhibitor Tech Talks			9:30 am - 6 pm	9:30 am - 6 pm	9:30 am - 3:30 pm	
■	Game Papers			8:30 - 10:15 am and 3:45 - 5:30 pm	8:30 - 10:15 am	1:45 - 5:30 pm	
■ ● ▲	Keynote Speakers		Randy Thom (ACM SIGGRAPH Award Presentations) 10:30 am - 12:15 pm	Will Wright 10:30 am - 12:15 pm	Steve Duenes 10:30 am - 12:15 pm		
■	Panels		1:45 - 5:30 pm	9:20 am - 3:30 pm	8:30 am - 3:30 pm	8:30 am - 5:30 pm	
■ ●	Poster Sessions			12:15 - 1:15 pm		12:15 - 1:15 pm	
■	Talks		8:30 - 10:15 am and 1:15 - 8 pm	8:30 am - 8 pm	8:30 am - 5:30 pm	10:30 am - 5:30 pm	8:30 am - 12:15 pm and 3:45 - 5:30 pm
■	Technical Papers			8:30 am - 5:30 pm	8:30 am - 5:30 pm	8:30 am - 5:30 pm	8:30 am - 5:30 pm

Galleries & Experiences

		SUN 2 AUG	MON 3 AUG	TUE 4 AUG	WED 5 AUG	THU 6 AUG	FRI 7 AUG
■ ●	BioLogic Art		9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - noon
■ ●	Emerging Technologies		9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - noon
■	Geek Bar		9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - noon
■ ●	Generative Fabrication		9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - noon
■ ●	Information Aesthetics Showcase		9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - noon
■ ●	Posters		9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - noon
■ ●	The Sandbox		9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - noon
■ ●	The Studio		9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - 6 pm	9 am - noon

Contests & Competitions

		SUN 2 AUG	MON 3 AUG	TUE 4 AUG	WED 5 AUG	THU 6 AUG	FRI 7 AUG
■ ● ▲	ACM Student Research Competition					10:30 am - 12:15 pm (Final Presentation)	
■ ● ▲	FJORG!		9 am - Midnight	Midnight - 5 pm		6 - 8 pm (Judging Ceremony)	
■ ● ▲	GameJam!			6 pm - Midnight	Midnight - 6 pm	6 - 8 pm (Judging Ceremony)	
■ ●	Research Challenge			1:45 - 3:30 pm (Judging Ceremony)			
■ ●	Speedlab		3:45 - 5:30 pm				1:45 - 5:30 pm (Judging Ceremony)
■ ● ▲	Collectible Business Card Game			Throughout the week			
■ ● ▲	Encounter SIGGRAPH			Tuesday, 10:30 am to Wednesday, 6 pm			

Performances & Special Events

		SUN 2 AUG	MON 3 AUG	TUE 4 AUG	WED 5 AUG	THU 6 AUG	FRI 7 AUG
■ ● ▲	Music Performances		6 - 8 pm	6 - 8 pm	1:45 - 3:30 pm and 6 - 8 pm	1:45 - 3:30 pm and 6 - 8 pm	
■ ● ▲	Technical Papers Fast Forward		6 - 8 pm				

Computer Animation Festival

		SUN 2 AUG	MON 3 AUG	TUE 4 AUG	WED 5 AUG	THU 6 AUG	FRI 7 AUG
■ ▲	Evening Theater		6:30 - 9 pm	6:30 - 9 pm	6:30 - 9 pm	6:30 - 9 pm	
■ ▲	Festival Panels		1:45 - 5:30 pm	9:20 am - 3:30 pm	8:30 - 10:15 am	8:30 am - 5:30 pm	
■ ▲	Festival Talks		1:15 - 8 pm	8:30 am - 5:30 pm	10:30 am - 5:30 pm	10:30 am - 3:30 pm	
■ ▲	Production Sessions		8:30 - 10:15 am	1:45 - 5:30 pm	8:30 am - 3:30 pm	10:30 am - 5:30 pm	
■ ▲	Real Time		6:30 - 7 pm	6:30 - 7 pm	8:30 am - 5:30 pm	8:30 - 10:15 am	
■ ▲	Stereoscopic 3D:					8:30 - 10 am and 6:30 - 9 pm	10 am - 12:15 pm
■ ▲	Urban Planning			8:30 am - 5:30 pm			
■ ▲	Visual Music		8:30 am - 8 pm				

STIMULATE. COLLABORATE. CREATE.

Conference Registration Categories

■ Full Conference Access
● Basic Access
▲ Computer Animation Festival

SIGGRAPH 2009 + New Orleans = the perfect combination for scientists, artists, animators, producers, educators, and executives in computer graphics and interactive techniques.

Five full days of learning all about the latest techniques and products, exploring the next frontiers of computer graphics, and connecting with colleagues and friends from the international SIGGRAPH community.

■ ● ▲
Keynote Speakers

LOCATION
La Nouvelle Orleans Ballroom

Randy Thom
Designing a Movie for Sound:
How to Make Sound a Full Collaborator
in the Storytelling Process
Monday, 3 August, 10:30 am - 12:15 pm

*Pioneer in sound and two-time
Academy Award® winner*

Randy Thom has worked on more than 75 films including some of Hollywood's biggest blockbusters such as "Bolt", "Forrest Gump", "Harry Potter and the Chamber of Secrets", "Harry Potter and the Goblet of Fire", "Ratatouille", "War of the Worlds", and "Wild at Heart". He received two Academy Awards® for Best Sound in "The Right Stuff" and Best Achievement in Sound Editing for "The Incredibles".

Will Wright
Playing With Perception
Tuesday, 4 August, 10:30 am - 12:15 pm

*Video game designer, creator
of Spore™ and The Sims series*

Will Wright rose to prominence when he invented SimCity, the widely acclaimed, non-violent, open-ended simulation video game. Since its release 20 years ago, he has introduced The Sims series and several other follow-ups. In 2008, Wright unveiled his latest achievement: Spore™, named by Time Magazine as one of the "50 Best Inventions of 2008".

Steve Duenes
A Visual Response to the News
Wednesday, 5 August, 10:30 am - 12:15 pm

New York Times Graphics Director

Steve Duenes is a leader in transforming complex data into understandable graphic journalism. Duenes started at The New York Times in 1999 as the graphics editor for science, becoming the graphics director in 2004. In his current role, he manages a staff of 30 journalists who work as a team to shape and deliver visual information by researching, writing, designing, and programming the renowned information graphics for both the printed newspaper and nytimes.com.

■ ● ▲
ACM SIGGRAPH Awards

Award Presentations: Monday, 3 August, 10:30 am
La Nouvelle Orleans Ballroom

Award Winner Talks: Monday, 3 August, 1:45-3:30 pm
Hall E 1-2

The Steven Anson Coons Award for Outstanding Creative Contributions to Computer Graphics
Robert L. Cook
Pixar Animation Studios

This award, presented during odd-numbered years, recognizes long-term creative impact on the field of computer graphics through a personal commitment over an extended period of time.

The Computer Graphics Achievement Award
Michael Kass
Pixar Animation Studios

Awarded annually to recognize a major accomplishment that provided a significant advance in the state of the art of computer graphics and is still significant and apparent.

The Significant New Researcher Award
Wojciech Matusik
Adobe Systems, Inc.

Awarded annually to a researcher who has made a recent significant contribution to the field of computer graphics and is new to the field. The intent is to recognize people who, though early in their careers, have already made a notable contribution.

The Distinguished Artist Award for Lifetime Achievement in Digital Art
Lynn Hershman Leeson
University of California, Davis

Roman Verostko
Minneapolis College of Art

Awarded annually to an artist who has created a substantial and important body of work that significantly advances aesthetic content in the field of digital art.

Conference Overview

One-Day registration includes access for one day to conference programs and events associated with that level of registration and all days of the Exhibition (Tuesday-Thursday). One-Day access does not include technical documentation or tickets for the Reception.

Conference Registration Categories

- ■ Full Conference Access
- ● Basic Access
- ▲ Computer Animation Festival

SESSIONS

■ Art Papers ➔
Tuesday - Wednesday, 4 - 5 August
Rooms 265 - 266
In collaboration with Leonardo/ISAST, SIGGRAPH 2009 presents peer-reviewed papers that illuminate and explore the process of making art and its place in society, helping the community understand the changing roles of artists and art-making in our increasingly computerized, networked, multi-sensory, online world. The Art Papers are published in a special issue of Leonardo.

■ Courses ➔
Monday - Friday, 3 - 7 August
Hall E 3, Auditorium A, Auditorium B, Auditorium C, Rooms 243-245, Rooms 260 - 262, Rooms 265-266, La Nouvelle Orleans Ballroom
Learn from the experts and acquire inside knowledge that expands skills and promotes professional advancement. SIGGRAPH 2009 Courses range from an introduction to the foundations of computer graphics and interactive techniques to advanced instruction on the most current techniques and topics.

■ ● ▲ Exhibitor Tech Talks ⇒
Tuesday - Thursday, 4 - 6 August
Back of Hall F
Get the inside story direct from the commercial developers of tomorrow's hot hardware, software, and systems. Join question-and-answer exchanges and one-on-one conversations after each presentation by SIGGRAPH 2009 exhibitors.

■ Game Papers ➔
Tuesday - Thursday, 4 - 6 August
Auditorium A, Auditorium B, Rooms 260 - 262
Peer-reviewed papers from the creative and technical communities that develop videogames, and from academic researchers who study videogames and related technologies. The Game Papers are published in The Sandbox 2009: ACM SIGGRAPH Video Game Proceedings issue.

■ Panels ➔
Monday - Thursday, 3 - 6 August
Hall E 1 - 2, Auditorium B, Auditorium C, Rooms 243 - 245, Rooms 260 - 262, Rooms 265 - 266, Rooms 271 - 273
Leading experts in computer graphics and interactive techniques share experiences, opinions, insights, speculation, disagreement, and controversy with the audience and each other.

■ Talks ➔
Tuesday - Friday, 4 - 7 August
Hall E 1 - 2, Hall E 3, Auditorium A, Auditorium B, Auditorium C, Rooms 243 - 245, Rooms 260 - 262, Rooms 265 - 266, Rooms 271 - 273, La Nouvelle Orleans Ballroom
A broad spectrum of presentations on recent achievements in all areas of computer graphics and interactive techniques, including art, design, animation, visual effects, interactive music, research, interactivity, and engineering.

■ Technical Papers ➔
Tuesday - Friday, 4 - 7 August
Hall E 1 - 2, Hall E 3
The SIGGRAPH Technical papers program is the premier international forum for disseminating new scholarly work in computer graphics. The Technical Papers is published as a special issue of ACM Transactions on Graphics, the world's most respected research publication in computer graphics and interactive techniques.

GALLERIES & EXPERIENCES

■ ● ART & DESIGN
BioLogic: A Natural History of Digital Life ⇒
Monday - Friday, 3 - 7 August
Rooms 352 - 355
An art exhibition of international juried installations and interactive art. Like a forward-looking cabinet of curiosities, BioLogic combines biological forms and systems with digital code and networks to explore expressions of life as we know it or imagine it to be.

■ ● ART & DESIGN
Generative Fabrication ⇒
Monday - Friday, 3 - 7 August
Rooms 356-357
The SIGGRAPH 2009 Design & Computation Gallery explores non-linear and biological processes through selected works of art, architecture, and design.

■ ● Emerging Technologies ⇒
Monday - Friday, 3 - 7 August
Rooms 337 - 342 & 346 - 351
Hands-on interaction with innovative technologies and applications in many fields, including displays, robotics, input devices, and haptics.

■ ● ▲ Exhibition ⇒
Tuesday - Thursday, 4 - 6 August
Hall F & G
Your best opportunity to explore this year's new software, hardware, and services offered by vendors from throughout the world. Get up-close and hands-on with the newest hardware systems, software tools, and creative services from hundreds of companies. Explore the products, systems, techniques, ideas, and inspiration that are creating the next three generations of computer graphics and interactive techniques.

■ Geek Bar
Sponsored by Walt Disney Animation Studios
Monday - Friday, 3 - 7 August
Rooms 252-253
Real-time human networking. Streaming content from the SIGGRAPH 2009 session rooms. Wireless access. Comfy chairs.

Conference Registration Categories

■ Full Conference Access
● Basic Access
▲ Computer Animation Festival

GALLERIES & EXPERIENCES (CONT.)

■ ●
Information Aesthetics Showcase →→
Monday - Friday, 3 - 7 August
Rooms 274 - 277
In recognition of the increasingly prominent role of information visualization and data graphics in digitally mediated culture, the Information Aesthetics Showcase presents projects from visualization labs, medical-imaging groups, social-research non-profit organizations, design labs, museums, art programs, and new media centers.

■ ●
Posters →
Monday - Friday, 3 - 7 August
Auditorium Lobby
Browse their breakthroughs then talk with the researchers who are leading the evolution of computer graphics and interactive techniques. Posters are displayed throughout the conference week, and presenters discuss their work in scheduled sessions: Tuesday, 4 August and Thursday, 6 August, 12:15 - 1:15 pm.

■ ●
The Sandbox →→
Monday - Friday, 3 - 7 August
Outside Room 334 Lobby
Workshop areas for game design, in conjunction with The Studio, featuring toolsets that attendees can use to play games and learn how they are designed, Game-playing stations for games shown in the Real-Time Rendering section of the Computer Animation Festival. IndieCade: An exhibit highlighting innovative, independent game design and development.

CONTESTS & COMPETITIONS

■ ●
The Studio →
Monday - Friday, 3 - 7 August
Rooms 343-345
From 2D and 3D graphics to audio and tactile interfaces, communal networks, and real-time experiences, in The Studio attendees apply tomorrow's hardware and software in hands-on sessions.

■ ● ▲
ACM Student Research Competition Final Presentation →→
Friday, 7 August | 10:30 am - 12:15 pm
Rooms 265 - 266
Before the conference, 25 posters are selected for judging at SIGGRAPH 2009. During the conference, a panel of distinguished judges selects five semi-finalists and presents awards at the ACM SRC Final Presentation.

■ ● ▲
Encounter SIGGRAPH 2009 →→
Tuesday, 4 August, 10:30 am –
Wednesday, 5 August, 6 pm
Hall G Lobby
A new way to explore SIGGRAPH – A conference-wide high-tech mobile phone scavenger hunt that will guide you through the highlights of the conference and even take you on a high-tech interactive tour of New Orleans! Play individually or in teams. Prizes awarded to top scorers. For more info see http://www.encountersiggraph.org

■ ● ▲
FJORG! →
Monday - Tuesday, 3 - 4 August
Rooms 255 - 257
Teams of animators from around the world forgo sleep and resist several staged distractions for 32 non-stop hours to produce the best character-driven animation in the universe. Celebrity judges from the animation industry present the winner of the third annual SIGGRAPH "iron animator" competition on Thursday, 6 August.

■ ● ▲
GameJam! →
Tuesday - Wednesday, 4 - 5 August
Rooms 255 - 257
For 24 action-packed, non-stop hours, teams collaborate to design, implement, and complete the best video game in human history. The results will be demonstrated at the SIGGRAPH GameJam! Awards Ceremony on Thursday, 6 August.

■ ●
Research Challenge →
Tuesday, 4 August | 1:45 - 3:30 pm
Rooms 265 - 266
Individuals and teams develop innovative solutions to a challenge problem, demonstrating their creativity, design, and execution skills. Selected finalists present their work to a panel of distinguished judges in a public session, where final awards are announced.

■ ● ▲
Social Game →→
Monday - Thursday, 3 - 6 August
Hall G Lobby
In this collectible business card game, participants gather business cards from SIGGRAPH 2009 attendees, then use the skills represented by the cards to build a production team and create a game with three "cool features". For more info see http://wiki.siggraph.org/cbcg

■ ●
SpeedLab →→
Opening Session
Sunday, 2 August | 4 - 5 pm
Rooms 265 - 266

Judging Ceremony
Friday, 7 August | 1:45 - 3:30 pm
Auditorium B

In this multi-disciplinary competition, teams are assigned a problem at the beginning of SIGGRAPH 2009, and five days later they present their solutions to a panel of celebrity judges. Solutions are evaluated on their creativity, practicality, and "cool factor". Sign up for a SpeedLab team at the opening session on Sunday, 2 August. Teams are formed based on participants' skills and expertise.

Conference Registration Categories

■ Full Conference Access
● Basic Access
▲ Computer Animation Festival

PERFORMANCES & SPECIAL EVENTS

■ ● ▲
Music Perfomances →
Monday - Thursday, 3 - 6 August
Rooms 243 - 245
Performances that combine music with imagery or demonstrate novel interactive techniques.

■ ● ▲
Technical Papers Fast Forward
Monday, 3 August
Hall E 1 - 2
The world's leading experts in computer graphics and interactive techniques preview the Technical Papers in provocative, sometimes hilarious summaries of the field's evolution.

■ ● ▲
Birds of a Feather →
Monday - Friday, 3 - 7 August
Informal presentations, discussions, and demonstrations, organized by and for people who share interests, goals, technologies, environments, or backgrounds. See the Conference Locator for a complete list of the Birds of a Feather sessions.

■ ●
International Resources →
Monday - Friday, 3 - 7 August
Hall G (SIGGRAPH Village)
Learn how the industry is evolving worldwide and collaborate with attendees from five continents. The International Center offers bilingual tours of SIGGRAPH 2009 programs, informal translation services, and space for meetings, talks, and demonstrations.

■ ● ▲
Job Fair ⇉
Tuesday - Thursday, 4 - 6 August
Hall G
Employers and creative professionals connect before the conference via the CreativeHeads. net job board network and candidate profiling system. During SIGGRAPH 2009, they meet at the Job Fair. After the conference, they continue to explore opportunities via the CreativeHeads.net posting and profiling system.

RECEPTION

■
Reception   Co-sponsored by **Side Effects Software**

Houdini
3D ANIMATION TOOLS

Thursday, 6 August 8 - 10 pm
Blaine Kern's Mardi Gras World, 1380 Port of New Orleans Place

Join friends and colleagues from around the world to celebrate the spirit of New Orleans. Wander among towering figures of fantasy. Marvel at the skill and technology that animate the mega-floats of Mardi Gras. Enjoy delicious Crescent City cuisine and refreshing libations.

Mardi Gras World is located just south of the Ernest N. Morial Convention Center. The best way to get to the reception is on foot, as part of the traditional New Orleans "second-line" street parade that departs the convention center at approximately 7 pm in front of Halls A-C.

Separate registration is required.

CO-LOCATED WORKSHOPS & EVENTS

Presented in cooperation with ACM SIGGRAPH, these small symposia focus on special areas of computer graphics and interactive techniques.

High Performance Graphics 2009

Hotel Monteleone
1 -3 August

The High-Performance Graphics 2009 conference synthesizes two important and cutting-edge topics in computer graphics:

- Graphics Hardware, represented since 1986 by an annual conference of that name, focusing on graphics hardware, architecture, and systems.
- Interactive Ray Tracing, represented since 2006 in an innovative symposium focusing on the emerging field of interactive ray tracing and global illumination techniques.

By combining these two communities, we aim to bring to authors and attendees the best of both, while extending the scope of the new conference to cover the overarching field of performance-oriented graphics systems, including innovative algorithms, efficient implementations, and novel hardware architectures. This broader focus offers a common forum for researchers, engineers, and architects to discuss the complex interactions of massively parallel hardware, novel programming models, efficient graphics algorithms, and innovative applications.

www.highperformancegraphics.org →→

NPAR 2009
7th International Symposium on Non-Photorealistic Animation & Rendering

Room 287
1 - 2 August

NPAR 2009, the 7th international symposium dedicated to non-photorealistic animation and rendering, sponsored by ACM SIGGRAPH and in cooperation with Eurographics. Non-photorealistic animation and rendering (NPAR) refers to techniques for visually communicating ideas and information. Such techniques usually generate imagery which is expressive, rather than "photorealistic". This research deals with both the mechanisms of non-photorealistic rendering techniques as well as the principles of visual communication via such artistic rendering.

www.cs.rug.nl/svcg/npar2009/ →→

SBIM 2009: Sixth Eurographics Symposium on Sketch-Based Interfaces and Modeling

Sheraton New Orleans
1 - 2 August

The Sixth ACM/Eurographics Symposium on Sketch-Based Interfaces and Modeling provides a venue for exploring the models, algorithms and technologies needed to enable effective sketch-based interfaces. It focuses on novel methods for classification and recognition of hand-drawn shapes, and methods for using these techniques to create or edit digital models — everything from text and mathematics to 2D diagrams to building and animating models in 3D. In addition to systems that build models, the symposium also presents empirical user studies aimed at evaluating the effectiveness of these sketch-based interfaces.

sbim09.cse.wustl.edu/index.php →→

Symposium on Computer Animation

Renaissance Arts Hotel
1 - 2 August

The Symposium on Computer Animation (SCA) is the premier forum for innovations in the software and technology of computer animation. The eighth annual event unites researchers and practitioners working on all aspects of time-based phenomena. Our focused, intimate gathering, with single track program and emphasis on community interaction, makes SCA the best venue to exchange research results, get inspired, and set up collaborations.

www.cs.ubc.ca/~van/sca/sca.html →→

Conference Policies

- **Passes:** To be admitted to the Reception, you must have a ticket. (Your registration badge does not provide access.) Computer Animation Festival access is included with Full Conference Access and the Festival pass.

- SIGGRAH 2009 reserves the right to deny registration or entrance to any attendee or prospective attendee, and to cancel an existing registration, if it determines that a registration or an attendee is not in the best interest of SIGGRAPH 2009 or ACM SIGGRAPH.

- Lost badges cannot be replaced. If you lose your badge, you must register again at the published rates to obtain a new badge. Lost merchandise vouchers will not be replaced.

- SIGGRAPH 2009 conference documentation and pre-purchased merchandise will not be shipped, nor will refunds be given for any material that is not picked up at the Merchandise Pickup Center.

Age Requirement Policies

- Registered attendees under the age of 16 must be accompanied by an adult at all times.

- Children under 16 are not permitted in the Exhibition. Age verification is required.

Airport Shuttle Discounts

SIGGRAPH 2009 has partnered with Airport Shuttle to offer transportation to and from Louis Armstrong International Airport (MSY). SIGGRAPH 2009 attendees receive a $2 discount on a round-trip ticket when they book service online through Airport Shuttle Reservations at www.siggraph.org/s2009. These discounts are valid from 25 July until 13 August 2009.

Bookstore
Room 270

Monday, 3 August
8 am - 7 pm
Tuesday - Friday, 4 - 7 August
8 am - 6 pm

BreakPoint Books offers the latest and greatest books, CDs, and DVDs on computer animation, graphic design, gaming, 3D graphics, modeling, and digital artistry. The bookstore features recent books by SIGGRAPH 2009 speakers and award winners.

Camera/Recording Policies

No cameras or recording deices are permitted at SIGGRAPH 2009. Abuse of this policy will result in revocation of the individual's registration credentials.

SIGGRAPH 2009 employs a professional photographer and reserves the right to use all images that this photographer takes during the conference for publication and promotion of future ACM SIGGRAPH events.

Computer Animation Festival Passes

Computer Animation Festival access is included with Full Conference Access and the Festival pass. You can add the week-long Festival Pass to your Basic Access registration at a discounted price, or you can add the Festival to a Basic One-Day pass.

Conference Management Office
+1.504.670.4002
Rooms 267-268

If you have questions regarding SIGGRAPH 2009, call or stop by this office anytime during conference hours.

Ernest N. Morial Convention Center

ACCESSIBILITY
The convention center is handicap accessible. If you have special needs or requirements, please call Conference Management at:
+1.504.670.4002

BUSINESS CENTER
+1.504.670.8941
Hall F Lobby

The Ernest N. Morial Convention Center Business Center offers copy and fax services, digital printing, sign and banner making, mobility scooter rentals, instant business cards, office and exhibit supplies and small parcel shipping services.

FOOD SERVICES
Several restaurants, concessions, and food carts are available throughout the convention center for the convenience of SIGGRAPH 2009 attendees.

Exhibition Management Office
+1.504.670.4008
Hall F (Back of the Hall)

Representatives are available during conference hours to meet with exhibitors and help with plans for exhibiting at SIGGRAPH 2009 and 2010.

Exhibitor Registration
Hall F

Open during registration hours. See Registration.

First Aid Office*
Hall F Lobby

Sunday, 2 August
7:30 am - 6:30 pm
Monday, 3 August
7 am - 9:30 pm
Tuesday - Wednesday, 4-5 August
7:30 am - 9:30 pm
Thursday, 6 August
9 am - 9 pm
Friday, 7 August
7:30 am - 6 pm

* For emergencies, contact the Conference Management Office at +1.504.670.4002 (do not call 911 directly, Conference Management will provide faster response within the convention center).

Housing Desk
+1.504.670.4010
Hall F

Complete information about SIGGRAPH 2009 hotel accommodations. Open during registration hours. See Registration.

Lost and Found
Hall F (next to Registration)

To inquire about lost items during the conference. (Note: On Friday the Lost and Found desk will be located in the SIGGRAPH Store, Hall E Lobby.) After the conference, all lost-and-found items will be turned over to the Ernest N. Morial Convention Center Security Office, Room H116 located outside of Hall H.

Luggage and Coat Check
Hall G Lobby

Monday, 3 August
7:30 am - 9:30 pm
Tuesday - Thursday, 4 - 6 August
8 am - 9:30 pm
Friday, 7 August
8 am - 6 pm

Luggage and Coat Check service is available for briefcases, backpacks, and other small items during the hours listed below. SIGGRAPH 2009 is not responsible for items left in the Luggage and Coat Check area.

Merchandise Pickup Center

Your conference documentation (included with registration) must be picked up at the Merchandise Pickup Center. Conference documentation and pre-purchased merchandise will not be shipped, nor will refunds be given for any material that is not picked up at the Merchandise Pickup Center. Open during registration hours. See Registration.

Parking
+1.504.566.1010

Parking is available at AMPCO/Fulton Street Garage located across the street from the Ernest N. Morial Convention Center at 901 Convention Center Boulevard for $10 per day. There are no in/out privileges.

Reception
Co-sponsored by Side Effects Software

Houdini
3D ANIMATION TOOLS

Thursday, 6 August, 8 - 10 pm
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Join friends and colleagues from around the world to celebrate the spirit of New Orleans. Wander among towering figures of fantasy. Marvel at the skill and technology that animate the mega-floats of Mardi Gras. Enjoy delicious Crescent City cuisine and refreshing libations.

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Reception tickets are available at the Registration counter in Hall F. The cost is $55 per person. All sales are final.

Registration/Merchandise Pickup Center
Hall F

Sunday, 2 August
2 - 6 pm
Monday, 3 August
7:30 am - 6 pm
Tuesday - Thursday, 4 - 6 August
8 am - 6 pm
Friday, 7 August
8 am - 3:30 pm

Restaurant Reservations/City Information
+1.504.670.8905
Hall F (near Registration)

Sunday - Friday, 2 - 7 August
9 am - 5 pm

General conference information, New Orleans restaurant reservations and New Orleans city information.

Shuttle Bus Service
+1.410.507.0971

SIGGRAPH 2009 provides shuttle bus service between many conference hotels and the Ernest N. Morial Convention Center.

IMPORTANT NOTICE
Attendees who used the SIGGRAPH 2009 hotel reservation system to make reservations at hotels served by the SIGGRAPH shuttle buses will receive a complimentary shuttle wristband when they check in. Attendees who did not book through the SIGGRAPH 2009 reservation system and wish to use the shuttle service can purchase wristbands at the SIGGRAPH Store for $75. Attendees without wristbands will not be allowed to use the shuttle service. One exception: all attendees with badges or reception tickets will be able to ride the shuttle buses to and from the reception, without needing a wristband.

HOTEL SHUTTLE SERVICE HOURS
Sunday, 2 August
1:30 - 6 pm
Monday - Thursday, 3 - 6 August
7 - 11:30 am and 5 - 9:30 pm
Friday, 7 August
7 - 11:30 am and 1:30 - 6 pm

Hotel shuttle service will pick-up and drop-off attendees outside Hall D & E of the Ernest N. Morial Convention Center.

The last shuttle from Blaine Kern's Mardi Gras World will depart at 10:30 pm.

SIGGRAPH Encore Conference Presentations DVD-ROM
La Nouvelle Orleans Ballroom Lobby

The SIGGRAPH Encore Conference Presentations DVD-ROM set returns in 2009! Get the SIGGRAPH 2009 conference presentations on a 2 disc DVD-ROM set. Visit the SIGGRAPH Encore booth in the La Nouvelle Orleans Ballroom Lobby for more information and to place your order.

SIGGRAPH Store
Hall E Lobby

Review and purchase additional technical materials and gifts (t-shirts, polo shirts, coffee mugs, baseball cap) for friends, family, and colleagues.

Sunday, 2 August
noon - 6 pm
Monday - Thursday, 3 - 6 August
8 am - 6 pm
Friday, 7 August
8 am - 3:30 pm

Speaker Prep
Rooms 278-279

Sunday, 2 August
9 am - 7 pm
Monday – Thursday, 3 - 6 August
7 am - 7 pm
Friday, 7 August
7 am - 2 pm

Pick up your registration credentials and conference information. Then go to the Speaker Prep Room to collect your Speaker Ribbons and badge holder.

If you are presenting at the conference, you should check in with Speaker Prep at least 24 hours before your session to review and upload your materials, practice your presentations, and test the playback of your media.

Technical Materials Sold After the Conference

Full Conference DVD-ROM
Member: $65; Non-Member: $100
This digital publication contains the electronic version of the Technical Papers, including images and supplemental material; all of the Course Notes, including supplemental material (movies, source code, HTML presentations); and the permanent record of the Courses, Emerging Technologies, Panels, Posters, Talks, the Art & Design Galleries, and the Computer Animation Festival. (A complimentary copy of the Full Conference DVD-ROM is included with Full Conference Access registration.)

ACM Transactions on Graphics (Conference Proceedings Special Issue) - Printed
Member: $35; Non-Member: $52
Contains the SIGGRAPH 2009 Technical Papers and the ACM SIGGRAPH awards.

Leonardo, the Journal of the International Society of the Arts, Sciences and Technology (ISAST) (Special Issue)
Member: $17; Non-Member: $25
This printed publication contains the permanent record of the juried Art Gallery

Sandbox: ACM SIGGRAPH on Video Games
Member: $20; Non-Member: $30
This printed and CD-ROM proceedings contains the Game Papers. The CD-ROM also contains supplemental material in support of the Game Papers.

SIGGRAPH 2009 Video Review
Member: $120; Non-Member: $180
This series of three DVDs documents the Computer Animation Festival programs. Individual DVD programs are available for purchase at SIGGRAPH 2009 registration, at the SIGGRAPH Store, and at the SIGGRAPH Video Review booth outside the Computer Animation Festival venues. Member: $40 each; non-member: $60 each.

SIGGRAPH Asia 2008 Video Review
Member: $30; Non-Member: $45
Highlighted works from the SIGGRAPH Asia 2008 Computer Animation Festival in Singapore, December 2008.

To order these materials after the conference, contact:

ACM Member Services
800.342.6626 (Continental US and Canada)
+1.212.626.0500 (International and New York Metro area)
+1.212.944.1318 fax
orders (at) acm.org

Telephone Numbers

Business Center
+1.504.670.8941

Conference Management Office
+1.504.670.4002

Exhibition Management Office
+1.504.670.4008

Housing Desk
+1.504.670.4010

Media Headquarters
+1.504.670.4011

Parking
+1.504.566.1010

Restaurant Reservations/ City Information
+1.504.670.8905

Shuttle Bus Service
+1.410.507.0971

Wireless Internet Access

SIGGRAPH 2009 provides 802.11 a/b/g wireless network access throughout the Ernest N. Morial Convention Center. To use the wireless network, attendees should have their own wireless (802.11a, b, or g compatible) cards.

Please refer to your laptop operating system and client adapter documentation and follow this procedure:

1. Document all existing TCP/IP and wireless configuration information before you make any changes.
2. Configure your laptop to use DHCP.
3. Configure your wireless adapter network Name (SSID) to be "s2009".
4. Disable encryption on your wireless adapter.

The SIGGRAPH 2009 wireless network provides open, unencrypted communications for conference attendees. The system is not secure and can be monitored by others.

INCLUDED WITH YOUR REGISTRATION

Sessions

■	●	▲	Awards Presentation
■			Courses/Panels/Talks
■	●	▲	Exhibitor Tech Talks
■	●	▲	Keynote Speakers
■			Papers: Technical, Art, Games

Galleries & Experiences

■	●	Art & Design
		BioLogic: A Natural History of Digital Life
		Generative Fabrication
■	●	Emerging Technologies
■	● ▲	Exhibition
■	●	Information Aesthetics Showcase
■	●	Posters
■	●	The Sandbox
■	●	The Studio

Contests & Competitions

■	●	▲	FJORG!
■	●	▲	GameJam!
■	●	▲	Social Game

Performances & Special Events

■	●	▲	Music and Audio
■	●	▲	Technical Papers Fast Forward

Community

■	●	▲	Birds of a Feather
■	●		International Resources
■	●	▲	Job Fair

Computer Animation Festival

■	▲	Evening Theaters
■	▲	Festival Panels, Talks
■	▲	Production Sessions
■	▲	Real-Time Rendering
■	▲	Stereoscopic 3D
■	▲	Visual Music

Documentation

■	Full-Conference DVD-ROM

Member Rate

If you are currently an ACM or ACM SIGGRAPH member you are eligible for member discounts. You must provide your current ACM or ACM SIGGRAPH membership number to receive the discount, otherwise, you will be charged the non-member rate. Local or regional ACM SIGGRAPH memberships are not eligible for registration discount.

Student Rate

You must be a full-time student to qualify. You must provide your 2009 ACM Student membership number to qualify for student rate (this applies for those registering in advance as well as at the conference.)

Failure to provide valid information will result in you being charged the non-member rate.
Note: Your badge will include your name, organization, city, state, country, and membership status as indicated on your registration form.

Registration
Location: Hall F

Sunday, 2 August	2 - 6 pm
Monday, 3 August	7:30 am - 6 pm
Tuesday, 4 August	8 am - 6 pm
Wednesday, 5 August	8 am - 6 pm
Thursday, 6 August	8 am - 6 pm
Friday, 7 August	8 am - 3:30 pm

Media Headquarters
Location: Room 284

Sunday, 2 August	4 - 6 pm
Monday, 3 August	8 am - 6 pm
Tuesday, 4 August	8 am - 6 pm
Wednesday, 5 August	8 am - 6 pm
Thursday, 6 August	9 am - 5 pm
Friday, 7 August	9 am - 3 pm

Media Registration

Media representatives must register in the Media Headquarters Office, Room 284. You must submit full and proper media credentials for a media pass. No exceptions will be made.

Media Briefing/Exhibition Floor Tour

The official SIGGRAPH media briefing provides an update the media on what's new and what's hot at SIGGRAPH 2009. Gain access to the exhibit floor before it opens to the attendees for a "sneak preview" of the latest products and applications.

Media Briefing
Location: Room 284
Tuesday, 4 August   8 - 8:45 am

Exhibitor Media Events

A schedule of various exhibitor media events will be available in the Media Headquarters Office in Room 284.

SIGGRAPH BY FOCUS:
FIRST-TIME ATTENDEES

For first-time attendees, the annual SIGGRAPH conference can be an exciting but overwhelming experience. We recommend setting aside time to explore the various galleries and experiences, and make sure to see the Evening Theater. Plus, listed below are suggestions for sessions that are particularly accessible to first-timers, to help you plan a fun, stimulating, and professionally rewarding adventure.

Keynote Speakers →

Randy Thom
Designing a Movie for Sound: How to Make Sound a Full Collaborator in the Storytelling Process
Monday, 3 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

Will Wright
Playing With Perception
Tuesday, 4 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

Steve Duenes
A Visual Response to the News
Wednesday, 5 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

Courses

Introduction to Computer Graphics →
Monday, 3 August | 1:45 - 5:30 pm
Auditorium A

Music Performances

Pandeiro Funk: Experiments on Rhythm-Based Interaction →
Tuesday, 4 August | 6 - 8 pm
Rooms 243-245

envyCODE →
Wednesday, 5 August | 1:45 - 3:30 pm
Rooms 243-245

Improvisation With The TOOB →
Wednesday, 5 August | 1:45 - 3:30 pm
Rooms 243-245

Reactable →
Wednesday, 5 August | 6 - 8 pm
Rooms 243-245

Silent Drum →
Thursday, 6 August | 1:45 - 3:30 pm
Rooms 243-245

And Then, Romina ... →
Thursday, 6 August | 6 – 8 pm
Rooms 243-245

Panels

Getting a Job in CG for Entertainment: Visual Effects, Animation, and Games → *FESTIVAL*
Monday, 3 August | 1:45 - 3:30 pm
Rooms 260-262

Keeping a Job in CG for Entertainment: Visual Effects, Animation, and Games → *FESTIVAL*
Monday, 3 August | 3:45 - 5:30 pm
Rooms 260-262

Special Events

Technical Papers Fast Forward →
Monday, 3 August | 6 - 8 pm
Hall E1-2

Talks

Visual Music Talks → *FESTIVAL*
Monday, 3 August | 1:15 - 5:45 pm
Rooms 243-245

See What You Feel: A Study in the Visual Extension of Music (Matthew Bain Performance and Talk) → *FESTIVAL*
Monday, 3 August | 6 - 8 pm
Rooms 243-245

Urban Planning → *FESTIVAL*
Tuesday, 4 August | 8:30 am - 5:30 pm
Rooms 271-273

Making Pixar's "Partly Cloudy": A Director's Vision → *FESTIVAL*
Tuesday, 4 August | 3:45 - 5:30 pm
Hall E 1-2

See, Hear, Make, and Play →
Wednesday, 5 August | 3:45 - 5:30 pm
Rooms 243-245

Production Sessions

Building Benjamin Button: A Blending of "Technique-ologies" → *FESTIVAL*
Monday, 3 August | 8:30 - 10:15 am
La Nouvelle Orleans Ballroom

Robots, Cyborgs, and the Final Frontier: An Inside Look at "Transformers: Revenge of the Fallen", "Terminator Salvation", and "Star Trek" → *FESTIVAL*
Tuesday, 4 August | 1:45 - 5:30 pm
La Nouvelle Orleans Ballroom

Big, Fast and Cool: Making the Art for Fight Night 4 & Gears of War 2 → *FESTIVAL*
Wednesday, 5 August | 8:30 - 10:15 am
La Nouvelle Orleans Ballroom

"Cloudy With a Chance of Meatballs": Making Mouthwatering 3D → *FESTIVAL*
Wednesday, 5 August | 1:45 - 3:30 pm
La Nouvelle Orleans Ballroom

G-Force 3D: Guinea Pigs, Gadgets, and Post-Production in Stereoscopic Filmmaking → *FESTIVAL*
Thursday, 6 August | 1:45 - 3:30 pm
Rooms 260-262

"Coraline": The Changing Face of Animation → *FESTIVAL*
Thursday, 6 August | 3:45 - 5:30 pm
Rooms 260-262

SIGGRAPH BY FOCUS: ART & DESIGN

SIGGRAPH celebrates and fosters the fusion and mutual inspiration of science, art, and technology. Here is a snapshot of some of the SIGGRAPH 2009 offerings that emphasize the art and design aspects of computer graphics and interactive techniques.
Listed on page 15 are suggestions for sessions that are particularly relevant to Art & Design.

Art & Design Experiences

BioLogic: A Natural History of Digital Life ➠
SIGGRAPH 2009's juried art gallery explores the flux of natural and technological forces. The gallery will be documented in a special issue of *Leonardo, The Journal of the International Society of the Arts, Sciences and Technology.*

Generative Fabrication ➠
This year's curated design & computation gallery explores non-linear and biological processes in selected works of art and architecture.

The Studio ➜
Where attendees get hands-on experience with the latest creative technologies.

Information Aesthetics Showcase ➠
Works that combine information and data visualization with graphic design and media arts.

Art & Design Sessions

Art Papers ➜
New for SIGGRAPH 2009. Presentation of scholarly papers on digital art and its place in society, peer-reviewed by SIGGRAPH for a special issue of *Leonardo, The Journal of the International Society of the Arts, Sciences and Technology.*

Reception
Celebrating the Special Issue of Leonardo and SIGGRAPH 2009 Art & Design Galleries

Tuesday, 4 August, 1:30 - 3:30 pm
Lobby outside Rooms 353-355

Drink a toast to the SIGGRAPH special issue of Leonardo and the SIGGRAPH 2009 art and design galleries. Talk with the artists, designers, and Art Papers authors about their work. Meet the members of the SIGGRAPH 2009 committee who organized this year's exhibits of digital art and design.

Keynote Speaker →

Steve Duenes
A Visual Response to the News
Wednesday, 5 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

Courses

Shape Grammars →
Friday, 7 August | 8:30 am - 12:15 pm
Rooms 243-245

Computation & Cultural Heritage:
Fundamentals and Applications →
Friday, 7 August | 1:45 - 5:30 pm
Auditorium C

Panels

The State of Aesthetic Computing
or Info-Aesthetics →
Monday, 3 August | 3:45 - 5:30 pm
Auditorium B

Building Digital Cities → FESTIVAL
Tuesday, 4 August | 9:30 - 10:15 am
Rooms 271-273

The Art History of Games →
Thursday, 6 August | 8:30 - 10:15 am
Auditorium C

BioLogic and Generative Fabrication →
Thursday, 6 August | 10:30 am - 12:15 pm
Rooms 265-266

Production Sessions

Big, Fast and Cool: Making
the Art for Fight Night 4 & FESTIVAL
Gears of War 2 →
Wednesday, 5 August | 8:30 - 10:15 am
La Nouvelle Orleans Ballroom

Talks

Information Aesthetics:
Designing Interactions →
Monday, 3 August | 8:30 - 10:15 am
Auditorium B

Visual Music Talks → FESTIVAL
Monday, 3 August | 1:15 - 5:45 pm
Rooms 243-245

2009 Japan Media Arts FESTIVAL
Festival Review →
Monday, 3 August | 1:45 - 3:30 pm
Rooms 271-273

Art and Interaction →
Tuesday, 4 August | 8:30 - 10:15 am
Rooms 265-266

Urban Planning → FESTIVAL
Tuesday, 4 August | 8:30 am - 5:30 pm
Rooms 271-273

Explorations in Art and Design →
Wednesday, 5 August | 3:45 - 5:30 pm
Rooms 265-266

Immersive and Impressive:
The Impressionistic Look FESTIVAL
of Flower on the PS3 →
Wednesday, 5 August | 1:45 - 3:30 pm
Rooms 271-273

SIGGRAPH BY FOCUS: EDUCATION

Educating the next generation of practitioners in computer graphics and interactive techniques is a great responsibility. SIGGRAPH 2009 maintains the SIGGRAPH community's traditional commitment to providing resources for teachers and learners. Listed below are suggestions for sessions of special interest to educators.

SpaceTime Student Exhibition Opening Educators Meet and Greet

Monday, 3 August | 3:30 - 4:30 pm
Hall G (SIGGRAPH Village)

Keynote Speakers ➡

Randy Thom
Designing a Movie for Sound: How to Make Sound a Full Collaborator in the Storytelling Process
Monday, 3 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

Will Wright
Playing With Perception
Tuesday, 4 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

Steve Duenes
A Visual Response to the News
Wednesday, 5 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

Birds of a Feather Sessions ➡➡

Sharing Ideas in Teaching 3D Animation
Teaching Computer Graphics in Context
Teaching Math Through Game Development
Interdisciplinary Computer Graphics Education

Courses

The Whys, How Tos, and Pitfalls of User Studies ➡
Monday, 3 August | 1:45 - 5:30 pm
Auditorium C

Panels

The Future of Teaching Computer Graphics for Students in Engineering, Science, and Mathematics ➡
Wednesday, 5 August | 8:30 - 10:15 am
Rooms 265-266

Instigating Change: Models for Positive Games ➡
Wednesday, 5 August | 1:45 - 3:30 pm
Auditorium B

Talks

Animation in Education ➡
Monday, 3 August | 1:45 - 3:30 pm
Rooms 265-266

Education: Learning and the Studio ➡
Tuesday, 4 August | 8:30 - 10:15 am
Auditorium B

SIGGRAPH BY FOCUS: GAMES

The buzz is building in the international games community. SIGGRAPH 2009, this year's edition of the premier conference on computer graphics and interactive techniques, is the place to be. Don't miss these sessions, shows, and opportunities:

Keynote Speaker →

Will Wright
Playing With Perception
Tuesday, 4 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom
Video game designer, creator of Spore and The Sims series

Game Papers →

Auditorium A, Auditorium B, Rooms 260-262
The latest breakthroughs in game design, development, and research. The Game Papers are published in the Sandbox 2009: ACM SIGGRAPH Video Game Proceedings issue.

Social Game →→

Hall G Lobby
In this collectible business card game, participants gather business cards from SIGGRAPH 2009 attendees, then use the skills represented by the cards to build a production team and create a game with three "cool features".

Courses

Advances in Real-Time Rendering in 3D Graphics and Games I →
Monday, 3 August | 8:30 am - 12:15 pm
Hall E 3

Advances in Real-Time Rendering in 3D Graphics and Games II →
Monday, 3 August | 1:45 - 5:30 pm
Hall E 3

Real-Time Global Illumination for Dynamic Scenes →
Tuesday, 4 August | 8:30 - 10:15 am
Auditorium C

Efficient Substitutes for Subdivision Surfaces →
Wednesday, 5 August | 1:45 - 5:30 pm
Auditorium A

Beyond Programmable Shading I →
Thursday, 6 August | 8:30 am - 12:15 pm
Auditorium A

Beyond Programmable Shading II →
Thursday, 6 August | 1:45 - 5:30 pm
Auditorium A

Realistic Human Body Movement for Emotional Expressiveness →
Friday, 7 August | 8:30 am - 12:15 pm
Auditorium B

Panels

Getting a Job in CG for **FESTIVAL**
Entertainment: Visual Effects, Animation, and Games →
Monday, 3 August | 1:45 - 3:30 pm
Rooms 260-262

Keeping a Job in CG for **FESTIVAL**
Entertainment: Visual Effects, Animation, and Games →
Monday, 3 August | 3:45 - 5:30 pm
Rooms 260-262

Will GPUs Change the Face of **FESTIVAL**
Rendering CGI for Motion Pictures? →
Tuesday, 4 August | 1:45 - 3:30 pm
Rooms 260-262

Instigating Change: Models for Positive Games →
Wednesday, 5 August | 1:45 - 3:30 pm
Auditorium B

The Art History of Games →
Thursday, 6 August | 8:30 - 10:15 am
Auditorium C

The Masters Speak: Game **FESTIVAL**
Developers Weigh in on True 3D Gaming →
Thursday, 6 August | 8:30 - 10:15 am
Rooms 271-273

Simulated Physics in Games →
Thursday, 6 August | 10:30 am - 12:15 pm
Auditorium C

Talks

From Indie Jams to Professional Pipelines →
Monday, 3 August | 8:30 - 10:15 am
Rooms 260-262

Making It Move →
Monday, 3 August | 3:45 - 5:30 pm
Hall E 1-2

Immersive and Impressive: **FESTIVAL**
The Impressionistic Look of Flower on the PS3 →
Wednesday, 5 August | 1:45 - 3:30 pm
Rooms 271-273

Real Time Live →
Wednesday, 5 August | 3:45 - 5:30 pm
La Nouvelle Orleans Ballroom

Talks *(continued)*

Building Story in Games: FESTIVAL
No Cut Scenes Required →
Thursday, 6 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

Doing It With Game Engines →
Friday, 7 August | 9:15 - 10:15 am
Hall E 3

Real Fast Rendering → FESTIVAL
Friday, 7 August | 10:30 am - 12:15 pm
Auditorium C

Rendering and Visualization →
Friday, 7 August | 3:45 - 5:30 pm
Rooms 260-262

Technical Papers

Imaging and Rendering Pipeline (TOG) →
Wednesday, 5 August | 3:45 - 5:30 Ppm
Hall E 3

Production Session

**Big, Fast and Cool: Making
the Art for Fight Night 4 &
Gears of War 2 →**
Wednesday, 5 August | 8:30 - 10:15 am
La Nouvelle Orleans Ballroom

The Sandbox ⇥

Outside Room 334 Lobby
The best recent work in experimental,
independent game development

GameJam! →

Rooms 255 - 257
Twenty-four-hour contest to produce the
best game in human history

The Exhibition ⇥

Hall F & G
All the products you need to create,
produce, and excel

Job Fair ⇥

Hall G
Worldwide career opportunities

SIGGRAPH BY FOCUS:
MUSIC AND AUDIO

For over 35 years, SIGGRAPH has been the premier conference for showcasing computer graphics and work in interactive techniques. The primary focus is on the visual, but that's just one sense among many. SIGGRAPH 2009 is highlighting the strongly related areas of music and audio, because:

⚜ Audiences absorb stories as unified audio-visual experiences.

⚜ Multimodal communication and interaction can enhance or surpass visual-only experiences.

⚜ Creating and editing music and audio define an important area of study in interactive techniques.

Music has an extra special connection for SIGGRAPH 2009 as we return to New Orleans, the birthplace of jazz and a vital melting pot of American music. SIGGRAPH 2009 includes:

Keynote Speaker →

Randy Thom
**Designing a Movie for Sound:
How to Make Sound a Full Collaborator
in the Storytelling Process**
Monday, 3 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom
Pioneer in sound and two-time Academy Award®
winner

Courses

**The Making of "Shade
Recovered": Networked
Senses at Play →** FESTIVAL
Monday, 3 August | 8:30 - 10:15 am
Rooms 243-245

**Creating New Interfaces for
Musical Expression →**
Tuesday, 4 August | 1:45 - 5:30 pm
Rooms 243-245

Interactive Sound Rendering →
Wednesday, 5 August | 8:30 am - 12:15 pm
Auditorium C

Panels

**The Visual in New Interfaces
for Musical Expression →**
Tuesday, 4 August | 10:30 am - 12:15 pm
Rooms 243-245

Sound and Story →
Wednesday, 5 August | 10:30 am - 12:15 pm
Rooms 243-245

DIY Media & Distribution →
Thursday, 6 August | 10:30 am - 12:15 pm
Rooms 243-245

Talks

Visual Music Talks → FESTIVAL
Monday, 3 August | 1:15 - 5:30 pm
Rooms 243-245

See What You Feel: A Study FESTIVAL
in the Visual Extension of Music →
Monday, 3 August | 6 - 8 pm
Rooms 243-245

See, Hear, Make, and Play →
Wednesday, 5 August | 3:45 - 5:30 pm
Rooms 243-245

Music as Multi Sense →
Thursday, 6 August | 3:45 - 5:30 pm
Rooms 243-245

The Studio →

Rooms 343-345
In cooperation with the New Interfaces for Musical Expression (NIME) symposium, The Studio includes technology, software, and expert help for creating new musical interfaces.

Music Performances →

Rooms 243-245
Performances that combine music with imagery or demonstrate novel interactive techniques.

LOCATION

Rooms 243 - 245

MUSIC PERFORMANCES

Performances that combine music with imagery or demonstrate novel interactive techniques.

See What You Feel: A Study in the Visual Extension of Music FESTIVAL

Monday, 3 August | 6 - 8 pm

A live performance of abstract animations of music pre-rendered in Maya, 3D visualizations of music-theory structures, and real-time systems that visually react to live music. The SIGGRAPH 2009 talk titled A Study in the Visual Extension of Music discusses the music system used in this performance.

Matthew Bain
The Ohio State University

Pandeiro Funk: Experiments on Rhythm-Based Interaction

Tuesday, 4 August | 6 - 8 pm

This work addresses the problem of making the machine listen and react to the musician to generate high-quality music in an improvisation situation. The method uses rhythmic phrases as commands to control the computer instead of using pedals or other interfaces, so the musician can enter or leave an interaction mode just by playing a certain rhythmic phrase.

The advantages of this approach are many. It is based in real-life experience. The musician can concentrate only on the music and not on control interfaces. It lets the musician control the machine without stopping the music flow. It requires low computational cost and gives fast results. Because it is audio-based, it can be applied to many sorts of instruments. And because a rhythmic phrase carries information that can be used as parameters during the interaction, the commands carry more information, and the interaction becomes richer and more natural.

In this performance, the system is adapted to work with a Brazilian percussion instrument called Pandeiro. Includes a brief discussion of this performance.

Sergio Krakowski
Luiz Velho
Instituto Nacional de Matemática Pura e Aplicada

François Pachet
Sony Computer Science Laboratory Paris

envyCODE

Wednesday, 5 August | 1:45 - 3:30 pm

envyCODE is Butch Rovan on custom instruments, extended alto clarinet (MiMICS System), and interactive electronics; Kevin Patton on extended guitar (Taurex System), custom instruments, and interactive electronics; and Carmen Montoya on custom instruments and interactive electronics.

FrameGarden (2009)
FrameGarden is a structured improvisation loosely inspired by the formal arrangement of a karesan-sui, or Japanese dry rock garden. The piece features hybrid/extended alto clarinet and guitar, custom instruments, and interactive computer music. The alto clarinet and guitar incorporate onboard sensor systems that allow each instrumentalist to control real-time processing as part of their normal performance gestures. Custom instruments include The Globe and The Banshee, new instruments designed by Rovan, and The Digital Poplar Consort, a set of four new sensor instruments designed by Patton and Montoya.

All sources – extended alto clarinet, extended guitar, and new instruments – control real-time processing in MaxMSP and STEIM's LiSa. Includes a brief discussion of this performance.

Joseph Rovan
Kevin Patton
Brown University

Maria Del Carmen Montoya

Improvisation With The TOOB

Wednesday, 5 August | 1:45 - 3:30 pm

The TOOB is a unique wireless electronic instrument created to extend wind-instrument performance techniques into the electroacoustic realm. It has been tweaked for over two years to give the performer a vast but intuitive range of sonic choices, allowing creative freedom in solo or group improvisation. The instrument senses breath, finger pressure, tilt, and acceleration, and has several other tactile controls. Sound is created and processed using Max/MSP/Jitter.

Arvid Tomayko-Peters
Squish the Squid Productions

Reactable

Wednesday, 5 August | 6 - 8 pm

The Reactable is based on a translucent and luminous round table. By putting tangible pucks on the Reactable surface, turning them, and connecting them to each other, performers can combine different elements such as synthesizers, effects, sample loops, or control elements to create a unique and flexible composition. Reactable's pucks represent the building blocks of electronic music. Each one has a different function in sound generation or effect processing, in a method deeply inspired by modular analog synthesizers such as those developed by Bob Moog in the early 1960s. Includes a brief discussion of this performance.

Sergi Jordà
Universitat Pompeu Fabra
Reactable Systems

Silent Drum

Thursday, 6 August | 1:45 - 3:30 pm

The Silent Drum is a transparent drum shell with an elastic head. When it is pressed, the membrane adapts to the shape of the hand. The shapes are captured by a video camera and sent to a computer, which analyzes them and outputs the tracked parameters. By mapping these parameters, the physical movements of the performer are translated into sound. The controller itself is completely silent when played.

The silent drum produces a large amount of variables only if the input is complex. Its design is based on a simple, effective hierarchical logic: there are no fingers without a hand, no hand without an arm, no arm without a body. It reports continuous variables and extracts discrete variables. Sound events, bounded by discrete variables, are used for score control, triggers, mapping changes, etc. Continuous variables are used to shape sound morphologies.

Jaime Oliver
University of California, San Diego

And Then, Romina ...

Thursday, 6 August | 6 - 8 pm

And Then, Romina..., for prepared electric guitar and electronics, is a dramatic work that explores various relationships between live guitar and electronic sound. Among these relationships is a concern for using electronics to extend both the timbral and performance possibilities of the live instrument. Much of the piece is abstractly based on the Italian song "O surdato nammurato" (Califano/Canino, 1915), which can be heard most distinctly at the end. The piece was composed at City University, London in the fall and winter of 2000.

Mike Frengel
Northeastern University

SIGGRAPH BY FOCUS:
PRODUCTION/VFX

The annual SIGGRAPH conference is the most important opportunity for the production and visual effects community to show their latest work to each other and to the research and art communities, and to learn the latest techniques from international experts. The Computer Animation Festival shows the latest and greatest work in production and visual effects.

The Computer Animation Festival's special guest speakers are:
- Chris Landreth, "The Spine" and Psychologically Driven Animation →
- Peter Ludé, "3D to the Home: What Can Possibly Go Wrong?" →
- Bob Whitehill, "Visual Storytelling in Three Dimensions" →

SIGGRAPH 2009 is also making a special effort to include game production in the conference and expanding to include music and audio. Two SIGGRAPH 2009 keynote speakers have achieved world renown in game and audio production:

- Will Wright, video game designer, creator of Spore™ and The Sims series. →
- Randy Thom, pioneer in sound and two-time Academy Award® winner. →

Here is a list of sessions that are directly related to production and VFX.

Courses

Build Your Own 3D Scanner:
3D Photography for Beginners →
Wednesday, 5 August | 8:30 am - 12:15 pm
Rooms 260-262

The Digital Emily Project: Photoreal
Facial Modeling and Animation →
Thursday, 6 August | 1:45 - 3:30 pm
Auditorium C

Realistic Human Body Movement
for Emotional Expressiveness →
Friday, 7 August | 8:30 am - 12:15 pm
Auditorium B

Visual Algorithms in Post-Production →
Friday, 7 August | 1:45 - 5:30 pm
Rooms 243-245

Panels

Getting a Job in CG for FESTIVAL
Entertainment: Visual Effects,
Animation, and Games →
Monday, 3 August | 1:45 - 3:30 pm
Room 260 - 262

Keeping a Job in CG for FESTIVAL
Entertainment: Visual Effects,
Animation, and Games →
Monday, 3 August | 3:45 - 5:30 pm
Room 260 - 262

Will GPUs Change the Face of FESTIVAL
Rendering CGI for Motion Pictures? →
Tuesday, 4 August | 1:45 - 3:30 pm
Rooms 260-262

Deconstructing FESTIVAL
"Watchmen" →
Thursday, 6 August | 8:30 - 10:15 am
La Nouvelle Orleans Ballroom

Beyond The Big Screen: The Evolution
of 3D Standards in Cinema, Broadcast
and the Home →
Thursday, 6 August | 10:30 am - 12:15 pm
Rooms 271-273

The Mass Animation Project and the
Future of Crowd-Sourced Creativity →
Thursday, 6 August | 1:45 - 3:30 pm
La Nouvelle Orleans Ballroom

Short-Cuts to Reality: The Art and
Compromise of Software Development
for Physics-Based VFX →
Thursday, 6 August | 3:45 - 5:30 pm
Hall E 1-2

Production Sessions

Building Benjamin Button: A Blending of "Technique-ologies" → FESTIVAL
Monday, 3 August | 8:30 - 10:15 am
La Nouvelle Orleans Ballroom

Robots, Cyborgs, and the Final Frontier: An Inside Look at "Transformers: Revenge of the Fallen", "Terminator Salvation", and "Star Trek" → FESTIVAL
Tuesday, 4 August | 1:45 - 5:30 pm
La Nouvelle Orleans Ballroom

Big, Fast and Cool: Making the Art for Fight Night 4 & Gears of War 2 → FESTIVAL
Wednesday, 5 August | 8:30 - 10:15 am
La Nouvelle Orleans Ballroom

"Cloudy With a Chance of Meatballs": Making Mouthwatering 3D → FESTIVAL
Wednesday, 5 August | 1:45 - 3:30 pm
La Nouvelle Orleans Ballroom

Monsters vs Stereo: How Stereo Affected Production on "Monsters vs Aliens" → FESTIVAL
Thursday, 6 August | 10:30 am - 12:15 pm
Rooms 260-262

G-Force 3D: Guinea Pigs, Gadgets, and Post-Production in Stereoscopic Filmmaking → FESTIVAL
Thursday, 6 August | 1:45 - 3:30 pm
Rooms 260-262

"Coraline": The Changing Face of Animation → FESTIVAL
Thursday, 6 August | 3:45 - 5:30 pm
Rooms 260-262

Talks

Splashing in Pipelines →
Monday, 3 August | 1:45 - 3:30 pm
Auditorium B

Making It Move →
Monday, 3 August | 3:45 - 5:30 pm
Hall E 1-2

Making Pixar's "Partly Cloudy": A Director's Vision → FESTIVAL
Tuesday, 4 August | 3:45 - 5:30 pm
Hall E 1-2

Taking Care of Your Pet →
Tuesday, 4 August | 6:15 - 8 pm
Hall E 1-2

Painterly Lighting →
Wednesday, 5 August | 8:30 - 10:15 am
Auditorium B

From Pitchvis to Postvis: Integrating Visualization Into the Production Pipeline → FESTIVAL
Wednesday, 5 August | 10:30 am - 12:15 pm
Rooms 271-273

Two Bolts and a Button →
Wednesday, 5 August | 1:45 - 3:30 pm
Hall E 1-2

Animateering →
Wednesday, 5 August | 3:45 - 5:30 Ppm
Auditorium C

Effects Omelette →
Thursday, 6 August | 10:30 am - 12:15 pm
Hall E 1-2

Real-Time Design Review and Collaboration for Global Infrastructure Projects → FESTIVAL
Thursday, 6 August | 1:45 - 3:30 pm
Rooms 271-273

Capturing and Visualizing Animation →
Thursday, 6 August | 3:45 - 5:30 pm
Auditorium C

Rendering →
Friday, 7 August | 8:30 - 10:15 am
Auditorium C

Doing It With Game Engines →
Friday, 7 August | 9:15 - 10:15 am
Hall E 3

Character Animation and Rigging →
Friday, 7 August | 3:45 - 5:30 pm
Hall E 3

Technical Papers

Light and Materials →
Tuesday, 4 August | 1:45 - 3:30 pm
Hall E 1-2

Fluid Simulation →
Tuesday, 4 August | 3:45 - 6 pm
Hall E 3

Reduced Physics for Animation →
Wednesday, 5 August | 1:45 - 3:30 pm
Hall E 3

Creating Natural Variations →
Wednesday, 5 August | 3:45 - 6 pm
Hall E 1-2

Imaging and Rendering Pipeline (TOG) →
Wednesday, 5 August | 3:45 - 5:30 pm
Hall E 3

Character Animation I →
Thursday, 6 August | 8:30 - 10:15 am
Hall E 1-2

Rendering Methods and Systems (TOG) →
Thursday, 6 August | 8:30 - 10:15 am
Hall E 3

Meshing →
Friday, 7 August | 8:30 - 10:15 am
Hall E 1-2

Character Animation II →
Friday, 7 August | 10:30 am - 12:15 pm
Hall E 1-2

Physically Based Modeling: From Contact to Capture →
Friday, 7 August | 1:45 - 3:30 pm
Hall E 1-2

SIGGRAPH BY FOCUS:
PROFESSIONAL DEVELOPMENT

SIGGRAPH 2009 is dedicated to helping attendees advance their professional careers. The annual Job Fair held in Hall G brings employers and employees together before and during the conference. Listed below are sessions dedicated to study and professional needs.

Keynote Speakers →

Randy Thom
Designing a Movie for Sound: How to Make Sound a Full Collaborator in the Storytelling Process
Monday, 3 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

Will Wright
Playing With Perception
Tuesday, 4 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

Steve Duenes
A Visual Response to the News
Wednesday, 5 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

Panels

Getting a Job in CG for Entertainment: Visual Effects, Animation, and Games → FESTIVAL
Monday, 3 August | 1:45 - 3:30 pm
Rooms 260-262

Keeping a Job in CG for Entertainment: Visual Effects, Animation, and Games → FESTIVAL
Monday, 3 August | 3:45 - 5:30 pm
Rooms 260-262

Beyond The Big Screen: The Evolution of 3D Standards in Cinema, Broadcast and the Home → FESTIVAL
Thursday, 6 August | 10:30 am - 12:15 pm
Rooms 271-273

The Mass Animation Project and the Future of Crowd-Sourced Creativity → FESTIVAL
Thursday, 6 August | 1:45 - 3:30 pm
La Nouvelle Orleans Ballroom

Talks

Education: Learning and the Studio →
Tuesday, 4 August | 8:30 - 10:15 am
Auditorium B

ART PAPERS

Art Papers illuminate and explore the changing roles of artists and art making in our increasingly computerized, networked, multi-sensory, online world. Art Papers present excellent ideas in accessible ways. They inform artistic disciplines, set standards, and stimulate future trends.

The peer-reviewed Art Papers are published in a special issue of *Leonardo, The Journal of the International Society of the Arts, Sciences and Technology*. The issue also includes visual documentation of the works exhibited in BioLogic: A Natural History of Digital Life.

Strategies: Art Making and Viewing in Today's Technological and Social Realm

Tuesday, 4 August | 3:45 - 5:30 pm
Room 265-266

Session Chair
Mine Özkar
Middle East Technical University

Experimental Interaction Unit: Commodities of Mass Destruction

This paper describes several projects by the collective Experimental Interaction Unit, that use product design, software engineering and digital networking to uncover collective behaviors that contribute to systems of social control. Biology and human behavioral studies are essential aspects of this critique.

Anuradha Vikram
Curative Projects

MobiSpray: Mobile Phone as Virtual Spray Can for Painting BIG Anytime Anywhere on Anything

MobiSpray combines a mobile phone, a PC, and a video projector into a novel art tool that liberates and empowers artists to change the environment with large-scale artistic expressions.

Jürgen Scheible
University of Art and Design Helsinki

Timo Ojala
University of Oulu

A New System to Appreciate the Visual Characteristics of a Painting

This paper explores development and evaluation of a painting viewing system that enables users to perceive the visual links between multiple paintings as semantic elements.

Tsutomu Miyashita
DNP Digitalcom Co., Ltd.

Souvenirs du Monde des Montagnes

Souvenirs du Monde des Montagnes offers a new language to bring the real and virtual worlds closer together, to weave new meanings between the visible and the invisible, and to bridge the gap between tradition and contemporary performing art.

Camille Scherrer
EPFL+ECAL Lab

Julien Pilet
Keio University

Vincent Lepetit
Pascal Fua
École Polytechnique Fédérale de Lausanne

Stitching it Together: Technology and Aesthetics in the Wearable and Natural

Wednesday, 5 August | 1:45 - 3:30 pm
Rooms 265-266

Session Chair
Joanna Berzowska
Concordia University

Wearable Forest Clothing System: Beyond Human-Computer Interaction

Wearable Forest is a garment that bioacoustically interacts with distant wildlife in a remote forest through a remote-controlled speaker and micro-phone. This networked interactive sound system can create a sense of unity between users and a remote soundscape.

Hiroki Kobayashi
Ryoko Ueoka
Michitaka Hirose
The University of Tokyo

Re-Visioning the Interface: Technological Fashion as Critical Media

An examination of the trend toward miniaturization of wearable technologies and its context in discourses on art and the body.

Susan Elizabeth Ryan
Louisiana State University

The 200 Year Continuum

The 200 Year Continuum is a collection of prophetic mythologies that discuss society's relationship to advancing technologies and their effects on the natural world.

Christian Kerrigan
AVATAR

COURSES

Seating in Courses is on a first-come, first-served basis. Please be sure to arrive early for the Courses you wish to attend. All the Course Notes are on the Full Conference DVD-ROM that Full Conference attendees receive with their registration. To purchase a copy of the Full Conference DVD-ROM visit the SIGGRAPH Store in Hall E Lobby.

Learn from the experts in the field and gain inside knowledge that is critical to career advancement. Courses deliver unique learning opportunities, available only at SIGGRAPH 2009, in three levels of difficulty (Introductory, intermediate, and advanced).

The Making of "Shade Recovered": Networked Senses at Play   FESTIVAL

Monday, 3 August | 8:30 - 10:15 am
Room 243-245
Level: Intermediate

Explores the underlying concepts and workflow of integrating sound and images in the authors composition and design of "Shade Recovered".

Instructor
Jean Detheux
Independent Mixed-Media Artist

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>
> *This course is open to attendees in two registration categories: Computer Animation Festival and Full Conference. All other courses require Full Conference registration.*

Schedule

8:30 am	An Exploration of "Sense-Giving and Sense-Receiving" in the Visual Aspect of Visual Music
8:45 am	A Look at How Music Informs Images, and Images Inform Music
9 am	Using Painter in Search of Fortuitous Accidents
9:05 am	Using Studio Artist in Search of Fortuitous Accidents in Time
9:25 am	Using Final Cut Pro to Edit by Way of Fortuitous Accidents
10 am	Questions & Answers

Advances in Real-Time Rendering in 3D Graphics and Games I

Monday, 3 August | 8:30 am - 12:15 pm
Hall E 3
Level: Intermediate

Advances in real-time graphics research and the increasing power of mainstream GPUs has generated an explosion of innovative algorithms suitable for rendering complex virtual worlds at interactive rates. Every year, the latest video games display a vast variety of sophisticated algorithms that power ground-breaking 3D rendering and push the visual boundaries and interactive experience of rich environments.

This course covers a series of topics on the best practices and techniques prevalent in state-of-the-art rendering in several award-winning games, and describes innovative and practical 3D rendering research breakthroughs that will be used in the games of tomorrow. The course is designed for technical practitioners and developers of graphics engines for visualization, games, or effects rendering. Presented techniques are applicable in real-time and off-line domains. Attendees will acquire a number of highly optimized algorithms in various areas of real-time rendering.

Schedule

8:30 am	Introduction – Current and Future Rendering Trends in Games **Tatarchuk**
8:45 am	The Present and The Future – Graphics Secrets From the Bungie Farm **Chen and Tatarchuk**
9:45 am	The Light Pre-Pass Renderer – Renderer Design for Efficient Support of Multiple Lights (Part 1) **Engel**
10:15 am	Break
10:30 am	The Light Pre-Pass Renderer – Renderer Design for Efficient Support of Multiple Lights (Part 2) **Engel**
11 am	Light Propagation Volumes in CryEngine 3 **Kaplanyan**
noon	Question & Answer **All**

Instructors
Natalya Tatarchuk
Hao Chen
Bungie, LLC

Alex Evans
Media Molecule

Anton Kaplanyan
Crytek GmbH

Jeremy Moore
David Jeffries
Black Rock Studio

Jason Yang
Advanced Micro Devices, Inc.

Wolfgang Engel
Rockstar Games

Introduction to Computer Graphics

Monday, 3 August | 1:45 - 5:30 pm
Auditorium A
Level: Introductory

Computer graphics is a broad and deep subject, and getting the most out of attending the annual SIGGRAPH conference requires a good understanding of the core ideas that lie at the heart of our existing techniques and future innovations. This course presents live demos of popular 2D and 3D software to demonstrate the key ideas that enable creation of scientific imagery, feature movies, interactive art, and more.

In the world of 3D, the course shows how to use basic shapes to create complex objects and demonstrates how to move and manipulate those objects over time to create motion. It also shows how to generate images that communicate these models to the world and string the images together to create animation. In the world of 2D, the course follows roughly the same approach but looks more closely at how today's rich 2D development environments allow us to manipulate photos and create interactive installations in which users can explore their data, control simulations, or create new artwork.

Instructor
Andrew Glassner

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This course is open to attendees in three registration categories: Computer Animation Festival, Basic Conference Access, and Full Conference. All other courses require Full Conference registration.

Schedule

1:45 pm	Introduction and Overview
1:50 pm	3D Overview
2 pm	3D Modeling Demos
2:45 pm	3D Rendering Demos
3:30 pm	Break
3:45 pm	3D Animation Demos
3:55 pm	2D Overview
4:05 pm	2D Design Demos
4:40 pm	2D Programming Demos
5:15 pm	Questions & Answers

Advances in Real-Time Rendering in 3D Graphics and Games II

Monday, 3 August | 1:45 - 5:30 pm
Level: Intermediate
Hall E 3

This course is a continuation of Advances in Real-Time Rendering in 3D Graphics and Games I.

Schedule

1:45 pm	Graphics Techniques From Disney's Pure **Moore and Jeffries**
2:30 pm	Making it Smooth: Advances in Antialiasing and Depth of Field Techniques **Yang**
3:30 pm	Break
3:45 pm	Graphics Engine Postmortem From LittleBigPlanet **Evans**
4:45 pm	Panel Question & Answer **All**

The Whys, How Tos, and Pitfalls of User Studies

Monday, 3 August | 1:45 - 5:30 pm
Level: Introductory
Auditorium C

Members of the SIGGRAPH community are both consumers and producers of algorithms that make images and techniques that let us interact with visual applications. This course explains the essential role of user studies in insuring that algorithms, products, and content are effective for their intended purposes. The course introduces user studies through real examples and case studies that highlight good practices and warn of mistakes that can compromise evaluation. The cases are chosen to demonstrate the range of the application of user studies in computer graphics (for example, in developing better algorithms and in evaluating images and interaction techniques.)

Instructors
Veronica Sundstedt
Trinity College Dublin

Mary Whitton
University of North Carolina at Chapel Hill

Marina Bloj
University of Bradford

Schedule

1:45 pm   Introduction
          All

2:30 pm   User evaluation
          during development
          Whitton

3:15 pm   Panel/Questions

3:30 pm   Break

3:45 pm   User Studies for Graphics
          Bloj

4:30 pm   Eye tracking in user studies
          Sundstedt

5:15 pm   Panel/Questions

Real-Time Global Illumination for Dynamic Scenes

Tuesday, 4 August | 8:30 - 10:15 am
Level: Intermediate
Auditorium C

Global illumination is an important factor in creating realistic scenes and provides visual cues for understanding scene geometry. However, global illumination is very costly and only recently has it become viable to render scenes with global-illumination effects at interactive frame rates by exploiting the parallelism and programmability of modern GPUs.

This course provides a concise overview of recent GPU-based global-illumination techniques that support fully dynamic scenes, compares them, and discusses their various strengths and weaknesses. After introducing the necessary foundation (rendering equation, direct vs. indirect illumination, etc.), the course summarizes the three main streams of real-time global illumination techniques: virtual point lights, screen-space techniques, and hierarchical finite elements.

Instructors
Carsten Dachsbacher
Universität Stuttgart

Jan Kautz
University College London

Schedule

8:30 am   Introduction
           Kautz

8:40 am   Virtual Point Lights
           Kautz

9:05 am   Screen-Space Techniques
           Dachsbacher

9:35 am   Hierarchical Finite Elements
           Dachsbacher

10:05 am   Conclusions/Summary
           J. Kautz

Acquisition of Optically Complex Objects and Phenomena

Tuesday, 4 August | 8:30 - 10:15 am
Level: Advanced
Auditorium A

Standard range-scanning techniques work well for approximately Lambertian reflectors, but large classes of objects can currently not be scanned robustly. Specular and refractive objects pose challenges to range scanning because the surface cannot be observed directly. Translucent objects exhibit significant effects of global light transport, while volumetric phenomena like fire, smoke, and plasma effects do not have a proper surface. Recent research has led to the development of feasible and surprisingly accurate scanning approaches for these types of objects. This course introduces the major theoretical findings, practical setups, and experimental results for digitization of optically complex objects and phenomena.

Instructors
Ivo Ihrke
Wolfgang Heidrich
University of British Columbia

Schedule

8:30 am   Introduction and Overview
          Ihrke

8:57 am   Refractive Object Acquisition
          • Single Refraction Events, Surface Triangulation
          • Generalization to Multiple Refraction/Reflection Events
          Heidrich

9:37 am   Acquisition of Volumetric Object Descriptions
          • Fluorescent Immersion Range Scanning
          • Smoke Acquisition - Direct Measurement
          • Flame Acquisition - Sparse View Tomography
          • Astronomical Objects - Single View Tomography
          Ihrke

10:12 am Outlook, Future Research Challenges, Identification of Important Unsolved Problems
          Heidrich

An Introduction to Shader-Based OpenGL Programming FESTIVAL

Tuesday, 4 August | 1:45 - 5:30 pm
Level: Introductory
Auditorium B

OpenGL is the most widely available application programming interface (API) for creating applications in almost every area of computer graphics including research, scientific visualization, entertainment and visual effects, computer-aided design, interactive gaming, and many more. Over the past decade, OpenGL has evolved to a large API with multiple, sometimes incompatible, versions. Recent versions of OpenGL have become shader-based, and the original fixed-function pipeline may not be available.

This course provides an accelerated introduction to creating applications using these recent versions of OpenGL API. It introduces the most recent version of OpenGL, in which an application must provide vertex and fragment shaders and cannot rely on a fixed-function pipeline. Consequently, this course is a complete rewrite of the OpenGL course that has been taught at the annual SIGGRAPH conference for over 10 years.

Instructors
Edward Angel
University of New Mexico

Dave Shreiner
ARM Ltd.

Schedule

1:45 pm   Welcome, Introduction, and Overview
          Angel

1:55 pm   Getting Started With OpenGL
          Angel

2:35 pm   Working With Objects in OpenGL
          Shreiner

3:20 pm   The OpenGL Shading Language
          Angel

3:30 pm   Break

3:45 pm   The OpenGL Shading Language - continued

4:20 pm   Lighting
          Shreiner

4:40 pm   Texture Mapping
          Shreiner

5:20 pm   Questions & Answers
          Shreiner and Angel

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This course is open to attendees in three registration categories: Computer Animation Festival, Basic Conference Access, and Full Conference. All other courses require Full Conference registration.

Color Imaging

Tuesday, 4 August | 1:45 - 5:30 pm
Level: Intermediate
Auditorium C

The study of color combines a unique mixture of physics and human visual perception, which in practice makes this seemingly straightforward topic challenging and often misunderstood. This course covers the basics of physical and perceptual processes, and demonstrates how color science can be appropriately applied to various applications in rendering, high-dynamic-range imaging, and image manipulation. It is specifically designed for students and professionals who need an understanding of color science as a side-line to their own work, especially those who design algorithms in computer graphics, computer vision, and image processing. It provides a basic understanding of how color science supports design of effective algorithms, and often leads to lower storage requirements, enhanced computational complexity, and better visual quality.

Instructors
Erik Reinhard
Univeristy of Bristol

Greg Ward
Dolby Canada

Garrett Johnson
Apple Computer, Rochester Institute of Technology

Schedule

1:45 pm   Fundamentals
          • Introduction to Color Imaging
          Reinhard

          • Radiometry/Photometry/ Colorimetry
          Johnson

          • Color Spaces
          Reinhard

          • Color Appearance
          Johnson

3:30 pm   Break

3:45 pm   Applications
          • Application: Rendering Spectral Prefiltering and Sharp Color Primaries
          Ward

          • Application: High Dynamic Range Imaging
          Image Encoding
          Ward

          • Application: Image Processing
          Color Transfer Between Images
          A Simplified Color Appearance Model
          Reinhard

          • Discussion
          All

Creating New Interfaces for Musical Expression

Tuesday, 4 August | 1:45 - 5:30 pm
Level: Introductory
Rooms 243-245

Advances in digital audio technologies have led to computers playing a role in most music production and performance. Digital technologies offer unprecedented opportunities for creation and manipulation of sound, but the flexibility of these new technologies imply an often-confusing array of choices for instrument designers, composers, and performers.

This course covers the theory and practice of new musical-interface design and explores principles that are useful for designing good musical interfaces. Topics include: mapping from human action to musical output, control intimacy, tools for creating musical interfaces (sensors and microcontrollers, audio synthesis techniques, and communication protocols such as Open Sound Control and MIDI). The course complements the hands-on session on building a musical controller, presented in The Studio.

Instructors
Sid Fels
University of British Columbia

Michael Lyons
Ritsumeikan University

Schedule

          Introduction to NIME: Theory & Tools

1:45 pm   Introduction
          Fels & Lyons

1:55 pm   HCI Theory
          Lyons

2:25 pm   How to Get There: Tools of NIME
          Fels

3:05 pm   Aesthetics of NIME
          Lyons

3:15 pm   Discussion

3:30 pm   Break

          Themes & Case Studies

3:45 pm   Augmented Instruments
          Lyons

4:05 pm   Sensor Based Instruments The Land of Plenty
          Fels

4:40 pm   On the Web and Moving Around
          Education and NIME
          Lyons

5:05 pm   The World is Not Flat
          Fels & Lyons

5:15 pm   Discussion

Point Based Graphics – State of the Art and Recent Advances

Tuesday, 4 August | 3:45 - 5:30 pm
Level: Introductory
Auditorium A

This course presents the latest research results in point-based computer graphics. It begins with a discussion of novel concepts for mathematical representation of point-sampled shapes, focusing on moving least squares, spherical MLS, and robust statistics. Next, it addresses efficient algorithms for digital geometry processing and modeling of point models, including filtering, resampling, spectral processing, and deformation. This section covers high-quality rendering methods for point samples, such as EWA splatting and ray tracing, and explains hardware architectures for efficient point processing and rendering. The last part of the course summarizes how point representations can be utilized in the context of physically based animation.

Instructor
Markus Gross
ETH Zürich

Schedule

Representation
- Moving Least Squares
- Spherical MLS
- Robust Statistics

Processing and Modeling
- Resampling
- Spectral Processing
- Deformation

Rendering
- Surfels
- EWA Splatting
- Hardware Acceleration

Animation
- Meshless Physics
- Surface Tracking

Build Your Own 3D Scanner: 3D Photography for Beginners

Wednesday, 5 August | 8:30 am - 12:15 pm
Level: Introductory
Rooms 260-262

Over the last decade, digital photography has entered the mainstream with inexpensive, miniaturized cameras for consumer use. Digital projection is poised to make a similar breakthrough, with a variety of vendors offering small, low-cost projectors. As a result, active imaging is a topic of renewed interest in the computer graphics community. In particular, low-cost homemade 3D scanners are now within reach of students and hobbyists with a modest budget.

This course provides a beginner with the necessary mathematics, software, and practical details to leverage projector-camera systems in their own 3D scanning projects. An example-driven approach is used throughout; each new concept is illustrated using a practical scanner implemented with off-the-shelf parts. The course concludes by detailing how these new approaches are used in rapid prototyping, entertainment, cultural heritage, and web-based applications.

Instructors
Douglas Lanman
Gabriel Taubin
Brown University

Schedule

8:30 am	Introduction **All**
8:45 am	The Mathematics of 3D Triangulation **Taubin**
9:05 am	3D Scanning with Swept-Planes Camera and Swept-Plane Light Source Calibration **Lanman**
10 am	Reconstruction and Visualization Using Point Clouds **Taubin**
10:15 am	Break
10:30 am	Structured Lighting Projector Calibration and Reconstruction **Lanman**
11 am	Combining Point Clouds From Multiple Views Surface Reconstruction From Point Clouds Elementary Mesh Processing **Taubin**
12:05 pm	Conclusion/Questions & Answers

Interactive Sound Rendering

Wednesday, 5 August | 8:30 am - 12:15 pm
Level: Introductory
Auditorium C

An overview of algorithmic and software technologies related to interactive sound rendering. The course lectures cover three main topics: physically based techniques to synthesize sounds generated from colliding objects or liquid sounds, efficient computation of sound propagation paths based on reflection or diffraction paths and converting those paths into audible sound, exploiting the computational capabilities of current multi-core commodity processors for real-time sound propagation and sound rendering for gaming and interactive applications. The presentations include audio demonstrations that show the meaning of various processing components in practice.

Instructors
Dinesh Manocha
Ming Lin
University of North Carolina at Chapel Hill

Paul Calamia
Princeton University

Lauri Savioja
Helsingin Yliopisto

Nicolas Tsingos
Dolby Laboratories, Inc.

Schedule

8:30 am	Introduction	**Manocha**
8:45 am	Sound Rendering	**Savioja**
9:20 am	Interactive Sound Synthesis	**Lin**
9:50 am	Perceptual Audio Rendering	**Tsingos**
10:15 am	Break	
10:30 am	Geometric Sound Propagation	**Manocha**
10:50 am	Simulating Diffraction	**Calamia**
11:20 am	Numeric Sound Propagation	**Lin**
11:40 am	Accelerations on Multi-Core CPUs and Many-Core GPUs	**Manocha and Savioja**
noon	Integration Into Game Engines	**Tsingos**

Advanced Illumination Techniques for GPU Volume Raycasting

Wednesday, 5 August | 1:45 - 5:30 pm
Level: Intermediate
Rooms 260-262

Volume raycasting techniques are important for both visual arts and visualization. They allow efficient generation of visual effects and visualization of scientific data obtained by tomography or numerical simulation. Volume-rendering techniques are also effective for direct rendering of implicit surfaces used for soft-body animation and constructive solid geometry.

The focus of this course is on volumetric illumination techniques that approximate physically based light transport in participating media. Such techniques include interactive implementation of soft and hard shadows, ambient occlusion, and simple Monte Carlo-based approaches to global illumination, including translucency and scattering.

Instructors
Markus Hadwiger
VRVIS Research Center

Patric Ljung
Siemens Corporate Research

Timo Ropinski
Universität Münster

Christof Rezk-Salama
Universität Siegen

Schedule

1:45 pm	Introduction and Basics	**Hadwiger**
2:30 pm	Light Interaction	**Ropinski**
3:15 pm	Break	
3:30 pm	Ambient Occlusion	**Ljung**
4:15 pm	Scattering	**Rezk-Salama**
5:15 pm	Questions and Answers	**All**

Efficient Substitutes for Subdivision Surfaces

Wednesday, 5 August | 1:45 - 5:30 pm
Level: Intermediate
Auditorium A

The goal of this course is to familiarize attendees with the practical aspects of subdivision surfaces for which we introduce substitutes for increased efficiency in real-time applications. The course starts by highlighting the properties that make SubD modeling attractive and introduces some recent techniques to capture these properties by alternative surface representations with a smaller foot-print. We list and compare the new surface representations and focus on their implementation on current and next-generation GPUs. Among the advantages and disadvantages of each approach, we address crucial practical issues, such as watertight evaluation, creases and corners, seamless displacement mapping, cache optimization. Finally and most importantly, Valve and Industrial Light Magic will present a few breathtaking practical examples and demonstrate how these advanced techniques have been adopted into their gaming and movie production pipelines.

Instructors
Vivek Verma
Philip Schneider
Industrial Light & Magic

Jason Mitchell
Valve Corporation

Ignacio Castaño
NVIDIA Corporation

Jörg Peters
University of Florida

Tianyun Ni
NVIDIA Corporation

Schedule

1:45 pm	Introduction & Overview **Castaño**
1:50 pm	Fundamentals of Efficient Substitutes for Catmull-Clark Subdivision Surfaces **Peters**
2:30 pm	Implementation **Ni**
3:30 pm	Break
3:45 pm	Approximate Subdivision Surfaces in Valve's Source Engine **Mitchell**
4:45 pm	Approximating Subdivision Surfaces in ILM's Toolchain **Schneider and Verna**

Next Billion Cameras

Wednesday, 5 August | 3:45 - 5:30 pm
Level: Introductory
Auditorium B

What will a camera look like 10 years from now? How should we change the camera to improve mobile photography? How will a billion networked and portable cameras change the social culture? How can we use bio-inspired processing to decompose sensed values into perceptually critical elements? How will online photo collections transform visual social computing?

Capture and analysis of visual information plays an important role in photography, art, medical imaging, tele-presence, worker safety, scene understanding, and robotics. But current computational approaches analyze images from single cameras that have only limited abilities. Cameras of the future will exploit unusual optics, novel illumination, and emerging sensors. A significant enhancement in the next billion cameras to support scene analysis and mechanisms for superior metadata tagging for effective sharing will bring about a revolution in visual communication. This course explores the trends and issues associated with that revolution.

Instructors
Ramesh Raskar
Media Lab, Massachusetts Institute of Technology

Steve Seitz
University of Washington

Alexei Efros
Carnegie Mellon University

Schedule

3:45 pm	Introduction
3:50 pm	Cameras of the Future • Form Factors, Modalities and Interaction • Enabling Visual Social Computing **Raskar**
4:20 pm	Reconstruction the World • Photo Tourism and Beyond • Image-Based Modeling and Rendering on a Massive Scale • Scene Summarization **Seitz**
4:50 pm	Understanding a Billion Photos • What Will the Photos Depict? • Photos as Visual Content for Computer Graphics • Solving Computer Vision **Efros**
5:20 pm	Discussion

Visual Perception of 3D Shape

Thursday, 6 August | 8:30 - 10:15 am
Level: Introductory
Auditorium B

The human brain has the remarkable ability to turn 2D retinal images of an object into a vivid perception of the object's 3D shape. Mathematically, this should be impossible, and yet we do it effortlessly whenever we open our eyes. How does the brain achieve this? This course presents a number of key findings from the study of human visual perception of 3D shape. It shows how different sources of image information such as contours, texture gradients, shading, and optic flow each contribute to the reconstruction of 3D shape by the human visual system. The course also summarizes what happens when 3D shape perception fails, leading to some cool illusions, and describes current ideas about how 3D shapes are parsed and represented, and relates these ideas to theories of 2D shape encoding. Throughout the course, connections will be made to common practices in the artistic depiction of 3D form. The course concludes with a discussion of how an understanding of human shape perception might be leveraged to enhance 3D shape visualization in photorealistic and non-photorealistic rendering. This course should be of interest to graphics researchers and practitioners who want to understand the portrayal of shape and, more broadly, anyone who is curious about human vision.

Instructors
Roland Fleming
MPI for Biological Cybernetics

Manish Singh
Rutgers - New Brunswick

Schedule

8:30 am Shape Estimation
         Fleming

9:15 am Questions

9:20 am Break

9:25 am Shape Representation
         Singh

10:10 am Questions

Beyond Programmable Shading I

Thursday, 6 August | 8:30 am - 12:15 pm
Level: Intermediate
Auditorium A

There are strong indications that the future of interactive graphics programming is a more flexible model than today's OpenGL/Direct3D pipelines. Graphics developers need a basic understanding of how to combine emerging parallel programming techniques and more flexible graphics processors with the traditional interactive rendering pipeline. As the first in a series, this course introduces the trends and directions in this emerging field. Topics include: parallel graphics architectures, parallel programming models for graphics, and game-developer investigations of the use of these new capabilities in future rendering engines.

Instructors
Aaron Lefohn
Intel Corporation

Michael Houston
AMD Corporation

Kayvon Fatahalian
Stanford University

Tim Foley
Stanford University,
Intel Corporation

Johan Andersson
Electronic Arts, DICE

J.M.P. van Waveren
Id Software

Schedule

8:30 am   Why and How is Interactive Graphics Programming Changing?
          Lefohn

8:50 am   Beyond Programmable Shading Retrospective
          Houston

9:15 am   Running Code at a Teraflop: Overview of GPU Architecture
          Fatahalian

10 am   Open Question & Answers
          All

10:15 am Break

10:30   Parallel Programming for Interactive Graphics
          Foley

11:10 am Parallel Graphics in Frostbite - Current & Future
          Andersson

11:45 am id tech 5 Challenges
          van Waveren

The Digital Emily Project: Photoreal Facial Modeling and Animation

Thursday, 6 August | 1:45 - 3:30 pm
Level: Intermediate
Auditorium C

This course describes how high-resolution face scanning, advanced character rigging, and performance-driven facial animation were combined to create Digital Emily, a believably photorealistic digital actor. Actress Emily O'Brien was scanned in the USC ICT light stage in 35 different facial poses using a new high-resolution face-scanning process capable of capturing geometry and textures down to the level of skin pores and fine wrinkles. These scans were assembled into a rigged digital character, which could then be driven by Image Metrics video-based facial animation technology. The real Emily was captured speaking on a small set, and her movements were used to drive a complete digital face replacement of her character, including its diffuse, specular, and animated displacement maps. HDRI lighting reconstruction techniques were used to reproduce the lighting on her original performance. The most recent results show new real-time animation and rendering research for the Digital Emily character.

Instructors
Paul Debevec
Institute for Creative Technologies and University of Southern California

Oleg Alexander
Peter Busch
Image Metrics, Ltd.

Matt Chiang
Institute for Creative Technologies and University of Southern California

Schedule

1:45 pm	Introduction and Previous Photoreal Actor Attempts **Debevec**
1:55 pm	Facial Geometry and Reflectance Capture **Debevec**
2:15 pm	Previous Work in Building Animated Faces From 3-D Scans **Debevec and Alexander**
2:25 pm	Blend Shape Construction and Rigging **Alexander**
2:40 pm	Performance-Driven Animation and Calibration **Busch**
3 pm	Final Compositing **Alexander**
3:10 pm	Ongoing Work: Real-Time Emily **Chiang**
3:20 pm	Questions **All**

Beyond Programmable Shading II

Thursday, 6 August | 1:45 - 5:30 pm
Level: Intermediate
Auditorium A

This second course in the series Beyond Programmable Shading presents the state of the art in combining traditional rendering API usage with advanced task- and data-parallel computation to increase the image quality of interactive graphics.

Leaders from graphics hardware vendors, game development, and academic research present case studies that show how general parallel computation is being combined with the traditional graphics pipeline to boost image quality and spur new graphics algorithm innovation. Each case study discusses the mix of parallel programming constructs, details of the graphics algorithm, and how the rendering pipeline and computation interact to achieve the technical goals. Presenters also discuss integrating a combination of GPU and CPU techniques for more efficient and flexible algorithms. The focus is on what currently can be done, how it is done, and near-future trends. Topics include: interactive realistic lighting, advanced geometry-processing pipelines, in-frame data structure construction, complex image processing, and rasterization versus ray tracing.

Instructors
Aaron Lefohn
Intel Corporation

Michael Houston
AMD Corporation

Ulf Assarsson
Chalmers University

Justin Hensley
AMD Corporation

Paul Lalonde
Intel Corporation

David Luebke
NVIDIA Research

Kurt Akeley
Microsoft Research

Johan Andersson
Electronic Arts, DICE

Cass Everitt
Epic Games

Kayvon Fatahalian
Stanford University

Jonathan Ragan-Kelley
Massachusetts Institute of Technology

Schedule

1:45 pm	Introduction/Recap of Morning Course **Houston**
1:55 pm	GPU Primitives – Case Study: Hair Rendering **Assarsson**
2:25 pm	A Real-Time Micropolygon Rendering Pipeline Is Not Far Away **Fatahalian**
3 pm	AMD Case Study **Hensley**
3:30 pm	Break
3:45 pm	Intel Case Study **Lalonde**
4:15 pm	NVIDIA Case Study **Luebke**
4:45 pm	Panel: "What Next for 3D Graphics Programming Models?"
	Moderator **Akeley**
	Panelists **Andersson** **Everitt** **Fatahalian** **Ragan-Kelley** **Assarsson**

Scattering

Thursday, 6 August | 1:45 - 5:30 pm
Level: Intermediate
Rooms 265-266

Most of current computer-generated imagery represents scenes with clear atmospheres, neglecting light scattering effects, and most computer-vision systems have not enjoyed success when deployed in uncontrolled outdoor environments. Nevertheless, scattering is a fundamental aspect of light transport in a wide range of applications, whether simulating it or interpreting it, from medical imaging to driving simulators or underwater imagery. This course addresses the challenges that arise with light scattering in computer graphics and computer vision. Topics include: appearance modeling, underwater imagery, vision in bad weather, and measurement techniques.

Instructors
Diego Gutierrez
Universidad de Zaragoza

Wojciech Jarosz
Disney Research Zürich

Craig Donner
Columbia University

Srinivasa Narasimhan
Carnegie Mellon University

Schedule

1:45 pm	Welcome and Introduction **Gutierrez**	
2 pm	Rendering Scattering Media **Jarosz**	
2:40 pm	Real-Time Rendering **Narasimhan**	
3 pm	Inelastic Scattering **Gutierrez**	
3:20 pm	Break	
3:35 pm	Scattering Materials **Donner**	
4:10 pm	Acquisition and Measurement **Donner**	
4:45 pm	Scattering and Vision **Narasimhan**	
5:15 pm	Wrap up and Discussion **All**	

Realistic Human Body Movement for Emotional Expressiveness

Friday, 7 August | 8:30 am - 12:15 pm
Level: Intermediate
Auditorium B

Humans express their emotions in many ways, in particular through face, eye, and body motion. So creators of virtual humans strive to convincingly depict emotional movements using a variety of methods. This course focuses on the use of realistic human body motion to generate emotional expressiveness. Topics include: applications and research relating to procedural animation of humans with emotion and personality, biomechanical and physical principles of animation, physics-based human motion simulation, and data-driven animation. The course also provides some insights from the field of psychology and reviews issues relating to the perception and evaluation of realistic human body animation.

Instructors
Carol O'Sullivan
Trinity College Dublin

Ken Perlin
New York University

Aaron Hertzmann
University of Toronto

Schedule

8:30 am	Introduction/Overview **All**	
8:45 am	Hand-Crafted Procedural Animation **Perlin**	
9:45 am	Biomechanical and Physical Principles of Human Animation **Hertzmann**	
10:15 am	Break	
10:30 am	Biomechanical and Physical Principles - continued **Hertzmann**	
11 am	Evaluating Expressive Human Motion, and Perceptual Issues	
noon	Conclusions/Discussion **All**	

Interaction: Interfaces, Algorithms, and Applications

Friday, 7 August | 8:30 am - 12:15 pm
Level: Intermediate
Auditorium A

The virtual reality field has recently seen the advent of novel commodity 3D user interfaces that have led to not only a revolution in video game interaction, but also new possibilities for other virtual reality applications. This course provides background on the interfaces and algorithms involved in 3D interaction, and previews the future of research in the field.

Instructors
Miguel A. Otaduy
Universidad Rey Juan Carlos

Takeo Igarashi
The University of Tokyo

Joseph J. LaViola, Jr.
University of Central Florida

Schedule

8:30 am	Introduction: 3D Interaction and Its Applications **Otaduy**
8:45 am	User Interfaces and Video Games **LaViola**
9:45 am	Tactile Interaction With Virtual Environments **Otaduy**
10:15 am	Break
10:30 am	Tactile Interaction With Virtual Environments - continued **Otaduy**
11 am	Interactive Sketching and Modeling **Igarashi**
noon	Questions & Answers **All**

Shape Grammars

Friday, 7 August | 8:30 am - 12:15 pm
Level: Intermediate
Rooms 243-245

The theory of shape grammars, first launched by Stiny and Gips in 1972, defines a formalism to support the ambiguity in creative processes that is generally ruled out by quantitative and symbolic computations. Since then, it has evolved into a ground-breaking pragmatist philosophy of shape and design. It is implemented in fields rnaging from architecture to art, graphic design, industrial design, and computer visualization. This course offers basic knowledge of the theory of shape grammars and some advanced issues useful for its implementation.

The course is presented in two consecutive sessions. The introductory session presents the fundamentals of the theory, focusing on the basic knowledge of shapes, shape algebras, and shape rules in order to explain how shape grammars translate visual and spatial thinking into design computation. It includes several examples of shape grammar applications in design analysis and synthesis. Attendees with further and more technical interests in the topic are encouraged to continue with the advanced session, which dwells on the computational devices of shape grammars and discusses a number of selected studies on computational implementation of the shape grammar idea.

Instructors
Mine Özkar
Middle East Technical University

George Stiny
Massachusetts Institute of Technology

Schedule

	Introduction
8:30 am	The Theory
9:30 am	What to Do With It?
	Advanced Issues
10:30 am	Recursion, Identity, Embedding
	Break
11:30 am	Recursion, Identity, Embedding continued
noon	Question & Answers

Computation & Cultural Heritage: Fundamentals and Applications

Friday, 7 August | 1:45 - 5:30 pm
Level: Intermediate
Auditorium C

This course surveys several practical techniques advanced by graphics and vision researchers for applications in cultural heritage, archeology, and art history. Topics include: efficient techniques for digital capture of heritage objects, appropriate uses in the heritage field, an end-to-end pipeline for processing archeological reconstructions (with special attention to incorporating archeological data and review throughout the process), how digital techniques are actually used in cultural heritage projects, and an honest evaluation of progress and challenges in this field.

Instructors
Kevin Cain
Todd Gill
INSIGHT

Greg Downing
XRez Studio

Philippe Martinez
INSIGHT, MAFTO

Mark Eakle
Xenexus

Paul Debevec
Institute for Creative Technologies,
University of Southern California

Benedict J. Brown
Katholieke Universiteit Leuven

Greg Ward
Dolby Canada

Paolo Cignoni
ISTI - CNR

Schedule

1:45 pm Introduction
         Cain

1:55 pm Efficient Traversal of Large
         Sets of Images in Cultural
         Heritage
         Downing

2:15 pm Simple, Efficient Visualization
         of Heritage Objects
         Ward

2:40 pm Applications of Image-Based
         Synthesis and HDR Imaging
         for Heritage Sites and Objects
         Debevec

3:15 pm Break

3:30 pm Low-Cost Resources for Image
         Synthesis and Image-Based
         Modeling
         Cignoni and Debevec

4 pm   A Pipeline for Efficiently
         Reconstructing Heritage
         Objects From Range Data
         Brown and Cain

4:30 pm Frequent pitfalls and
         Deficiencies in the Use of
         3D Acquisition Techniques
         for Cultural Heritage
         Cignoni

4:50 pm Planning a Collaboration in the
         CH Field
         Brown

5 pm   An honest review and look
         to the future
         Cain and Cignoni

5:15 pm Questions

Visual Algorithms in Post-Production

Friday, 7 August | 1:45 - 5:30 pm
Level: Intermediate
Rooms 243-245

The work of the visual algorithms community (for example the work of SIGGRAPH Technical Papers authors) frequently affects real-world film post production. But often academics in the relevant fields have little idea of the tools and algorithms actually involved in day-to-day post production. This course surveys a range of typical tools and algorithmic techniques currently used in post production and shows how some emerging technologies may change these techniques in the future. The course attempts to demystify some of the processes and jargon involved, both to enlighten an academic audience and inspire new contributions to the industry.

Instructors
Simon Robinson
The Foundry

Anil Kokaram
Trinity College Dublin

Mike Seymour
fxguide, LLC

Schedule

8:30 am   Introduction
          Seymour

9:15 am   Ingest
          Kokaram

9:30 am   Break

9:40 am   Basic Compositing
          Robinson

10:15 am Challenges in 2D
          Compositing
          Kokaram

10:50 am Break

11:00 am 3D Stereoscopic
          Post Production
          Robinson

11:25 am The Future Of Compositing
          Robinson

noon   Summary and Wrap Up

Advanced Material Appearance Modeling

Friday, 7 August | 1:45 - 5:30 pm
Level: Advanced
Auditorium A

For many years, appearance models in computer graphics focused on general models for reflectance functions coupled with texture maps. Recently, it has been recognized that even very common materials such as hair, skin, fabric, and rusting metal require more sophisticated models to appear realistic. This course begins with a brief review of basic reflectance models and the use of texture maps. It describes common approaches in advanced material models such as combining the effects of layers, groups of particles, and/or fibers. It surveys the detailed models needed for a wide range of materials such as plants, hair, skin, plants, inks, gems, and automotive paints, and summarizes modeling of complex appearance due to aging and weathering processes.

Instructors
Holly Rushmeier
Julie Dorsey
Yale University

Schedule

1:45 pm	Introduction **Dorsey**
2 pm	Background **Rushmeier**
2:50 pm	Specialized Material Models: Common Themes **Rushmeier**
3:15 pm	Break
3:30 pm	Natural Materials **Dorsey**
4 pm	Manufactured/Processed Materials **Rushmeier**
4:25 pm	Aging and Weathering Processes **Dorsey**
5:10 pm	Current Trends and Needs **Rushmeier**

GAME PAPERS

The latest breakthroughs in game design, development, and research.
SIGGRAPH Game Papers are published in *Sandbox 2009: ACM SIGGRAPH Video Game Proceedings*.

Supporting Social and Persuasive Play

Tuesday, 4 August | 8:30 - 10:15 am
Rooms 260-262

Session Chair
Karen Schrier
Columbia University

Designing History: The Path to Participation Nation

A detailed project postmortem describing the iterative design process of a cross-media learning environment for high school students, the heart of which is an online collectible card game centered on US Constitutional issues.

Tracy Fullerton
University of Southern California,
School of Cinematic Arts

Laird Malamed
Activision Blizzard, Inc.

Nahil Sharkasi
Jesse Vigil
University of Southern California,
School of Cinematic Arts

Societal Impact of a Serious Game on Raising Public Awareness: The Case of FloodSim

FloodSim was developed with the aim of raising awareness of issues surrounding flooding policy and citizen engagement in the UK. This paper presents the results of analyzing the game's impact and its efficacy in raising public awareness among large numbers of players.

Genaro Rebolledo-Mendez
The Serious Games Institute

Katerina Avremides
University of Sussex

Sara de Freitas
The Serious Games Institute

Kam Memarzia
PlayGen Ltd.

Using Influence and Persuasion to Shape Player Experiences

The results of a pilot study indicating the effectiveness of using social-psychological influences to guide players' decisions in a choose-your-own-adventure-style online story.

David Roberts
Merrick Furst
Charles Isbell
Brian Dorn
Georgia Institute of Technology

Game Design Strategies for Collectivist Persuasion

This paper presents design considerations associated with developing a serious game about smoking cessation targeted at collectivist players and based on collectivist persuasive game-design strategies, and then summarizes a quantitative evaluation of effects on individualist and collectivist players.

Rilla Khaled
Pippin Barr
Robert Biddle
Carleton University

James Noble
Ronald Fischer
Victoria University of Wellington

Game Mechanics and Design Projects

Tuesday, 4 August | 3:45 - 5:30 pm
Rooms 260-262

Session Chair
Tracy Fullerton
University of Southern California,
School of Cinematic Arts

Game Design Principles for Engaging Cooperative Play: Core Mechanics and Interfaces for Non-Mimetic Simulation of Fire Emergency Response

Work practice serves as the basis for non-mimetic simulation of fire emergency response. Non-mimetic simulation focuses on information flows and distributed cognition. This simulation, a game to teach team coordination, takes form through core mechanics and interface components. A series of experiments distills game design principles for engaging cooperative play.

Zachary Toups
Andruid Kerne
William Hamilton
Texas A&M University

Experimental Evaluation of Teaching Recursion in a Video Game

This novel game, EleMental: The Recurrence, provides computer science students the opportunity to write code and perform interactive visualization to effectively learn about recursion through depth-first search of a binary tree.

Amanda Chaffin
Katelyn Doran
Drew Hicks
Tiffany Barnes
University of North Carolina at Charlotte

Game Mechanics and Design Projects *continued*

Cardboard Semiotics: Reconfigurable Symbols as a Means for Narrative Prototyping in Game Design

This paper adapts a participatory design method known as cardboard computing to the domain of game design by suggesting a method for combining semiotic analysis with cardboard prototyping to improve both high-level and interactive storytelling in video games.

Rudy McDaniel
University of Central Florida

Erik Henry Vick
Stephen Jacobs
Rochester Institute of Technology

Peter Telep
University of Central Florida

Game Design for Social Networks

This talk explores design drivers for creating games for social-networking platforms, such as Facebook and Twitter, and introduces a number of both theoretical and practical principles to inspire game concept creation and design solutions.

Aki Järvinen
T-Universitetet i København

Kinesthetic Movement in Games I

Wednesday, 5 August | 8:30 - 10:15 am
Auditorium A

Session Chair
Tracy Fullerton
University of Southern California,
School of Cinematic Arts

A High-Performance Visual Profiler for Games

A fast visual-performance profiler that enables game developers to efficiently and effectively find causes of frame drops and other bottlenecks in video games.

Michiel Roza
Mark Schroders
Eximion B.V.

Huub van de Wetering
Technische Universiteit Eindhoven

Presence-Enhancing Real Walking User Interface for First-Person Video Games

For first-person video games, players must have a high-level of feeling presence in the game environment. This paper describes user interfaces based on real walking and virtual portals for presence-enhancing gameplay, and introduces transitional environments as a starting point for the virtual reality gaming experience.

Frank Steinicke
Gerd Bruder
Klaus Hinrichs
Universität Münster

Anthony Steed
University College London

Understanding Visual Interfaces for the Next Generation of Dance-Based Rhythm Video Games

A study comparing three different visual methods for displaying dance-routine information in RealDance, a next-generation dancing videogame prototype. RealDance uses four Nintendo Wiimotes, attached to the player's arms and legs, providing a 3D spatial interface for more natural gameplay.

Emiko Charbonneau
Chadwick Wingrave
Andrew Miller
Joseph LaViola Jr.
University of Central Florida

Rock Band: A Case Study in the Design of Embodied Interface Experience

With the recent surge of interest in novel game interface devices, there is a need for new theoretical tools for critiquing and designing embodied game interactions. This paper presents a preliminary framework for the study of embodied interface using a case study of Rock Band to illustrate its utility.

Joshua Tanenbaum
Jim Bizzocchi
Simon Fraser University

Kinesthetic Movement in Games II

Thursday, 6 August | 1:45 - 3:30 pm
Auditorium B

Session Chair
Karen Schrier
Columbia University

Art of Defense: A Collaborative, Handheld Augmented-Reality Board Game

This game uses camera phones as windows onto merged physical and digital spaces, leveraging physical game pieces to combine the social and physical aspects of board games with the continuous simulation of a computer game.

Duy-Nguyen Ta Huynh
Karthik Raveendran
Yan Xu
Kimberly Spreen
Blair MacIntyre
Georgia Institute of Technology

A Framework for Exertion Interactions Over a Distance

This paper introduces a framework to analyze existing and design novel exertion games for social play, demonstrated with Remote Impact, a full-body shadowboxing game for distributed players that facilitates extreme physical exertion.

Florian Mueller
Stefan Agamanolis
Frank Vetere
Martin R. Gibbs
The University of Melbourne

A Unified Approach for Physically Based Simulations and Haptic Rendering

A novel geometric data structure, inner sphere trees, that supports both approximate proximity queries and penetration volume with one unified algorithm. This enables computation of continuous forces and torques between rigid objects consisting of hundreds of thousands of polygons for physically based simulations or force-feedback at haptic rates.

Rene Weller
Gabriel Zachmann
Technische Universität Clausthal

Giving Yourself to the Game: Transferring a Player's Own Movements to Avatars Using Tangible Interfaces

Projecting own-movement onto abstracted self-representations and visual avatars by combining common coding approaches with tangible interfaces and virtual worlds.

Ali Mazalek
Georgia Institute of Technology

Sanjay Chandrasekharan
University of Calgary

Michael Nitsche
Georgia Institute of Technology

Tim Welsh
University of Calgary

Geoff Thomas
Tandav Sanka
Paul Clifton
Georgia Institute of Technology

3D and the Cinematic in Games

Thursday, 6 August | 3:45 - 5:30 pm
Auditorium B

Session Chair
Drew Davidson
Carnegie Mellon University

Inferred Lighting: Fast Dynamic Lighting and Shadows for Opaque and Translucent Objects

Inferred lighting is a three-stage rendering pipeline that uses a special discontinuity-sensitive filter to "infer" lighting values from a lower-resolution lighting buffer, enabling a very large number of lights, a unified lighting and shadowing pipeline for alpha and opaque polygons, and hardware multisample antialiasing.

Scott Kircher
Alan Lawrance
Volition, Inc.

Interactive Simulation of Flying Japanese Kites

A real-time kite-flying simulation system using experimental data for the flying kite, a lift and drag force calculation method based on aerodynamics, real-time fluid simulation, and tensile-force calculation based on a mass-spring model.

Taichi Okamoto
Shizuoka University

Makoto Fujisawa
Nara Institute of Science and Technology

Kenjiro Miura
Shizuoka University

3D and the Cinematic in Games
continued

The Bespoke 3DUI XNA Framework: A Low-Cost Platform for Prototyping 3D Spatial Interfaces in Video Games

An open-source software platform for research in 3D user interaction. The system leverages low-cost, widely available game technologies and provides 3D user-interface machinery in a game-development framework.

Paul Varcholik
Joseph LaViola
Charles Hughes
University of Central Florida

Heuristics for Continuity Editing of Cinematic Computer-Graphics Scenes

Heuristics for editing footage of 3D computer-graphics cinematic sequences into a coherent movie clip that obeys the conventions of continuity editing, following specified stylistic rules.

Kaveh Kardan
Henri Casanova
University of Hawaii

PANELS

Full Conference Access registration allows attendees access to all SIGGRAPH 2009 Panels. Seating is on a first-come, first-served basis. Please be sure to arrive early for the Panel you wish to attend.

Panels have long been an important part of the annual SIGGRAPH conference, providing a forum for the community to share experiences, opinions, insights, speculation, disagreement, controversy, and audience interaction with the leading experts in computer graphics and interactive techniques.

Getting a Job in CG for Entertainment: Visual Effects, Animation, and Games **FESTIVAL**

Monday, 3 August | 1:45 - 3:30 pm
Rooms 260-262

Recruiters from Digital Domain, The Motion Picture Company, and Sony Pictures Imageworks discuss what it takes to get a job in CG from the ground up.

Moderator
Rob Pieke
Moving Picture Company

Karen Sickles
Digital Domain

Panelists
Ken Murayama
Sony Pictures Imageworks

Denise Novosel
Microsoft/Xbox and Microsoft Game Studios

Hannah Acock
Double Negative

Emma McGonigle
Moving Picture Company

Keeping a Job in CG for Entertainment: Visual Effects, Animation, and Games **FESTIVAL**

Monday, 3 August | 3:45 - 5:30 pm
Rooms 260-262

Supervisors from the industry's big three CG entertainment fields discuss what it takes to keep your skills up to date in the ever-changing CGI industry.

Moderator
Robin Linn
Reel FX/Radium

Jonathan Litt
Digital Domain

Rob Bredow
Sony Pictures Animation

Ken McGaugh
Double Negative

Rick Stringfellow
Electronic Arts

The State of Aesthetic Computing or Info-Aesthetics

Monday, 3 August | 3:45 - 5:30 pm
Auditorium B

Aesthetic Computing is one of several related new fields: Info-Aesthetics, Database Aesthetics, Network Aesthetics, and Software Aesthetics. What are their similarities and differences? What are the aesthetic issues that drive them? How are they linked to technological developments? And what exactly is the role of aesthetics is this context?

Michael Kelly
University of North Carolina at Charlotte

Victoria Vesna
University of California, Los Angeles

Paul Fishwick
University of Florida

Andrew Vande Moere
University of Sydney

Kenneth Huff
Savannah College of Art and Design

Building Digital Cities **FESTIVAL**

Tuesday, 4 August, | 9:30 - 10:15 am
Rooms 271-273

Experts in the use of current 3D tools discuss their use in current urban planning, sustainability, and reconstruction.

Moderator
Doug Eberhard
Autodesk, Inc.

Panelists
Kevin Gilson
Parsons Brinckerhoff

Donald Newlands
Newlands & Company, Inc.

The Visual in New Interfaces for Musical Expression

Tuesday, 4 August | 10:30 am - 12:15 pm
Rooms 243-245

We are constantly creating new ways to generate and organize sound. Sometimes the result is plain fun, and sometimes it's just really nice to listen to. This panel brings together experts who have tried to create new interfaces for musical expression through very different technical means. Using tabletop interfaces, visual-sound installations, mobile music making, and circuit bending, the panelists explore what the visual means in these different approaches to musical art.

Moderator
Georg Essl
University of Michigan

Panelists
Joseph Paradiso
Massachusetts Institute of Technology

Sergi Jorda
Pompeu Fabra University of Barcelona

Will GPUs Change the Face of Rendering CGI for Motion Pictures? **FESTIVAL**

Tuesday, 4 August | 1:45 - 3:30 pm
Rooms 260-262

Current-generation GPUs raised the production values of games while radically changing the development and content pipelines, but they are still rarely used in film production. This session examines the obstacles that prevent GPUs from being integrated into film pipelines and looks at some strategies for implementing them in production.

Moderator
Evan Hirsch

Panelists
Eric Enderton
NVIDIA Corporation

Kishore Mulchandani
Advanced Micro Devices, Inc.

Arthur Shek
Walt Disney Animation Studios

The Future of Teaching Computer Graphics for Students in Engineering, Science, and Mathematics

Wednesday, 5 August | 8:30 - 10:15 am
Rooms 265 - 266

In response to recent advances in graphics hardware and ensuing changes in application programming interfaces, this panel discusses various approaches to teaching a first course in computer graphics to technically oriented students.

Edward Angel
University of New Mexico

Peter Shirley
Evan Hart
NVIDIA Corporation

Dave Shreiner
ARM Ltd.

Tomorrow's Yesterday: Scientific and Biomedical Visualization

FESTIVAL

Wednesday, 5 August | 8:30 - 10:15 am
Rooms 271-273

Screenings of state-of the art scientific and biomedical visualizations followed by discussions of innovative solutions, behind-the-scenes software developments, interdisciplinary collaboration, methods, techniques, and production pipelines. The goal of this panel is to present fresh work, capture interesting and under-represented visualization areas in the SIGGRAPH community, and contribute to definition of standards for technical development and production methods. The panel provides a balanced platform for exploration of the overlapping technical problems and complex solutions in scientific and biomedical visualizations knowledge.

Moderator
Donna Cox
NCSA, University of Illinois

Panelists
Greg Shirah
NASA/GSFC - Scientific Visualization Studio

Doug Roberts
Adler Planetarium & Astronomy Museum

Seth W. Ruffins
California Institute of Technology

Gaël McGill
Harvard Medical School & Digizyme, Inc.

Sound and Story

Wednesday, 5 August | 10:30 am - 12:15 pm
Rooms 243-245

What we hear greatly influences what we see and feel. This panel celebrates the role of sound and music in the aesthetic experience of storytelling. Experts in film and videogame sound design and composition discuss the art of combining audio with visual narrative, present highlights and favorites, and debate emerging directions for sound and story.

Moderator
Paul Lipson
Game Audio Network Guild
Pyramind, Inc.

Panelists
Lorne Lanning
Oddworld Inhabitants

Brian Schmidt
Brian Schmidt Studios, LLC

Tommy Tallarico
Tommy Tallarico Studios, Inc.
Video Games Live
Game Audio Network Guild

Instigating Change: Models for Positive Games

Wednesday, 5 August | 1:45 - 3:30 pm
Auditorium B

What kinds of games have positive social impacts? Recent developments in independent game making show that positive changes in games do perhaps make changes in the real world. Games that entertain and also have unique, positive social aspects can empower forms of critical play and encourage people to take positive action. What are these games, what are the motivations of the game makers, and what's happening? Our panel of national leaders in the field will showcase examples such as Hurricane Katrina: Tempest in Crescent City, LAYOFF, ORGY, Hush, and Akoha.

Panelists
Mary Flanagan
Dartmouth College

Alan Gershenfeld
E-Line Ventures

Jay Bachhuber
Global Kids, Inc.

Alex Eberts
Akoha

Tracy Fullerton
University of Southern California

Drew Davidson
Carnegie Mellon University

The Art History of Games

Thursday, 6 August | 8:30 - 10:15 am
Auditorium C

This panel explores ideas surrounding games as an art form, the role of technology in the development of game and the relationship among games, the established art world, "fine art" forms, and the cultural traditions of art.

John Sharp
Savannah College of Art and Design

Ian Bogost
Georgia Institute of Technology

Frank Lantz
Area/Code

Michael Nitsche
Georgia Institute of Technology

Peter Weishar
Savannah College of Art and Design

Deconstructing "Watchmen"

FESTIVAL

Thursday, 6 August | 8:30 - 10:15 am
La Nouvelle Orleans Ballroom

Zack Snyder's "Watchmen" is a far cry from "300". It had to be in order to achieve such gritty realism, with 200 sets built in Vancouver and as much in-camera work as possible before resorting to CG. And yet the film is a diverse CG marvel to behold, building layer upon layer of riveting pop cultural information.

This panel explores Sony's making of Dr. Manhattan, the all-powerful, all-CG blue man, which presented new performance-capture challenges, along with his Glass Palace on Mars, which presented some new procedural challenges: digital cityscapes, 3D environments, and the CG Owlship by MPC Vancouver; the bravura opening-title sequence, which intricately sets up the history of the masked superheroes with the help of CIS Vancouver; and the making of the inkblot-stained mask of Rorschach by Intelligent Creatures.

Moderator
Bill Desowitz
AWN & VFX World

Panelists
Lon Molnar
Intelligent Creatures

Bryan Hirota
CIS Hollywood

Ben Cole
MPC Vancouver

Rob Bredow
Sony Pictures Imageworks

The Masters Speak: FESTIVAL
Game Developers Weigh in on True 3D Gaming

Thursday, 6 August | 8:30 - 10:15 am
Rooms 271-273

According to a survey of over 300 gaming professionals done by Gamesindustry.biz, stereoscopic 3D (S-3D) gaming is the most anticipated technology of 2009. At-home solutions include new glasses, 3D displays, head-mounted displays, projectors, a wide range of 3D HDTVs, and more. Despite this industry's long history, game developers have never truly embraced the technology. Times are clearly changing!

This panel, the first of its kind, features gaming's leading minds. Speakers discuss the link between S-3D film and cinema, share some exciting technology demonstrations, and put forward ideas to move S-3D gaming to the next level and into customers' hands.

Moderator
Neil Schneider
Meant to be Seen

Panelists
Habib Zargarpour
Electronic Arts

Nicolas Schultz
Crytek GmbH

Andrew Oliver
Blitz Games Studios

Beyond The Big Screen: FESTIVAL
The Evolution of 3D Standards in Cinema, Broadcast and the Home

Thursday, 6 August | 10:30 am - 12:15 pm
Rooms 271-273

With this year's explosion in 3D stereoscopic content in movies, games, television, and BluRay DVD, manufacturers and content creators have more reason than ever to understand how their materials play from screen to screen - and what additions, adjustments and conversations might still be necessary. Whether it's 60 feet in 4K or 3.5" on your phone, this panel explores the advances and challenges for standardizing 3D for a rapidly changing array of delivery platforms.

Moderator
Rob Engle
Sony Pictures Imageworks

Neil Schneider
Meant to be Seen

Josh Greer
RealD

Peter Ludé
Sony Electronics; Executive Vice President, SMPTE; Board of Directors ITVS

BioLogic and Generative Fabrication

Thursday, 6 August | 10:30 am - 12:15 pm
Rooms 265 - 266

Computer-based technologies initially performed an assistive role, as tools that enhanced existing practices in functionalist ways. However, according to Tanya Harrod (The Applied Arts and the Politics and Poetics of Digital Technology, 2002, http://www.pixelraiders.org/), the claim that the computer is only a tool is a cliché. She states that the computer is not just a tool and that use of computer-based technologies affects the thought processes of practitioners.

This panel discussion is an opportunity to hear a selection of practitioners participating in the BioLogic and Generative Fabrication exhibitions talk about how they have employed computation beyond an assistive role in their work and discuss how technology has influenced their approach to creative practice.

Moderator
John Marshall
rootoftwo, University of Michigan

Panelists
Arthur Elsenaar
Artifacial.org, Nottingham Trent University

Chris Lasch
Aranda/Lasch

Jenny Sabin
CabinStudio+, Sabin+Jones LabStudio, University of Pennsylvania

Yoon Chung Han
Mohoya.com, University of California, Los Angeles

DIY Media & Distribution

Thursday, 6 August | 10:30 am - 12:15 pm
Rooms 243 - 245

A discussion of how low-cost or open-source development and distribution tools are affecting creative production. It features creative pioneers and programmers who have irretrievably altered musical composition, computer graphics, the future of journalism, and the definition of art. Like every advancement since the stone age, their work enlists the help of machines to improve upon what humans once made by themselves - fundamentally modern but also timeless.

The panelists explore people-oriented ideals, like creating design programs that are free for everyone to use and build upon, television programming that allows amateurs to acquire air time, one-person symphonies, and artwork to which non-artists contribute small drawings. They also discuss the users, who help the internet live up to its potential by taking part in the myriad opportunities to show off their creativity in ways never before possible.

Do we live in a brief renaissance period where the gates are down and all bets are off, little realizing that the window will soon close and economic, corporate, or government forces will restrict the world's media again? Or do our times mark the beginning of a permanent openness, where you don't have to be established to have a voice, and where large-scale collaboration happens without financial incentives.

Moderator
Scott Draves
Google Inc.
ElectricSheep.org

Panelists
Eddie Codel
Geek Entertainment TV

Aaron Koblin
Google Creative Lab

Tiffiniy Cheng
Participatory Culture Foundation

Simulated Physics in Games

Thursday, 6 August | 10:30 am - 12:15 pm
Auditorium C

This panel brings together academic and industry experts to discuss current issues and future challenges related to using realistic physics simulations in computer games and other interactive applications.

James O'Brien
University of California, Berkeley

Eric Parker
Pixelux Entertainment S.A.

Jay Stelly
Valve Corporation

Doug James
Cornell University

Zoran Popović
University of Washington

David Wu
Microsoft Corporation

Dilip Sequeira
NVIDIA Corporation

Panels

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SIGGRAPH2009 Full Conference Final Program

The Mass Animation Project and the Future of Crowd-Sourced Creativity *FESTIVAL*

Thursday, 6 August | 1:45 - 3:30 pm
La Nouvelle Orleans Ballroom

It started with creation of a virtual studio on a social-networking platform (Facebook) with support from Intel and Dell (our sponsors), Autodesk (10,000 free Maya software licenses), and Reel FX (visual effects partner), and an open invitation to artists around the world to collaborate on an animated short film ("Live Music"). Learn how Yair Landau and the Mass Animation team and 58,000 + participants from 101 countries came together to create the largest global animation collaboration ever and what this means for the future of entertainment content creation.

Panelists
Yair Landau
Mass Animation Project

Jacquie Barnbrook
Live Nation

Michael Rivet
Intel Corporation

Robert Hoffman
Autodesk, Inc.

Scott Peterson
Reel FX

A Journey From Outer to Inner Space: Scientific and Biomedical Stereoscopic Visualization *FESTIVAL*

Thursday, 6 August | 3:45 - 5:30 pm
Rooms 271-273

This panel begins with a special screening: earth and lunar sciences, solar expeditions, galaxy formations, climate studies, mummy returns, and a journey inside the human body – all screened using state-of-the-art stereoscopic Real-D Theater projection!

Panelists discuss the challenges, techniques, and software involved in producing stereoscopic scientific and biomedical visualizations.

Moderator
Mark Bolas
Institute for Creative Technologies & School of Cinematic Arts, University of Southern California

Panelists
Helen-Nicole Kostis
University of Maryland Baltimore County & Scientific Visualization Studio, NASA/GSFC

Arnaud Thernisien
Universities Space Research Association

Donna Cox
NCSA, University of Illinois

Robert Patterson
Advanced Visualization Lab, NCSA

Benjamin Moreno
SARL IMA Solutions

Richard Breiman
University of California, San Francisco
School of Medicine

Short-Cuts to Reality: The Art and Compromise of Software Development for Physics-Based VFX

Thursday, 6 August | 3:45 - 5:30 pm
Hall E 1 - 2

An exploration of the art and compromise of software development for physics-based VFX with special emphasis on issues related to technology transfer from academia.

Ken Museth
Digital Domain

Ron Henderson
DreamWorks Animation

Nick Rasmussen
Industrial Light & Magic

Jerry Tessendorf
Rhythm & Hues Studios

TALKS

SIGGRAPH 2009 Talks provide a broad spectrum of presentations on recent achievements in all areas of computer graphics and interactive techniques, including art, design, animation, visual effects, interactive music, research, interactivity, and engineering.

Full Conference Access registration allows attendees access to all SIGGRAPH 2009 Talks. Seating is on a first-come, first-served basis. Please be sure to arrive early for the Talk sessions you wish to attend.

Cameras and Imaging

Monday, 3 August | 8:30-10:15 am
Hall E 1-2

Session Chair
Takeo Igarashi
The University of Tokyo

Non Linear Aperture for Stylized Depth of Field

New non-linear apertures that replace the standard linear aperture in light-field refocusing to create stylized depth-of-field effects.

Adrien Bousseau
ARTIS - INRIA L'Université à Grenoble

Shooting "UP": A Trip Through the Camera Structure of "UP"

For "UP", Pixar used camera and staging as story-telling devices to develop a camera plan that parallels the development of characters' emotional and narrative arcs, providing depth and nuance to the film's compositions.

Patrick Lin
Pixar Animation Studios

Automatic Colorization of Grayscale Images Using Multiple Images on the Web

A novel colorization method that is entirely automatic and produces multiple natural, colorized images by using one million images collected from the web.

Yuji Morimoto
Yuichi Taguchi
Takeshi Naemura
The University of Tokyo

PhotoSketch: A Sketch-Based Image Query and Compositing System

A system for progressively creating new images through a simple sketching and compositing interface backed by a large database of millions of images.

Mathias Eitz
Kristian Hildbrand
Technische Universität Berlin

Tamy Boubekeur
Télécom ParisTech

Marc Alexa
Technische Universität Berlin

From Indie Jams to Professional Pipelines

Monday, 3 August | 8:30-10:15 am
Rooms 260-262

Session Chair
Nafees Bin Zafar
Digital Domain

Houdini in a Games Pipeline

Using Side Effects Houdini as part of the art-production pipeline for Sony's PlayStation 3 game: Killzone 2.

Paulus Bannink
Guerilla Games

Results From the Global Game Jam

Over 1,600 people. Over 360 games. Under 48 hours. This session showcases the most interesting games from the first annual Global Game Jam and hosts a discussion of design innovation and the importance of constraints.

Ian Schreiber

Spore API: Accessing a Unique Database of Player Creativity

Applications built with the Spore API, which can access information about the millions of creations uploaded from Spore.

Shodhan Shalin
Dan Moskowitz
Michael Twardos
Maxis, Electronic Arts Inc.

Information and Aesthetics: Designing Interactions

Monday, 3 August | 8:30 - 10:15 am
Auditorium B

Session Chair
Nicole Coleman
Stanford University

well-formed.eigenfactor: Considerations in Design and Data Analysis

This talk discusses the rationale, process, and mechanisms behind the interactive visualizations for the well-formed.eigenfactor project.

Moritz Stefaner
Fachhochschule Potsdam

Martin Rosvall
Carl Bergstrom
University of Washington, Seattle

Synchronous Objects for One Flat Thing, Reproduced

Synchronous Objects is an interactive screen-based work that illuminates, reinterprets, and transforms the choreographic structures in William Forsythe's dance One Flat Thing, reproduced through a vivid collection of information objects designed by a team of multidisciplinary researchers at The Ohio State University.

Maria Palazzi
Norah Zuniga Shaw
The Ohio State University

GreenLite Dartmouth: Unplug or the Polar Bear Gets It

GreenLite Dartmouth visualizes complex, real-time energy data using interactive animations to create an emotional relationship between energy use and its effects. When electricity use is low, for example, a polar bear is happy and playful. As more energy is used, the bear becomes distressed, and his well-being is endangered.

Evan Tice
Tim Tregubov
Kate Schnippering
Yoon-Ki Park
Ray diCiaccio
Max Friedman
Jennifer Huang
Justin Slick
Giulia Siccardo
Jessica Glago
Stephanie Trudeau
Daniel Gobaud
Daniel Garcia
Craig Slagel
Lorie Loeb
Dartmouth College

Visual Music **FESTIVAL**

Monday, 3 August | 1:15 - 5:45 pm
Rooms 243-245

Session Chair
Dennis Miller
Northeastern University

From Pythagoras to Pixels: The Ongoing Trajectory of Visual Music

A historical overview of visual music from early analog creations to current digital creations.

Pam Turner
Virginia Commonwealth University

Designing Instruments for Abstract Visual Improvisation

This talk explores objectives in the visual-music domain and how we can make color, form, and motion accessible to visual improvisers.

Fred Collopy
Case Western Reserve University

Modulated Feedback: The Audio-Visual Composition "Mercurius"

Discussion of the nature and use of custom sonic and visual algorithms in the award-winning audio-visual composition "Mercurius".

Bret Battey
De Montfort University

Visual Music and the True Collaboration of Art Forms and Artists

Discussion of the structural design, textural patterns, and expressive gestures of the multimedia genre commonly known as "collaborative image/music composition".

Stephanie Maxwell
Rochester Institute of Technology

What Sound Does Color Make?

Using mathematical models to create visual compositions and designs.

Brian Evans
University of Alabama

Exploring Shifting Ground: Creative Intersections Between Experimental Animation and Audio

Approaches to creating productive relationships between audio and visuals by applying elements and principles across interdisciplinary lines.

Bonnie Mitchel
Elainie Lillios
Bowling Green State University

2009 Japan Media Arts Festival Review

Monday, 3 August | 1:45 - 3:30 pm FESTIVAL
Rooms 271-273

This talk is also open to attendees with Computer Animation Festival Access.

A brief overview of the Japan Media Arts Festival is followed by a screening of the best of this year's contributors, including the Academy Award-winning short animated film "La Maison en Petites Cubes".

Asami Hosokawa
Japan Media Arts Festival

Animation in Education

Monday, 3 August | 1:45-3:30 pm
Rooms 265-266

Session Chair
Ann McNamara
Texas A & M University

Creativity in Videogame Design as Pedagogy

A presentation of findings from recent studies of the iterative design process and how certain cognitive skills relate to creativity. The talk examines three after-school videogame design courses at elementary schools in New York City.

Ronah Harris
Teachers College, Columbia University

Teaching Animation in Second Life

Based on experiences of an online offering of the course Computer Animation: Algorithm and Techniques, at Rochester Institute of Technology, this talk focuses on the unique opportunities and challenges of offering a course in computer animation completely in the virtual world of Second Life.

Joe Geigel
Rochester Institute of Technology

Talks | Monday, 3 August

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SIGGRAPH2009 Full Conference Final Program

Animation in Education *continued*

Collaborative Animation Productions Using Original Music in an Unique Teaching Environment

How the University of Central Florida's Digital Media Department has integrated music into its digitally animated films utilizing various strategies in a production-oriented digital-animation curriculum.

Darlene Hadrika
Stella Sung
University of Central Florida

MyWorld4D: Introduction to Computer Graphics with a Modeling and Simulation Twist

The successful design, implementation, and results of an introductory computer graphics course that blends modeling and simulation concepts into the classical rendering pipeline syllabus.

Georgeta Marai
University of Pittsburgh

Splashing in Pipelines

Monday, 3 August | 1:45 - 3:30 pm
Auditorium B

Session Chair
Andy Nealen
Rutgers University

Non-Reflective Boundary Condition For Incompressible Free-Surface Fluids

A novel non-reflective boundary condition for free-surface water simulation.

Andreas Söderström
Linköpings universitet

Ken Museth
Digital Domain

An Efficient Level Set Toolkit for Visual Effects

An efficient level set toolkit for VFX based on a novel compact data structure, DB-Grid.

Ken Museth
Digital Domain

Water-Surface Animation for "Madagascar: Escape 2 Africa"

A system for animating water surfaces using the shallow-water and linear-wave equations along with appropriate discretizations. The system is fast, robust, and well-behaved with respect to changes in grid resolution, allowing quick artistic iterations and independent control over the look of different scales of motion.

Ron Henderson
DreamWorks Animation

Jason Waltman
PDI/DreamWorks

Underground Cave Sequence for "Land of the Lost"

For "Land of the Lost", Rhythm & Hues was tasked to create the underwater Mystery Cave sequence, which involved creating a photorealistic underground river, a collapsing cave, a waterfall, and a dimensional vortex.

Lucio Flores
David Horsley
Rhythm & Hues Studios

Making It Move

Monday, 3 August | 3:45 - 5:30 pm
Hall E 1-2

Session Chair
Paul Kry
McGill University

Geometric Fracture Modeling in "Bolt"

A system to facilitate modeling of elaborate cracking and shattering objects. The system supports automatic generation of a large number of fragments, artist control of the density and complexity of cracks, and manual fine-tuning of the shape of the resulting pieces.

Jeffrey Hellrung
University of California, Los Angeles

Andrew Selle
Arthur Shek
Walt Disney Animation Studios

Eftychios Sifakis
Joseph Teran
University of California, Los Angeles
Walt Disney Animation Studios

Simulating the Balloon Canopy in "Up"

The sheer number of dynamic bodies in the balloon canopy in "Up" required a reimagining of Pixar's rigid-body simulation environment and development of concise rigs and exible artists' tools.

Jon Reisch
Eric Froemling
Pixar Animation Studios

Fight Night 4: Physics-Driven Animation and Visuals

The game team CG supervisor and lead gameplay engineer explore the innovative physics-driven game play and visual style of the new Fight Night 4 game from Electronic Arts.

Frank Vitz
Georges Taorres
Electronic Arts Canada

B.O.B.: Breaking Ordinary Boundaries of Animation in "Monsters vs. Aliens"

The components and technical challenges of B.O.B.'s character rig.

Terran Boylan
Darin Grant
Dreamworks Animation

Empowering Audiences Through User-Directed Entertainment

Monday, 3 August | 3:45 - 5:30 pm
Room 271-273

FESTIVAL

Today's world of user-generated content and social-networking sites puts the audience at the heart of entertainment, allowing them to create their own personalized content. Hollywood has always pushed the boundaries of entertainment by applying the latest technologies to tell stories in new and compelling ways. But despite all its advances, Hollywood has not caught up with the audience-centric world of personalized content. Until now.

The creative vision of the world's leading directors and continually advancing technologies in the studio and at home are delivering increasingly realistic environments and characters to the screen, bringing the imagination of Hollywood's best 21st-century storytellers to life. Now, through ground-breaking software that enables sophisticated real-time rendering techniques and new delivery models, and through forthcoming client and server hardware that has the potential to put the equivalent of a supercomputer in a home set-top box, Hollywood is on the verge of bringing ultra-realistic user-directed entertainment to consumers.

This panel of the industry's leading experts shows how the era of user-directed content will become reality in the near future.

Peter Berg
Film 44

Jules Urbach
OTOY

Rick Bergman
AMD Products Group

See What You Feel: A Study in the Visual Extension of Music **FESTIVAL**

Monday, 3 August | 6 - 8 pm
Rooms 243-245

A live performance of abstract animations of music pre-rendered in Maya, 3D visualizations of music-theory structures, and real-time systems that visually react to live music. The SIGGRAPH 2009 talk titled A Study in the Visual Extension of Music discusses the music system used in this performance.

Matthew Bain
The Ohio State University

Art and Interaction

Tuesday, 4 August | 8:30 - 10:15 am
Rooms 265-266

Session Chair
Joyce Rudinsky
University of North Carolina at Chapel Hill

Applying Color Theory to Creating Scientific Visualizations

The process of building effective color maps for producing explanatory and aesthetically engaging scientific visualizations.

Theresa-Marie Rhyne
North Carolina State University

GPSFilm: Location-Based Mobile Cinema

An open-source application that enables a new way of watching a movie based on the viewer's location and journey.

Scott Hessels
Nanyang Technological University

Karma Chameleon: Jacquard-Woven Photonic Fiber Display

Karma Chameleon is a photonic textile display woven on a Jacquard loom, using photonic band-gap fibers that can change color when illuminated with ambient or transmitted light. Using double-weave structures allows further modulation of the color and patterns in the textile.

Joanna Berzowska
Concordia University

Maksim Skorobogatiy
École Polytechnique de Montréal

Art and Interaction *continued*

Generalizing Multi-Touch Direct Manipulation

A screen-space-based approach for direct manipulation on multi-touch surfaces, which both completely captures the behaviors of existing 2D direct manipulators and naturally extends direct manipulation into three dimensions.

Jason Reisman
Philip Davidson
Jefferson Han
Perceptive Pixel, Inc.

BiDi Screen

A BiDirectional (BiDi) screen capable of both imaging and display that uses an LCD as a spatial-light modulator to support seamless transition from on-screen, multi-touch interactions to off-screen, hover-based gestures.

Matthew Hirsch
Massachusetts Institute of Technology

Douglas Lanman
Brown University

Ramesh Raskar
Henry Holtzman
Massachusetts Institute of Technology

Urban Planning **FESTIVAL**

Tuesday, 4 August | 8:30 am - 5:30 pm
Rooms 271-273

Session Chair
Doug Eberhard
Autodesk, Inc.

8:30 - 9:20 am
The Evolution of Revolution of Design: From Paper Models and Beyond

A leading authority in the architecture, engineering, and construction industries presents a brief history of design and the new digital tools and processes that that are changing the professional and academic landscape. Learn how innovations like BIM (Building Information Modeling) are replacing outdated methods for collaborative design and decision making across the $2.3 trillion global-infrastructure marketplace. See new applications and opportunities for model-based design, analysis, simulation, and visualization, and gain expanded insights into the evolution and "revolution" that are taking place within organizations and projects today.

Susan Piedmont-Palladino
National Building Museum

Urban Planning *continued* **FESTIVAL**

1:45 - 2:45 pm
Green From the Ground Up: Infrastructure Rehabilitation and Sustainable Design

As communities and cities look to achieve better sustainability through urban regeneration and infra-structure rehabilitation, new mandates, metrics, and methods are being employed to provide improved predictability and decision making throughout the planning, design, construction, and operation lifecycle. See examples from Greensburg, Kansas (as seen on PBS), a city that decided to "Go Green" and rebuild the city following a devastating tornado that wiped out 80 percent of the city and explore other green projects that seek to achieve better future results by addressing the triple bottom line of economic, social, and environmental sustainability.

Doug Eberhard
Autodesk, Inc.

3 - 4:05 pm
Model Rebuilding for New Orleans Transportation

Before Hurricane Katrina, the State of Louisiana was improving its transportation network, but the storm's devastating destruction required additional efforts to rebuild and rehabilitate critical transportation infrastructure. See examples of the advanced computer modeling, visualization, and communication tools that helped both internal and external efforts, and hear from the people who were involved in helping to put New Orleans and the surrounding region back in business again.

Kevin Gilson
Parsons Brinckerhoff

Gay Knipper
Louisiana Department of Transportation and Development

4:15 - 5:30 pm
Model-Based Community Planning, Decision Support, and Collaboration

New tools and methods to incorporate geographic information systems, 3D modeling, real-time visualization, and decision support are helping cities and communities make more informed decisions about future planning and development. These solutions are providing both technical and non-technical stakeholders with better information and interaction as they work toward more sustainable land-use and design, and better understanding of how decisions affect local and surrounding communities, businesses, and residents. A leading expert shows examples of this work and explores the possibilities for more collaborative decisionmaking using an interactive model-based approach.

Paul Patnode
Environmental Simulation Center, Ltd.

Education: Learning and the Studio

Tuesday, 4 August | 8:30 - 10:15 am
Auditorium B

Session Chair
Dana Masson
Animation Mentor and Killerjellybean Animation

Innovation in Animation: Exiting the Comfort Zone

Motivating fine arts students to move beyond replication and explore the many possibilities available for making interesting animated images is achieved by engaging students in a careful examination of the defining elements of anima-tion, early innovations, and the ongoing spirit of discovery.

Pamela Taylor
Virginia Commonwealth University

Educate the Educator: Lessons Learned From the Faculty Education Programs at Rhythm & Hues Studios Worldwide

This talk provides pointers on how to benefit from faculty-outreach programs based on lessons learned from faculty education programs con-ducted by Rhythm & Hues Studios at locations in the US and India.

Shish Aikat
Rhythm & Hues Studios

Bringing the Studio to Campus: A Case Study in Successful Collaboration Between Academia and Industry

This talk describes the organization and results from an 11-week graduate-level course adminis-tered by Texas A&M University and DreamWorks Animation in which 15 students and six industry professionals took part in a client-service model project to produce three 30-second animated shorts.

Jill Mulholland
Texas A&M University

Jim Conrads
Marilyn Friedman
Dave Walvoord
DreamWorks Animation

Jose Guinea Montalvo
Texas A&M University

Education: Learning and the Studio *continued*

Building Bridges, Not Falling Through Cracks: What We Have Learned During 10 Years of Australian Digital Visual Effects Traineeships

The digital-visual-effects industry is one of the most successful examples of industry building in an increasingly digital world. This case study looks at the interconnectedness of education, employment, infrastructure, and innovation, and presents a framework of the qualities and processes that have been key to the industry's success.

Shilo McClean
NICTA

Sensing and Display

Tuesday, 4 August | 1:45 – 3:30 pm
Auditorium A

Session Chair
Jeff Han
Perceptive Pixel, Inc.

High-Tech Chocolate: Exploring Mobile and 3D Applications for Factories

FX Palo Alto Laboratory, a Silicon Valley research lab, and TCHO, a San Francisco chocolate manu-facturer, explore new technologies for industry: an iPhone app for remote control of machines in TCHO's development lab and a multi-user 3D vir-tual world mirroring the chocolate factory, where sensor networks capture data on the chocolate process.

Maribeth Back
FX Palo Alto Laboratory, Inc.

Timothy Childs
TCHO Ventures, Inc

Anthony Dunnigan
Jonathan Foote
Sagar Gattepally
Craig Latta
Bee Liew
Jim Vaughan
FX Palo Alto Laboratory, Inc.

Sensing and Display *continued*

Adaptive Coded Aperture Projection

Displaying dynamic aperture patterns on a liquid-crystal array at a projector's aperture plane together with inverse filtering supports projector defocus compensation, high quality projector de-pixelation, and increasing temporal contrast of projected video sequences. Such adaptive coded apertures are a step toward next-generation auto-iris projector lenses.

Max Grosse
Bauhaus-Universität Weimar

Gordon Wetzstein
The University of British Columbia

Anselm Grundhoefer
Oliver Bimber
Bauhaus-Universität Weimar

Projected Light Microscopy

A new illumination technique for microscopy that either improves visibility when observing speci-mens through the oculars by enhancing perceived contrast and by reducing highlights or advances image analysis by increasing signal-to-noise ratio.

Oliver Bimber
Bauhaus-Universität Weimar

Toshiyuki Amano
Nara Institute of Science and Technology

Anselm Grundhöfer
Daniel Kurz
Bauhaus-Universität Weimar

Daniel Klöck
Brandenburgische Technische Universität Cottbus

Sebastian Thiele
Häntsch, Ferry
Bauhaus-Universität Weimar

Making Pixar's "Partly Cloudy": A Director's Vision **FESTIVAL**

Tuesday, 4 August | 3:45 - 5:30 pm
Hall E 1-2

Where do babies come from? Director Peter Sohn answers all your questions about his directorial debut on Pixar's new short in this behind-the-scenes look at the creation of the film, followed by a screening.

Peter Sohn
Pixar Animation Studios

Taking Care of Your Pet

Tuesday, 4 August | 6:15 - 8 pm
Hall E 1-2

Session Chair
David (grue) DeBry
Cloudpic

Hatching an Imaginary Bird

Extensions to traditional modeling, articulation, grooming, and shading developed to fulfill the design requirements for Kevin, the giant, iridescent, flightless bird in Pixar's film, "Up".

Byron Bashforth
Tom Sanocki
Junyi Ling
Laura Hainke
Pixar Animation Studios

Rhino-Palooza: Procedural Animation and Mesh Smoothing

The set of novel tools and techniques developed to solve the technical challenges of Rhino, the hamster from Disney's "Bolt".

Dmitriy Pinskiy
Evan Goldberg
Walt Disney Animation Studios

It's Good to be Alpha

The geometric, rigging, grooming, and shading challenges of creating the highly stylized canine character of Alpha for "Up".

Robert Moyer
Paul Aichele
Laura Hainke
Byron Bashforth
Pixar Animation Studios

Venomous Cattle for "Australia"

Summary of the crowd workflow based on Rising Sun Pictures' Venom 3D infrastructure that was developed to arrange, simulate, reuse, and render animated cattle for numerous shots in Baz Luhrmann's "Australia".

Carsten Kolve
Dan Bethell
Rising Sun Pictures

Painterly Lighting

Wednesday, 5 August | 8:30 - 10:15 am
Auditorium B

Session Chair
Diego Guttierez
Zaragoza University

Applying Painterly Concepts in a CG Film

For "Bolt", a tool set was developed to achieve techniques used by painters, such as massing, editing, and edge-quality, which helped to achieve the textural richness of the classic Disney animated films.

Adolph Lusinsky
Walt Disney Animation

Painting With Polygons

An exploration of a simple but effective non-photorealistic rendering solution that uses existing polygonal rendering tools including normal displacement, motion blur, and basic gradient shaders.

Isaac Botkin
First Pacific Media

Smoother Subsurface Scattering

A technique for smoothing the sampling noise in the subsurface scattering model employed by the proprietary production renderer at Rhythm & Hues, which saves substantial time and memory.

Ivan Neulander
Rhythm & Hues Studios

Radially Symmetric Reflection Maps

A technique for rendering hand-painted, radially symmetric area lights at real-time rates, using a new representation based on prefiltered reflection maps.

Jonathan Stone
Double Fine Productions

From Pitchvis to Postvis: FESTIVAL
Integrating Visualization Into the Production Pipeline

Wednesday, 5 August | 10:30 am - 12:15 pm
Rooms 271-273

How the role of previs is evolving beyond the traditional animatic to an integral part of filmmaking's creative process. Moderated by award-winning writer Barbara Robertson, this session explores how leading studios are using visualization as a part of their visual-effects production pipeline. Discover the innovative techniques and cutting-edge technologies that are pushing filmmaking into a brave new world.

Moderator
Barbara Robertson

Panelists
Steve Sullivan
Michael Sanders
Industrial Light & Magic

Capture and Display

Wednesday, 5 August | 1:45 - 3:30 pm
Auditorium C

Session Chair
Ariel Shamir
The Interdisciplinary Center

Dense Stereo Event Capture for the James Bond Film "Quantum of Solace"

A multi-view geometry-reconstruction system developed to capture the performance of Daniel Craig and Olga Kurylenko free falling in a vertical wind tunnel for the latest James Bond movie, "Quantum of Solace".

Oliver James
Ted Waine
Double Negative Visual Effects

2D and 3D Facial Correspondences via Photometric Alignment

Computing optical flow on scans of facial expressions (albedo and photometric normals) to establish correspondences that can be used to parameterize high-resolution 3D geometry in a common 2D UV domain, enabling blends of facial expression geometries in a temporally coherent yet detail-preserving manner.

Cyrus Wilson
Abhijeet Ghosh
Pieter Peers
Jen-Yuan Chiang
Jay Busch
Paul Debevec
University of Southern California,
Institute for Creative Technologies

Capture and Display *continued*

ILM's Multitrack: A New Visual Tracking Framework for High-End VFX Production

An example-based visual tracking algorithm designed to handle a variety of challenging VFX production scenarios.

Christoph Bregler
Kiran Bhat
Jeff Saltzman
Brett Allen
Industrial Light & Magic

Estimating Specular Roughness From Polarized Second-Order Spherical Gradient Illumination

This method estimates per-pixel specular roughness using polarized second-order spherical gradient illumination and shows that, for isotropic BRDFs, only three second-order spherical gradient patterns are sufficient for a robust estimate of per-pixel specular roughness.

Abhijeet Ghosh
Tongbo Chen
Pieter Peers
Cyrus Wilson
Paul Debevec
Institute for Creative Technologies,
University of Southern California

Two Bolts and a Button

Wednesday, 5 August | 1:45 - 3:30 pm
Hall E 1-2

Session Chair
Carlye Archibeque
LightStage, LLC

The Light Kit: HDRI-Based Area Light System for "The Curious Case of Benjamin Button"

A photorealistic lighting system based on HDRI-mapped area lights developed at Digital Domain for "The Curious Case of Benjamin Button".

Tadao Mihashi
Dan Abrams
Paul Lambert
Marco Maldonado
Jesse James Chisholm
Digital Domain

Two Bolts and a Button *continued*

Interactive Lighting of Effects Using Point Clouds In "Bolt"

A technique for using point clouds to illuminate effects and the environments they interact developed for Disney's animated feature film "Bolt" to enhance effects integration.

Dale Mayeda
Walt Disney Animation Studios

Composite-Based Refraction for Fur and Other Complex Objects on "Bolt"

A compositing-based solution to the problem of rendering and artdirecting refracted hair and fur, developed for Disney's animated feature film "Bolt".

Lewis Siegel
Sean Jenkins
Walt Disney Animation Studios

Animateering

Wednesday, 5 August | 3:45 - 5:30 pm
Auditorium C

Session Chair
Mark Elendt
Side Effects Software, Inc.

Tablescape Animation: A Support System for Making Animations Using Tabletop Physical Objects

A novel support system for intuitively and extemporaneously making animations, in which users can draw characters by hand and control them by moving and connecting tabletop physical objects and playing with puppets, and then create a 2D animation based on the input data.

Yasuaki Kakehi
Junichi Yamaoka
Daisuke Akatsuka
Keio University

Takeshi Naemura
The University of Tokyo

Clouds with Character: "Partly Cloudy"

This method of directing volumetric clouds to create a main character was developed for the short Pixar film "Partly Cloudy".

David Batte
Michael Fu
Pixar Animation Studios

Animateering *continued*

The Hair-Motion Compositor: Compositing Dynamic Hair Animations in a Production Environment

A hair-motion compositing system that facilitates editing and blending of existing hair animations to obtain the desired motion. Much like a 2D image compositor, hair and fur animations are defined as a network of nodes, where each node represents animations or operations applied to these animations.

Armin Bruderlin
Francois Chardavoine
Sony Pictures Imageworks

iBind: Smooth Indirect Binding Using Segmented Thin-Layers

iBind is a novel indirect binding technique that improves on mean value coordinates. It smoothly deforms vertices by uniquely leveraging heat diffusion on closed, thin layers across a structured 4D set of mean-value coordinates.

Erick Miller
Chung-An Lin
Gene Lee
Walt Disney Animation Studios

Explorations in Art and Design

Wednesday, 5 August | 3:45 - 5:30 pm
Rooms 265-266

Session Chair
Daria Tsoupikova
University of Illinois at Chicago

Computational Thinking Through Programming and Algorithmic Art

Using algorithmic art to develop computational thinking skills through computer programming. Also an art-programming algorithm taxonomy that identifies a broad range of algorithms and their links to specific design elements and principles as well as specific programming and mathematical concepts.

Genevieve Orr
Willamette University

Explorations in Art and Design
continued

Universal Panoramas: Narrative, Interactive Panoramic Universes on the Internet

Universal Panoramas is an idea and an emerging toolset for creating narrative interactive universes on the internet by combining panoramic photography and computer graphics, sound, live-action video, and animation into coherent, immersive wholes for use in interactive entertainment, architecture visualization, and corporate presentations.

Kim Larsen
Placebo Effects AS

Genetic Stair

The Genetic Stair is an exploration of the expressive potential of biologically inspired generative design techniques and contemporary fabrication technologies.

Nicholas Desbiens
Caliper Studio

Visual Zen Art: Visual Measurement of Aesthetic Cognitive Dissonance in Japanese Dry-Stone Gardens

Using eyetracker to measure visual PageRanks of landscape garden objects (mainly rocks_ in one of the most famous Japanese dry-stone Zen gardens and discover the surprising visual effect hidden in this garden. The effect was totally unknown 560 years ago. Today it is called "cognitive dissonance".

DongSheng Cai
University of Tsukuba

Shigenori Mochizuki
Ritsumeikan University

Yun Wang
University of Tsukuba

Nobuyoshi Asai
University of Aizu

Fukumoto, Asako
Keio University

Immersive and Impressive: The Impressionistic Look of Flower on the PS3 **FESTIVAL**

Wednesday, 5 August | 1:45 - 3:30 pm
Rooms 271-273

Flower is a PlayStation 3 downloadable game and winner of numerous industry best-graphics awards. Hear how the tiny team at thatgamecompany created immersive and realistic natural environments by focusing on impressionistic rendering rather than photorealism.

John Edwards
thatgamecompany

Real Time Live **FESTIVAL**

Wednesday, 5 August | 3:45 - 5:30 pm
La Nouvelle Orleans Ballroom

Live demos of real-time rendering. These demos are the final selections for the Real-Time Rendering section of the Computer Animation Festival.

Real-Time Rendering and Animation of Trees
Ralf Habel
Institut für Computergraphik und Algorithmen

Real Time Hair Simulation and Rendering on the GPU
Sarah Tariq
NVIDIA Corporation

Real-Time Car Turbulence
Jonathan Cohen
NVIDIA Corporation

OLE Coordinate System
Jun Fujiki
Kyushu University

NVIDIA's Medusa Demo
Mark Swain
NVIDIA Corporation

Gears of War 2
Wyeth Johnson
Epic Games

Split Second
David Jefferies
Disney Interactive

See, Hear, Make, and Play

Wednesday, 5 August | 3:45 - 5:30 pm
Rooms 243-245

Session Chair
Wendy Ju
Stanford University

The Blues Machine

A multitouch, tangible guitar-like interface for 12-bar blues improvisation.

Marcelo Cicconet
Ilana Paterman
Paulo Cezar Carvalho
Luiz Velho
Instituto Nacional de Matemática Pura e Aplicada

Computer-Mediated Performance and Extended Instrument Design

This talk explores some of the ways that technology can be used to enable or redefine improvisational musical-performance practice.

Thomas Ciufo
Smith College

InTune: A Musician's Intonation Visualization System

A computer system that allows a musician to visualize the intonation exhibited in a performance. The system presents three intuitive and linked views: an annotated music score, a pitch trace, and a spectrogram.

Kyung Ae Lim
Christopher Raphael
Indiana University

Building Story in Games: No Cut Scenes Required **FESTIVAL**

Thursday, 6 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

Telling stories through objectives and rewards is unique to our art form. How can we connect some of the tenets of traditional storytelling, including character arcs and three-act structures into a medium that demands emergent storytelling? This session covers a variety of different fiction-delivery techniques for interactive entertainment.

Danny Bilson
THQ Inc.

Bob Nicoll
Electronic Arts

Effects Omelette

Thursday, 6 August | 10:30 am - 12:15 pm
Hall E 1-2

Session Chair
Jim Hillin
Digital Domain

Concurrent Monoscopic and Stereoscopic Animated Film Production

An examination of the creative choices, techniques, and production pipeline for Disney's "Bolt", which generate an approach to concurrent production of both monoscopic and stereoscopic versions of a CG-animated feature film.

Robert Neuman
Walt Disney Animation Studios

Pushing Tailoring Techniques To Reinforce "Up" Character Design

This talk outlines the tailoring team's use of traditional pattern-making techniques to create garments that reinforced the character design of the extremely caricatured characters in Pixar Animation Studio's "Up".

Fran Kalal
Carmen Ngai
Claudia Chung
Pixar Animation Studios

The Net Effect: Simulated Bird-Catching in "Up"

An explanation of techniques and technology used to create a highly interactive weighted net ensnaring a character in "Up".

Eric Froemling
Pixar Animation Studios

Destroying the Eiffel Tower: A Modular FX Pipeline

The destruction of this complex model, involving terabytes of data per shot, was only possible through the use of a Python-based modular pipeline that was almost completely procedural.

Daniel P. Ferreira
Daniel Maskit
Atsushi Ikarashi
Ryo Sakaguchi
Karl Kohlman
Andrew Paules
Digital Domain

Real-Time Design Review and Collaboration for Global Infrastructure Projects **FESTIVAL**

Thursday, 6 August | 1:45 - 3:30 pm
Rooms 271-273

Real-time, model-based design, visualization, simulation, and analysis tools are driving better ways for teams to create, experience, and collaborate on infrastructure projects of all types and sizes. Integrated analysis and simulation capabilities are allowing experts to find and fix risky or expensive problems in a virtual environment first, before construction and operation begins. This is generating better, faster, and less expensive projects, and changing the way agencies, professionals, and the public inform and interact to build a better world.

This session re-enacts live design review and collaboration sessions for key building and infrastructure projects around the world. it demonstrates real-time, model-based collaboration tools, including automated clash detection, project schedule integration (4D modeling), model markup, and virtual navigation. See how technical and non-technical stakeholders are making more informed decisions about the world's infrastructure and experience live interactive collaboration (in stereo) on real-world projects being designed and built today.

Kevin Gilson
Parsons Brinckerhoff

Doug Eberhard
Autodesk, Inc.

Capturing and Visualizing Animation

Thursday, 6 August | 3:45-5:30 pm
Auditorium C

Chair
Bill Polson
Pixar Animation Studios

Medial Axis Techniques for Stereoscopic Extraction

Stereoscopic conversion of Disney's "Beauty and the Beast" required development of novel extensions to standard medial axis techniques to automatically generate depth maps from the hand-drawn images.

Evan Goldberg
Walt Disney Animation Studios

Realistic Eye Motion Using Procedural Geometric Methods

Using an anatomically motivated approach, this talk demonstrates a procedural method to create convincing realistic deformations of the skin and flesh surrounding the eye that can be easily applied onto any digital creature's face.

Erick Miller
Dmitriy Pinskiy
Walt Disney Animation Studios

Connecting the Dots: Discovering What's Important for Creature Motion

An experiment designed to reveal some of the key features necessary for conveying creature motion. The ultimate goal is to find the minimal representation necessary to communicate recognizable locomotion or traits that may be communicated to the viewer through motion, such as size and attitude.

Ann McNamara
Meredith McLendon
Tim McLaughlin
Ravindra Dwivedi
Texas A&M University

Motion Capture for Natural Tree Animation

Reconstruction of tree structure and motion from passive optical-motion-capture data to animate a small tree swaying in the wind.

Michael Jones
Jie Long
Cory Rheimschussel
Ontario Britton
Brigham Young University

Music as Multi Sense

Thursday, 6 August | 3:45 - 5:30 pm
Rooms 243-245

Session Chair
Wendy Ju
Stanford University

The Immersive Computer-Controlled Audio Sound Theater: History and Current Trends in Multi-Modal Sound Diffusion

The Immersive Computer-Controlled Audio Sound Theater is a large-scale loudspeaker array for concert presentation of electro-acoustic music. It uses a client-server architecture, with traditional and novel control interfaces, to provide real-time control of audio diffusion over an array of up to 44 loudspeakers.

Stephen Beck
Louisiana State University

Multi-Touch Everywhere!

A portable device that enables users to turn any flat surface into a multi-touch controller for music and other media applications.

Alain Crevoisier
Greg Kellum
University of Applied Sciences Western Switzerland

Sound Scope Headphones

Sound Scope Headphones are designed to let users control an audio mixer through natural movements and enable a musical novice to separately listen to each player's performance.

Sound Scope Headphones demo in Emerging Technologies →

Masatoshi Hamanaka
SeungHee Lee
University of Tsukuba

Rendering

Friday, 7 August | 8:30 - 10:15 am
Auditorium C

Session Chair
Bob Crocco
Microsoft Live Labs

Practical Uses of a Ray Tracer for "Cloudy With a Chance of Meatballs"

How the physically based nature of raytracing was combined with an artistically flexible toolset to achieve the complex, but stylized look of "Cloudy With a Chance of Meatballs" while providing the artist an interactive lighting environment.

Karl Herbst
Danny Dimian
Sony Pictures Imageworks

Multi-Layer, Dual-Resolution Screen-Space Ambient Occlusion

This talk describes a general method for rendering higher-quality screen space ambient occlusion (SSAO) by using depth-peeled layers and an enlarged frustum, as well as a dual-resolution method for improving the performance of any SSAO algorithm.

Louis Bavoil
Miguel Sainz
NVIDIA Corporation

RACBVHs: Random-Accessible, Compressed Bounding-Volume Hierarchies

A novel approach to compressed bounding-volume hierarhcies that supports random access and achieves 12:1 compression ratio and 4:1 run-time performance for ray tracing and collision detection.

Tae-Joon Kim
Sung-eui Yoon
Korea Advanced Institute of Science and Technology

Rendering Volumes With Microvoxels

This robust volumetric rendering extension to the REYES rendering architecture includes support for decoupled shading, fast motion blur, and accurate compositing.

Andrew Clinton
Mark Elendt
Side Effects Software

Doing It With Game Engines

Friday, 7 August | 9:15 - 10:15 am
Hall E 3

Session Chair
Naty Hoffman
Activision

How to Get From 30 to 60 Frames Per Second in Video Games for "Free"

A novel technique for video games that combines the best of high-quality rendering at 30 frames per second with the natural motion of objects refreshing at 60 frames per second with very minimal memory and performance overhead.

Dmitry Andreev
LucasArts

Making a Feature-Length Animated Movie With a Game Engine

Delacave has recently completed "The True Story of Puss'n Boots" using real-time hardware technologies. This talk illustrates the challenges, difficulties, and new possibilities that real-time gaming technologies can offer to production of a computer-animated movie.

Alexis Casas
Pierre Augeard
Ali Hamdan
Delacave

Wildfire Forecasting Using an Open-Source 3D Multilayer Geographical Framework

A wildfire forecasting system with realistic 3D visualization for coordination and management of emergency situations. The system allows visualization of the wildfire in a realistic landscape and estimation of its evolution in various vegetation and weather conditions. It also allows visualization of and interaction with different types of emergency units.

Modesto Castrillón
Pedro A. Jorge
Universidad de Las Palmas de Gran Canaria

Ignacio J. López
Instituto Tecnológico de Canarias

David Martín
Universidad de Las Palmas de Gran Canaria

Rafael J. Nebot
Izzat Sabbagh
Instituto Tecnológico de Canarias

Javier Sánchez
Antonio J. Sánchez
José P. Suárez
Agustín Trujillo
Universidad de Las Palmas de Gran Canaria

Real Fast Rendering

Friday, 7 August | 10:30 am - 12:15 pm
Auditorium C

Session Chair
Dan Wexler
NVIDIA Corporation

Volumetric Shadow Mapping

A new, adaptive method for fast rendering of volumetric shadows in dusty, foggy, or underwater environments. Rendering quality can be adjusted for applications ranging from real-time application to production rendering.

Pascal Gautron
Jean-Eudes Marvie
Thomson Corporate Research

Guillaume Francois
The Moving Picture Company

Bucket Depth Peeling

An efficient algorithm for multi-layer depth peeling, which captures and sorts multiple fragments in a single geometry pass via a bucket sort on GPU. The algorithm outperforms previous methods in both quality and speed, especially for large-scale scenes with high depth complexity.

Fang Liu
Meng-Cheng Huang
Xue-Hui Liu
Chinese Academy of Sciences

En-Hua Wu
Chinese Academy of Sciences, Universidade de Macau

BVH for Efficient Raytracing of Dynamic Metaballs on GPU

A new method for efficiently raytracing a large number of metaballs using dynamic BVH and current graphics hardware capacities. This technique allows interactive real-time rendering of complex and deformable geometries of arbitrary topology including effects such as shadows and mirror reflections.

Olivier Gourmel
Anthony Pajot
Université Toulouse

Pierre Poulin
Université de Montréal

Mathias Paulin
Loïc Barthe
Université Toulouse

Normal Mapping With Low-Frequency Precomputed Visibility

Encoding visibility using low-order spherical harmonics and evaluating the triple product integral of lighting, visibility, and the cosine term on the GPU decouples normal variation from visibility. Combined with PCA compression and efficient factorization of the triple product, soft shadows can be computed more efficiently.

Michal Iwanicki
CD Projekt RED

Peter-Pike Sloan
Disney Interactive Studios

Character Animation and Rigging

Friday, 7 August | 3:45 - 5:30 pm
Hall E 3

Session Chair
Bobby Boddenheimer
Vanderbilt University

Animation and Simulation of Octopus Arms in "Night at the Museum 2"

A set of techniques used to animate flexible arms for the monstrous octopus character in "Night at the Museum 2".

Tae-Yong Kim
Matt Derksen
Rhythm & Hues Studios

Methods for Fast Skeleton Sketching

Introducing different methods and concepts for defining a fast and effective sketching interface for skeleton creation, including stroke embedding methods and a full-featured templating system.

Martin Poirier
Eric Paquette
École de technologie supérieure

Practical Character Physics For Animators

A graphics system that significantly improves the visual quality of certain types of 3D character motion animated with traditional means by inferring physical properties and correcting the results through the use of dynamics.

Ari Shapiro
Rhythm & Hues Studios

Sung-Hee Lee
University of California, Los Angeles

Surface Motion Graphs for Character Animation From 3D Video

A framework for character animation production that reuses captured 3D video sequences of people according to user constraints on movement, position, and timing The system has the potential to create realistic, synthetic, animated content by reproducing the dynamics of shape and appearance currently missing from marker-based motion capture.

Peng Huang
Adrian Hilton
University of Surrey

Rendering and Visualization

Friday, 7 August | 3:45 – 5:30 pm
Rooms 260-262

Session Chair
Wilmot Li
Adobe Systems Incorporated

Beyond Triangles : GigaVoxels Effects In Video Games

The latest results of research on using voxel representations in the context of video games and demonstration of how the GigaVoxels approach can be used to render complex visual effects in a very efficient way thanks to intrinsic properties of a multi-resolution scheme.

Cyril Crassin
INRIA Rhône-Alpes

Fabrice Neyret
LJK/INRIA L'Université à Grenoble CNRS

Sylvain Lefebvre
INRIA Sophia-Antipolis

Miguel Sainz
NVIDIA Corporation

Elmar Eisemann
MPI Informatik, Universität des Saarlandes

Single-Pass Depth Peeling Via CUDA Rasterizer

A highly efficient algorithm for multi-layer depth peeling via CUDA rasterizer with a single pass. The graphics pipeline is simulated by CUDA, and fragments per pixel are stored and sorted by atomic operations of CUDA without RMW hazards. Results show significant speed improvement compared to classical depth peeling.

Fang Liu
Meng-Cheng Huang
Xue-Hui Liu
Chinese Academy of Sciences

En-Hua Wu
Chinese Academy of Sciences, Universidade de Macau

Design and Self-Assembly of DNA Into Nanoscale Three-Dimensional Shapes

Experimental methods and open-source computer-aided design tools for construction of nanoscale three-dimensional shapes from DNA.

Shawn Douglas
Harvard University

Hendrik Dietz
Technische Universität München

Tim Liedl
Bjorn Hogberg
Franziska Graf
Adam Marblestone
Harvard University

Surat Teerapittayanon
Massachusetts Institute of Technology

Alejandro Vazquez
The Johns Hopkins University

George Church
William Shih
Harvard University

Full Conference Access registration allows attendees access to all SIGGRAPH 2009 Technical Papers. Seating is on a first-come, first-served basis. Please be sure to arrive early for the Technical Papers sessions you wish to attend.

TECHNICAL PAPERS

The SIGGRAPH Technical Papers program is the premier international forum for disseminating new scholarly work in computer graphics. These papers span the areas of modeling, animation, rendering, and imaging, but they also touch on related areas such as visualization, computer vision, human-computer interaction, and applications of computer graphics. SIGGRAPH Technical Papers are published as a special issue of the journal *ACM Transactions on Graphics.*

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SPECIAL EVENT
Technical Papers Fast-Forward

Monday, 3 August | 6 - 8 pm
Hall E 1-2

The world's leading experts in computer graphics and interactive techniques preview their latest work in provocative, sometimes hilarious summaries of the field's evolution.

Fast Image Processing and Retargeting

Tuesday, 4 August | 8:30 - 10:15 am
Hall E 1-2

Session Chair
Aaron Hertzmann
University of Toronto
Submit a Question ➠

Gaussian KD-Trees for Fast High-Dimensional Filtering

This paper proposes the Gaussian KD-Tree: A high-dimensional data structure to accelerate a broad class of non-linear filters, including bilateral, non-local means, and a novel non-local means for geometry.

Andrew Adams
Stanford University

Natasha Gelfand
Nokia Research

Jennifer Dolson
Marc Levoy
Stanford University

Edge-Avoiding Wavelets and Their Applications

This paper proposes a new family of second-generation wavelets, constructed using a robust data-prediction lifting scheme. The support of these new wavelets avoids having pixels from both sides of an edge, thus lowering the inter-scale correlation. This new framework allows performing edge-preserving processing in linear time.

Raanan Fattal
Hebrew University

Multi-Operator Media Retargeting

A method to combine different operators to retarget media in an optimal manner. A new image similarity measure, called Bi-Directional Warping (BDW), is used with dynamic programming to find an optimal path in a multi-dimensional resizing space. Results are shown on images as well as video.

Michael Rubinstein
Ariel Shamir
The Interdisciplinary Center

Shai Avidan
Adobe Systems Incorporated

PatchMatch: A Randomized Correspondence Algorithm for Structural Image Editing

A fast randomized algorithm for computing approximate nearest-neighbor fields in images. The algorithm supports a variety of tools appropriate for interactive image editing, including image completion, retargeting, and reshuffling. The paper provides theoretical analysis of the algorithm and demonstrates its use in a working interactive image editor.

Connelly Barnes
Princeton University

Eli Shechtman
Adobe Systems Incorporated

Adam Finkelstein
Princeton University

Dan Goldman
Adobe Systems Incorporated

Curve and Surface Modeling (TOG)

Tuesday, 4 August | 8:30 - 10:15 am
Hall E 3

Session Chair
Cindy Grimm
Washington University in St. Louis
Submit a Question ➠

2D Piecewise Algebraic Splines for Implicit Modeling

This paper introduces a technique to construct bivariate spline-basis functions from any given set of 2D polygons. In addition to their obvious use in designing free-form parametric geometric shapes, the proposed 2D splines have been shown to be a powerful tool for implicit shape modeling.

Qingde Li
University of Hull

Jie Tan
The Chinese Academy of Sciences

A BSP-Based Algorithm for Dimensionally Nonhomogeneous Planar Implicit Curves With Topological Guarantees

This algorithm renders 2D implicit curves with self-intersections and isolated points. Its core is a modified two-point numerical method capable of sampling not only sign-variant curve components that satisfy the Bolzano corollary, but also sign-invariant and mixed components that are usually missed by other algorithms.

Abel Gomes
Jose F. Morgado
Edgar S. Pereira
Universidade da Beira Interior

Curve and Surface Modeling (TOG) *continued*

Tuesday, 4 August | 8:30 - 10:15 am
Hall E 3

Interpolatory Point Set Surfaces: Convexity and Hermite Data

Point set surfaces are extended to interpolate given points and normals with good shape quality and additional parameters for shape control.

Marc Alexa
Technische Universität Berlin

Anders Adamson
Sinora

A Variational Approach for Automatic Generation of Panoramic Maps

Panoramic maps are commonplace navigation aids in tourist places like ski resorts or national parks. Traditionally, an artist skillfully designs such maps by combining several views into a single image. This paper presents an automatic approach that rearranges landscape features to avoid their occlusion and ensure good visibility with minimal deformations.

Patrick Degener
Reinhard Klein
Universität Bonn

Perception and Depiction

Tuesday, 4 August | 10:30 am - 12:15 pm
Hall E 1-2

Session Chair
Kavita Bala
Cornell University
Submit a Question ➡

Light Warping for Enhanced Surface Depiction

Starting from a 3D object with an arbitrary material and environment illumination, this approach enhances surface depiction by locally compressing or stretching reflected light patterns. Such a process allows users to re-introduce or attenuate features such as convexities and concavities, or foreshortened regions, in arbitrary lighting and viewing directions.

Romain Vergne
Romain Pacanowski
Pascal Barla
Xavier Granier
Christophe Schlick
INRIA Bordeaux University

Toward Evaluating Lighting Design Interface Paradigms for Novice Users

A user study focusing on novices to evaluate the benefits of three lighting-design interface paradigms: direct manipulation, indirect feature dragging, and optimization through painting. This study will affect design of future lighting interfaces and additional experiments toward a comprehensive evaluation of lighting interfaces.

William Kerr
Fabio Pellacini
Dartmouth College

Modeling Human Color Perception Under Extended Luminance Levels

Human color perception has not yet been studied for very high luminances. The authors have gathered unique psychophysical data for luminance levels covering most of the dynamic range of the human visual system and derived a generalized color appearance model that quantifies human color perception for this extended range.

Min H. Kim
Tim Weyrich
Jan Kautz
University College London

How Well Do Line Drawings Depict Shape?

The ability of line drawings to depict 3D shape was studied by asking participants to estimate surface normals at many points. The results show that line drawings can depict certain shapes as well as shaded renderings, and that errors in depiction are localized and can often be traced to particular lines.

Forrester Cole
Princeton University

Kevin Sanik
Doug DeCarlo
Rutgers University

Adam Finkelstein
Thomas Funkhouser
Princeton University

Szymon Rusinkiewicz
Princeton University and Adobe Systems, Incorporated

Manish Singh
Rutgers University

Light and Materials

Tuesday, 4 August | 1:45 - 3:30 pm
Hall E 1-2

Session Chair
Pedro Sander
The Hong Kong University of Science and Technology
Submit a Question ⇢

Kernel Nystrom Method for Light Transport

The Kernel Nystrom method for reconstructing the light transport matrix from a relatively small number of acquired images is highly effective for scenes with complex lighting effects such as caustic, shadowing, inter-reflection, and subsurface scattering.

Jiaping Wang
Microsoft Research Asia

Yue Dong
Tsinghua University and Microsoft Research Asia

Xin Tong
Zhouchen Lin
Microsoft Research Asia

Baining Guo
Microsoft Research Asia and Tsinghua University

An Empirical BSSRDF Model

A new explicit representation of the homogeneous BSSRDF based on large-scale simulations. This model captures the appearance of materials that are not accurately represented using existing single-scattering models or multiple isotropic-scattering models (for example, the diffusion approximation).

Craig Donner
Columbia University

Jason Lawrence
University of Virginia

Ravi Ramamoorthi
University of California, Berkeley

Toshiya Hachisuka
Henrik Wann Jensen
University of California, San Diego

Shree Nayar
Columbia University

SubEdit: A Representation for Editing Measured Heterogeneous Subsurface Scattering

A novel representation for editing measured heterogeneous subsurface scattering. It makes artistic modifications efficient and at the same time ensures good visual quality.

Ying Song
ZheJiang University

Xin Tong
Microsoft Research Asia

Fabio Pellacini
Dartmouth College

Pieter Peers
University of Southern California,
Institute for Creative Technologies

Fabricating Microgeometry for Custom Surface Reflectance

Manufacturing physical surfaces that, in aggregate, exhibit a desired surface appearance. From a user specification of a BRDF, or simply a highlight shape, this method infers the required distribution of surface slopes. It optimizes for a manufacturable height field with this slope distribution and fabricates it using a computer-controlled mill.

Tim Weyrich
University College London

Pieter Peers
University of Southern California,
Institute for Creative Technologies

Wojciech Matusik
Adobe Systems, Incorporated

Szymon Rusinkiewicz
Princeton University and Adobe Systems, Incorporated

Shape Editing and Deformation

Tuesday, 4 August | 1:45 - 3:30 pm
Hall E 3

Session Chair
Mario Botsch
Universität Bielefeld
Submit a Question ⇢

iWires: An Analyze-and-Edit Approach to Shape Manipulation

The essence of man-made objects can often be captured in a small set of 1D curves or wires. This paper demonstrates that extracting such wires, learning their individual properties and mutual relations, and subsequently preserving them during editing, leads to a simple, efficient, and powerful shape editing framework.

Ran Gal
Tel-Aviv University

Olga Sorkine
New York University

Niloy Mitra
Indian Institute of Technology

Daniel Cohen-Or
Tel-Aviv University

Variational Harmonic Maps for Space Deformation

The paper presents a space deformation method that combines the advantages of cage-based methods (smoothness, efficiency, robustness, and ease of implementation) with the ease of use of constraint-based methods. The deformation is based on generating an As-Rigid-As-Possible harmonic map of the source domain, which best fits the user's constraints.

Mirela Ben-Chen
Ofir Weber
Craig Gotsman
Technion - Israel Institute of Technology

Shape Editing and Deformation
continued

Joint-Aware Manipulation of Deformable Models

Complex mesh models of man-made objects often consist of multiple components connected by various types of joints. This paper proposes a joint-aware deformation framework that supports direct manipulation of an arbitrary mix of rigid and deformable components, and respects various joint constraints connecting them.

Weiwei Xu
Microsoft Research Asia

Jun Wang
University of Science and Technology of China

KangKang Yin
Microsoft Research Asia

Kun Zhou
Zheijang University

Michiel van de Panne
The University of Biritish Columbia

Falai Chen
University of Science and Technology of China

Baining Guo
Microsoft Research Asia

Semantic Deformation Transfer

Given a few example pose pairs, semantic deformation transfer infers a meaningful correspondence between two meshes and synthesizes novel poses of one mesh from the input poses of the other. For example, it can transfer the poses of a person walking normally to poses of walking on two hands.

Ilya Baran
Daniel Vlasic
Massachusetts Institute of Technology

Eitan Grinspun
Columbia University

Jovan Popović
Adobe Systems, Incorporated, University of Washington, and Massachusetts Institute of Technology

Fluid Simulation

Tuesday, 4 August | 3:45 - 6 pm
Hall E 3

Session Chair
Robert Bridson
The University of British Columbia
Submit a Question →→

Harmonic Fluids

An algorithm for synthesizing familiar bubble-based fluid sounds such as splashing, pouring, and babbling. The algorithm acoustically augments existing incompressible fluid solvers with particle-based models for acoustic bubble creation, vibration, advection, and radiation. Acoustic transfer functions are estimated using our fast dual-domain boundary integral Helmholtz solver.

Changxi Zheng
Doug James
Cornell University

Energy-Preserving Integrators for Fluid Animation

This paper proposes simple, unconditionally stable, fully Eulerian integration schemes that accurately capture the monotonic energy decay induced by viscosity, hence maintaining liveliness of low-viscosity fluids without recourse to corrective devices.

Patrick Mullen
Keenan Crane
Dmitry Pavlov
California Institute of Technology

Yiying Tong
Michigan State University

Mathieu Desbrun
California Institute of Technology

Modular Bases for Fluid Dynamics

This paper presents fluid tiles, modular reduced models that can be assembled into huge simulations. Consistency between tiles is enforced using constraint reduction, which modifies reduced models to ensure compatibility between tiles. The coupling terms can be precomputed, allowing for interactive rearrangement of the tiles while the simulation is running.

Martin Wicke
Stanford University

Matt Stanton
Adrien Treuille
Carnegie Mellon University

Predictive-Corrective Incompressible SPH

This paper presents a novel SPH solver that enforces incompressibility by using a prediction-correction scheme to determine the particle pressures. Results show that the method clearly outperforms the commonly used weakly compressible SPH model by more than an order of magnitude.

Barbara Solenthaler
Renato Pajarola
University of Zurich

Directable, High-Resolution Simulation of FIre on the GPU

A hybrid particle and grid simulation system that utilizes graphics hardware (GPU) to quickly simulate artist-directable, high-resolution fire. Simulation resolutions as high as 2048 can be computed in a few hours by parallelizing work among multiple GPUs.

Christopher Horvath
Willi Geiger
Industrial Light & Magic

Image Warping and Interpolation

Wednesday, 5 August | 8:30 - 10:15 am
Hall E 1-2

Session Chair
Victor Ostromoukhov
Université de Montréal
Submit a Question →

Moving Gradients: A Path-Based Method for Plausible Image Interpolation

A method for plausible interpolation of images based on the intuitive idea that a given pixel in the interpolated frames traces out a path in source images. It has several key aspects, such as arbitrary transition points between images, simple and efficient occlusion handling, and working in the gradient domain.

Dhruv Mahajan
Columbia University

Fu-Chung Huang
University of California, Berkeley

Wojciech Matusik
Adobe Systems, Incorporated

Ravi Ramamoorthi
Peter Belhumeur
Columbia University

Optimizing Content-Preserving Projections for Wide-Angle Images

Any projection of a three-dimensional scene into a two-dimensional image inherently produces some type of distortion. This paper presents a method for creating a projection adapted to the contents of a particular scene, minimizing the perceived distortion of the image.

Robert Carroll
Maneesh Agrawala
University of California, Berkeley

Aseem Agarwala
Adobe Systems, Incorporated

Content-Preserving Warps for 3D Video Stabilization

A technique that transforms a video from a hand-held video camera so that it appears as if it were taken with a directed camera motion. This method adjusts the video to appear as if it were taken from nearby viewpoints, enabling simulation of 3D camera movements.

Feng Liu
Michael Gleicher
University of Wisconsin-Madison

Hailin Jin
Aseem Agarwala
Adobe Systems, Incorporated

FlexiStickers - Photogrammetric Texture Mapping Using Casual Images

A novel approach for texturing 3D models using casual images, which manages to account for the 3D geometry of the photographed object. The algorithm is realized in a FlexiStickers application, which enables fast interactive texture mapping using a small number of constraints.

Yochay Tzur
Ayellet Tal
Technion - Israel Institute of Technology

Motion Synthesis and Editing (TOG)

Wednesday, 5 August | 8:30 - 10:15 am
Hall E 3

Session Chair
Carol O'Sullivan
Trinity College Dublin
Submit a Question →

Generalizing Motion Edits With Gaussian Processes

One way that artists create compelling character animations is by manipulating details of a character's motion. This process is expensive and repetitive. This paper shows that we can make such motion editing more efficient by generalizing the edits an animator makes on short sequences of motion to other sequences.

Leslie Ikemoto
Animate Me

Okan Arikan
University of Texas, Austin

David Forsyth
University of Illinois at Urbana-Champaign

Optimization-Based Interactive Motion Synthesis

A physics-based approach to synthesizing motion of a responsive virtual character in a dynamically varying environment. This framework allows the programmer to specify active control strategies using intuitive kinematic goals that are encoded as objectives and constraints in the optimization problem formulated at each time step.

Sumit Jain
Yuting Ye
C. Karen Liu
Georgia Institute of Technology

Lie Group Integrators for Animation and Control of Vehicles

A general framework for integrating the dynamics of holonomic and nonholonomic vehicles (helicopters, boats, and cars), resulting in integration schemes that are superior to standard methods in numerical robustness and efficiency.

Marin Kobilarov
Keenan Crane
Mathieu Desbrun
California Institute of Technology

Surfaces

Wednesday, 5 August | 10:30 am - 12:15 pm
Hall E 1-2

Session Chair
Misha Kazhdan
The John Hopkins University
Submit a Question ➡➡

NURBS With Extraordinary Points: High-Degree, Non-Uniform, Rational Subdivision Schemes

This paper introduces arbitrary topology surfaces with all the capabilities of NURBS. Previous subdivision surfaces have always been either uniform, low degree, or both. In contrast, this scheme can represent any odd-degree NURBS patch. The surfaces can also include extraordinary points, which extends NURBS to arbitrary topologies.

Thomas J. Cashman
Ursula H. Augsdörfer
Neil A. Dodgson
University of Cambridge

Malcolm A. Sabin
Numerical Geometry Ltd

Direct Trimming of NURBS Surfaces on the GPU

A highly efficient direct-trimming technique for NURBS surfaces, based on a novel point-classification scheme for curved regions including holes. This approach is applicable to tessellation-based rendering as well as to ray tracing systems.

Andre Schollmeyer
Bernd Fröhlich
Bauhaus-Universität Weimar

Bi-3 C^2 Polar Subdivision

C^2 polar subdivision uses small, simple, local rules to refine a polar control net compatibly with Catmull-Clark subdivision. The resulting surfaces are C^2, piecewise of degree bi-3, allow for high valences, and can model the full complement of quadratic shapes.

Ashish Myles
Jörg Peters
University of Florida

Symmetric Tiling of Closed Surfaces: Visualization of Regular Maps

Cut out F polygons with p sides from an elastic fabric, sew them together such that at each corner q polygons meet, stuff tightly. What shape could you get? This puzzle has a scope that ranges from mathematical physics via art to baby toys, and we provide visual answers.

Jarke J. van Wijk
Technische Universiteit Eindhoven

Reduced Physics for Animation

Wednesday, 5 August | 1:45 - 3:30 pm
Hall E 3

Session Chair
Adrien Treuille
Carnegie Mellon University
Submit a Question ➡➡

Enrichment Textures for Detailed Cutting of Shells

A method for simulating highly detailed cutting and fracturing of thin shells at a resolution much finer than the underlying simulation mesh. The harmonic-enrichment textures handle multiple, intersecting, arbitrarily shaped, and progressive cuts in a simple and unified framework.

Peter Kaufmann
Sebastian Martin
ETH Zürich

Mario Botsch
Universität Bielefeld

Eitan Grinspun
Columbia University

Markus Gross
ETH Zürich

Numerical Coarsening of Inhomogeneous Elastic Materials

A methodology to approximate a deformable object made of arbitrary fine structures of various linear elastic materials with a dynamically similar coarse model.

Lily Kharevych
Patrick Mullen
Houman Owhadi
Mathieu Desbrun
California Institute of Technology

Preserving Topology and Elasticity for Embedded Deformable Models

This paper introduces a new approach for embedding linear elastic deformable models. The technique results in significant improvements in the efficient, physically based simulation of highly detailed objects.

Matthieu Nesme
McGill University, Grenoble Universités, INRIA, LJK-CNRS

Paul Kry
McGill University

Lenka Jeřábková
INRIA, LJK-CNRS

François Faure
Grenoble Universités, INRIA, LJK-CNRS

Deformable Object Animation Using Reduced Optimal Control

Our method can generate a physically plausible motion of a large deformable model that matches a given set of keyframes. It does so by properly applying model reduction to the control problem, decreasing space-time optimization times from many hours to just a few minutes.

Jernej Barbič
Marco da Silva
Massachusetts Institute of Technology

Jovan Popović
Adobe Systems, Incorporated, University of Washington, and Massachusetts Institute of Technology

Creating Natural Variations

Wednesday, 5 August | 3:45 - 6 pm
Hall E 1-2

Session Chair
Sylvain Paris
Adobe Systems, Incorporated
Submit a Question ➜

Procedural Noise Using Sparse Gabor Convolution

A procedural noise function that offers accurate spectral control and setup-free surface noise with high-quality anisotropic filtering.

Ares Lagae
Katholieke Universiteit Leuven

Sylvain Lefebvre
George Drettakis
REVES/INRIA Sophia-Antipolis

Philip Dutré
Katholieke Universiteit Leuven

Eye-Catching Crowds: Saliency-Based Selective Variation

This paper shows that crowd variety can be efficiently achieved by varying only the heads and upper bodies of characters, as these were found to be most salient. The authors evaluated the effectiveness and performance implications of varying these parts using different accessories, textures, and geometry alterations.

Rachel McDonnell
Micheal Larkin
Trinity College Dublin

Benjamín Hernández Arreguín
Isaac Rudomín
Instituto Tecnológico y de
Estudios Superiores de Monterrey

Carol O'Sullivan
Trinity College Dublin

Example-Based Hair Geometry Synthesis

This paper presents an example-based approach to hair geometry modeling.

Lvdi Wang
Tsinghua University

Yizhou Yu
University of Illinois at Urbana-Champaign

Kun Zhou
Zhejiang University

Baining Guo
Microsoft Research Asia

Visio-lization: Generating Novel Facial Images

This paper aims to learn a model of facial images and use this to generate new examples. The results do not resemble the training faces, but are realistic and incorporate variation in sex, age, pose, illumination, hairstyle and other factors. We also adapt this method to edit real facial images.

Umar Mohammed
Simon Prince
Jan Kautz
University College London

Self-Organizing Tree Models for Image Synthesis

This paper presents a method for generating realistic models of temperate-climate trees based on the competition of buds and branches for light or space, regulated by internal signaling mechanisms. The method is illustrated with tree models, forest scenes, animations of tree development, and examples of combined interactive-procedural tree modeling.

Wojciech Pa|ubicki
Kipp Horel
Steven Longay
Adam Runions
Brendan Lane
University of Calgary

Radomír Měch
Adobe Systems, Incorporated

Przemyslaw Prusinkiewicz
University of Calgary

Imaging and Rendering Pipeline (TOG)

Wednesday, 5 August | 3:45 - 5:30 pm
Hall E 3

Session Chair
Hanspeter Pfister
Harvard University
Submit a Question ➜

Fourier Depth-of-Field

This paper introduces an analysis of focusing and depth of field in the frequency domain, allowing a practical characterization of a light field's frequency content. Based on this analysis, the paper proposes an adaptive depth-of-field rendering algorithm that optimizes both image and aperture sampling.

Cyril Soler
Kartic Subr
INRIA Rhône-Alpes

Frédo Durand
CSAIL, Massachusetts Institute of Technology

Nicolas Holzschuch
François Sillion
INRIA, Université Joseph Fourier-Grenoble, CNRS

Compressive Light Transport Sensing

Reflectance fields for image-based relighting using compressive sensing, several innovations that address problem-specific challenges (for example, a novel hierarchical decoding algorithm that exploits inter-pixel coherency relations), and a new set of illumination patterns that improves signal-to-noise in the measurements.

Pieter Peers
University of Southern California,
Institute for Creative Technologies

Dhruv K. Mahajan
Columbia University

Bruce Lamond
Abhjeet Ghosh
University of Southern California,
Institute for Creative Technologies

Wojciech Matusik
Adobe Systems, Incorporated

Ravi Ramamoorthi
University of California, Berkeley

Paul Debevec
University of Southern California,
Institute for Creative Technologies

Imaging and Rendering Pipeline (TOG) *continued*

Display Supersampling

In conventional supersampling, multiple scene samples are computationally combined to produce a single screen pixel. In display super-sampling, multiple display samples are physically combined via superimposition of display pixels. This paper analyzes the requirements for producing high-quality alias-free textures on such displays.

Niranjan Damera-Venkata
Nelson L. Chang
HP Labs

GRAMPS: A Programming Model for Graphics Pipelines

A programming model that generalizes modern graphics pipelines. Applications are structured as graphs of stages that exchange data via queues. GRAMPS is demonstrated with three applications (Direct3D, a ray tracer, and a combination) on two simulated platforms: GPU-like and CPU-like multi-core machines.

Jeremy Sugerman
Stanford University

Kayvon Fatahalian
Solomon Boulos
Stanford University

Kurt Akeley
Microsoft Research

Pat Hanrahan
Stanford University

Character Animation I

Thursday, 6 August | 8:30 - 10:15 am
Hall E 1-2

Session Chair
Jehee Lee
Seoul National University
Submit a Question ⇒

Dextrous Manipulation From a Grasping Pose

This paper describes an automatic algorithm that takes as input an initial grasping pose and partial object trajectory, and produces as output a physically plausible hand animation that effects the desired manipulation.

C. Karen Liu
Georgia Institute of Technology

Optimal Gait and Form for Animal Locomotion

A fully automatic method for generating gaits and morphologies for legged-animal locomotion. This approach requires only a description of an animal's basic shape as input and can determine a plausible motion and gait type as well as refine the animal's shape.

Kevin Wampler
Zoran Popović
University ot Washington

Performance-Based Control Interface for Character Animation

A system that directly uses human motion performance to provide a radically different, and much more expressive interface for controlling virtual characters.

Satoru Ishigaki
Timothy White
Georgia Institute of Technology

Victor Zordan
University of California, Riverside

C. Karen Liu
Georgia Institute of Technology

Detail-Preserving Continuum Simulation of Straight Hair

This paper presents a hybrid Eulerian/Lagrangian approach to efficiently handling both self and body collisions with hair while still maintaining detail. Bulk interactions and hair-volume preservation are handled efficiently and effectively with a FLIP-based fluid solver, while intricate hair-hair interaction is handled with Lagrangian self-collisions.

Aleka McAdams
University of California, Los Angeles

Andrew Selle
Kelly Ward
Walt Disney Animation Studios

Eftychios Sifakis
Joseph Teran
University of California, Los Angeles

Technical Papers | Thursday, 6 August

Rendering Methods and Systems (TOG)

Thursday, 6 August | 8:30 - 10:15 am
Hall E 3

Session Chair
Julie Dorsey
Yale University
Submit a Question ➡

Affine Double and Triple Product Wavelet Integrals for Rendering

This paper introduces a new theory of affine wavelet integrals that enables relighting with near-field planar area lights at real-time rates. The theory also has applications in importance sampling and image processing.

Bo Sun
Columbia University

Ravi Ramamoorthi
University of California, Berkeley

Participating-Media Illumination Using Light-Propagation Maps

A new method for propagating light through participating media that inherits the generality and computational lightness of the Discrete Ordinates Method while avoiding its two main shortcomings: false scattering and ray effects.

Raanan Fattal
Hebrew University

A Tool to Create Illuminant and Reflectance Spectra for Light-Driven Graphics and Visualization

There is more to a picture than you can see. To enable designers to make effective use of spectral lighting to steer overall tone of a scene or to make metameric detail visible, this method creates a palette of spectral lights and materials for graphics and visualization.

Steven Bergner
Mark S. Drew
Torsten Möller
Simon Fraser University

Automatic Pre-Tessellation Culling

This paper introduces an algorithm for automatically computing tight bounds on the fly for a base primitive before tessellation. These bounds are derived from an arbitrary vertex-shader program, which may include curved-surface evaluations and displacements. The obtained bounds are used for backface, view frustum, and occlusion culling before tessellation.

Jon Hasselgren
Jacob Munkberg
Tomas Akenine-Möller
Lunds universitet, Intel Corporation

Interacting With Hands, Eyes, and Images

Thursday, 6 August | 10:30 am - 12:15 pm
Hall E 3

Session Chair
Steve Feiner
Columbia University
Submit a Question ➡

Real-Time Hand-Tracking With a Color Glove

This paper describes a tracking system that reconstructs the position, orientation, and pose of the hand from a single camera. The tracking is fast enough to allow interactive user input and to experiment with design of new interfaces for interaction and animation.

Robert Y. Wang
Massachusetts Institute of Technology

Jovan Popović
Adobe Systems, Incorporated, University of Washington, and Massachusetts Institute of Technology

Achieving Eye Contact in a One-to-Many 3D Video Teleconferencing System

A 3D teleconferencing system that achieves accurate gaze and eye contact between an autostereoscopically displayed remote participant and an audience of multiple observers. The system leverages live 3D face scanning, high-speed video projection, custom vertex shaders, and interactive face tracking to simulate both horizontal and vertical parallax.

Andrew Jones
Magnus Lang
Graham Fyffe
Xeuming Yu
Jay Busch
University of Southern California,
Institute for Creative Technologies

Ian McDowall
Fakespace Labs

Mark Bolas
University of Southern California, Institute for Creative Technologies & School of Cinematic Arts

Paul Debevec
University of Southern California,
Institute for Creative Technologies

The UnMousePad - An Interpolating Multi-Touch Force-Sensing Input Pad

The UnMousePad is a flexible and inexpensive multitouch input sensor based on a novel principle: interpolating force-senstive resistance. IFSR devices can acquire high-quality anti-aliased images of pressure over a surface at high frame rates. This paper describes operating principles, implementation details, device characteristics, and potential applications.

Ilya Rosenberg
Ken Perlin
New York University Media Research Lab

Generating Photo Manipulation Tutorials by Demonstration

A demonstration-based system for automatically generating visual step-by-step tutorials of photo manipulations. The tutorials illustrate the manipulation using images, text, and annotations. They leverage image recognition to add semantically meaningful information. The authors demonstrate the approach on portrait retouching and editing outdoor scenes.

Floraine Grabler
Maneesh Agrawala
University of California, Berkeley

Wilmot Li
Mira Dontcheva
Adobe Systems, Incorporated

Takeo Igarashi
The University of Tokyo, JST ERATO

Visual, Cut, Paste, and Search

Thursday, 6 August | 1:45 - 3:30 pm
Hall E 1-2

Session Chair
Raanan Fattal
The Hebrew University of Jerusalem
Submit a Question →

Coordinates for Instant Image Cloning

Poisson cloning made interactive: a new approach to seamless image cloning. Instead of solving a large linear system to compute an interpolating membrane, the method uses mean-value coordinates. The advantages are speed, ease of implementation, small memory footprint, and parallelizability, enabling real-time image and video cloning.

Zeev Farbman
The Hebrew University of Jerusalem

Gil Hoffer
Tel-Aviv University

Yaron Lipman
Princeton University

Daniel Cohen-Or
Tel-Aviv University

Dani Lischinski
The Hebrew University of Jerusalem

SkyFinder: Attribute-Based Sky Image Search

SkyFinder is an interactive sky-search system with over a half million sky images. A set of sky attributes is automaticaly extracted so that the user can easily find a desired sky image using a query like "landscape at sunset with sun on the left", or "blue sky white cloud".

Litian Tao
Lu Yuan
Jian Sun
Microsoft Research Asia

Paint Selection

Paint Selection is a progressive painting-based tool for local selection in images. It helps users quickly make a selection by roughly painting the object of interest and provides high-quality instant feedback, even on multi-megapixel images.

Jiangyu Liu
University of Science and Technology of China

Jian Sun
Microsoft Research Asia

Heung-Yeung Shum
Microsoft Corporation

Video SnapCut: Robust Video Object Cutout Using Localized Classifiers

This paper introduces a robust video object cut-out and matting system based on collaboration of local classifiers that adaptively and automatically integrate local features such as color and online learned shape priors. The system achieves state-of-the-art results for complicated videos, including dynamic background and non-rigid foreground deformations.

Xue Bai
University of Minnesota

Jue Wang
David Simons
Adobe Systems, Incorporated

Guillermo Sapiro
University of Minnesota

Modeling and Rendering of Dynamic Shapes (TOG)

Thursday, 6 August | 1:45 - 3:30 pm
Hall E 3

Session Chair
Doug James
Cornell University
Submit a Question →

Efficient Reconstruction of Nonrigid Shape and Motion From Real-Time 3D Scanner Data

This technique takes time sequences of point clouds from real-time 3D scanners as input, possibly showing only partial scans of a deforming object in each frame. The algorithm computes a factorization into a single shape and its deformation over time, thus establishing dense correspondences, removing noise, and filling holes.

Michael Wand
Max-Planck-Institut Informatik

Bart Adams
Stanford University, Katholieke Universiteit Leuven

Maksim Ovsjanikov
Stanford University

Alexander Berner
Martin Bokeloh
Philipp Jenke
Universität Tübingen, WSI/GRIS

Leonidas Guibas
Stanford University

Hans-Peter Seidel
Max-Planck-Institut Informatik

Andreas Schilling
Universität Tübingen, WSI/GRIS

An Edge-Based, Computationally Efficient Formulation of Saint Venant-Kirchhoff Tetrahedral Finite Elements

This paper describes a fast algorithm for tetrahedral FE simulation of Saint Venant-Kirchhoff elastic objects. The number of FLOPs required for computing the vertex forces and tangent stiffness matrices from given vertex positions is 62% to 73% smaller than a conventional method.

Ryo Kikuuwe
Hiroaki Tabuchi
Motoji Yamamoto
Kyushu University

Modeling and Rendering of Dynamic Shapes (TOG) *continued*

Fitting Solid Meshes to Animated Surfaces Using Linear Elasticity

Computing correspondence between time frames of an animated 3D surface is essential for understanding its motion. This paper presents a method that can produce correspondence information for objects that do not undergo large volume or topological changes, such as living creatures, based on linear elasticity with rotation compensation.

Jaeil Choi
Georgia Institute of Technology

Andrzej Szymczak
Colorado School of Mines

Data-Driven Curvature for Real-Time Line Drawing of Dynamic Scenes

This paper presents a method for real-time line drawing of deforming objects. The method learns the mapping from a low-dimensional set of animation parameters to surface curvatures for a deforming mesh. The learned model can then accurately and efficiently predict curvatures and their derivatives, enabling real-time line drawing.

Evangelos Kalogerakis
Derek Nowrouzezahrai
Patricio Simari
James McCrae
Aaron Hertzmann
Karan Singh
University of Toronto

Shape Analysis

Thursday, 6 August | 3:45 - 5:30 pm
Hall E 3

Session Chair
Olga Sorkine
New York University
Submit a Question →→

Curve Skeleton Extraction From Incomplete Point-Cloud Data

Based on a novel notion of generalized ROtational Symmetry Axis (ROSA), this paper shows how to extract curve skeletons from incomplete point-cloud data and how these skeletons can also be used to enhance performances achieved by popular surface-reconstruction algorithms.

Andrea Tagliasacchi
Richard (Hao) Zhang
Simon Fraser University

Daniel Cohen-Or
Tel Aviv University

Mobius Voting for Surface Correspondence

This work makes use of Mobius transformations to develop an efficient, automatic algorithm for discovering point correspondences between surfaces that are approximately and/or partially isometric.

Yaron Lipman
Thomas Funkhouser
Princeton University

A Benchmark for 3D Mesh Segmentation

This paper describes a benchmark for evaluation of 3D mesh-segmentation algorithms. It investigates the design decisions made in building the benchmark, analyzes properties of human-generated and computer-generated segmentations, and provides quantitative comparisons of seven recently published mesh-segmentation algorithms.

Xiaobai Chen
Aleksey Golovinskiy
Thomas Funkhouser
Princeton University

Interactive Hausdorff Distance Computation for General Polygonal Models

The first real-time algorithm to compute the two-sided Hausdorff distance between arbitrary polygonal models for measurement of shape similarity and penetration-depth computation.

Min Tang
Minkyoung Lee
Young J. Kim
Ewha Womans University

Meshing

Friday, 7 August | 8:30 - 10:15 am
Hall E 1-2

Session Chair
Nina Amenta
University of California, Davis
Submit a Question →→

Interleaving Delaunay Refinement and Optimization for Practical Isotropic Tetrahedron Mesh Generation

This paper presents an algorithm for isotropic tetrahedral mesh generation. The method interleaves Delaunay refinement and mesh optimization to generate quality meshes that satisfy user-defined criteria. This interleaving is shown to be more conservative in Steiner point insertions than refinement alone and to produce higher-quality meshes than optimization alone.

Jane Tournois
INRIA Sophia Antipolis

Camille Wormser
ETH Zürich

Pierre Alliez
INRIA Sophia Antipolis

Mathieu Desbrun
California Institute of Technology

Deforming Meshes That Split and Merge

A method for accurately tracking the moving surface of deformable materials, represented by a triangle mesh, in a manner that gracefully handles topological changes. In regions where topological events are detected, the method inserts a simplified surface created with a standard isosurface-creation method.

Chris Wojtan
Georgia Institute of Technology

Nils Thuerey
Markus Gross
ETH Zürich

Greg Turk
Georgia Institute of Technology

Mixed-Integer Quadrangulation

An approach for fully automatic computation of coarse, structure-aligned quadmeshes. Singularities (vertices that have a non-regular connectivity) are placed with reference to the global structure, enabling high-quality quadrangulations in the sense of CAD models.

David Bommes
Henrik Zimmer
Leif Kobbelt
RWTH Aachen University

Cyclic Plain-Weaving on Polygonal Mesh Surfaces With Graph Rotation System

This paper shows that it is possible to create cycles with an even number of crossings by simply twisting every edge of the manifold mesh. Based on their proof, the authors developed a method to convert any manifold mesh to a plain-weaved basket.

Ergun Akleman
Jianer Chen
Qing Xing
Texas A&M University

Jonathan Gross
Columbia University

Character Animation II

Friday, 7 August | 10:30 am - 12:15 pm
Hall E 1-2

Session Chair
C. Karen Liu
Georgia Institute of Technology
Submit a Question →→

Synchronized Multi-Character Motion Editing

A novel motion-editing technique that allows the user to manipulate synchronized multi-character motions interactively. The paper demonstrates how multiple character motions are synthesized, manipulated, spatially aligned, and temporally synchronized in an interactive system.

Manmyung Kim
Kyunglyul Hyun
Jongmin Kim
Jehee Lee
Seoul National University

Momentum Control for Balance

Momentum control for balance is a novel technique for controlling physically based characters to maintain balance in extreme conditions, for example in the presence of disturbances, low friction, and moving ground. The system guides linear and angular momentum to control the entire body for balancing, resulting in recognizable recovery strategies.

Adriano Macchietto
Victor Zordan
Christian Shelton
University of California, Riverside

Character Animation II *continued*

Contact-Aware Nonlinear Control of Dynamic Characters

A contact-aware physically based locomotion system can generate high-quality animation of agile movements by using a nonlinear controller that plans through frequent contact changes. The control system can yield walking with sudden agile turns, and it is fast enough to compute even for full three-dimensional characters.

Uldarico Muico
Yongjoon Lee
University of Washington

Jovan Popović
Adobe Systems, Incorporated
and University of Washington

Zoran Popović
University of Washington

Linear Bellman Combination for Control of Character Animation

Linear Bellman Combination modifies and improves control policies designed for animation of dynamic characters. For example, a walking controller can either be modified to change the step length or improved to be more resilient to external disturbances.

Marco da Silva
Frédo Durand
CSAIL, Massachusetts Institute of Technology

Jovan Popović
Adobe Systems, Incorporated, University of Washington, and Massachusetts Institute of Technology

Vector Graphics and Point Distributions

Friday, 7 August | 10:30 am - 12:15 pm
Hall E 3

Session Chair
Eitan Grinspun
Columbia University
Submit a Question ⇒

A Visibility Algorithm for Converting 3D Meshes Into Editable 2D Vector Graphics

Artists often need to embellish and import 3D CAD-CAM models into 2D vector-graphics software to produce (for example) brochures or manuals. This algorithm performs that tedious task automatically. The derived layered representation facilitates further editing. High-quality illustrations can thus be prepared efficiently.

Elmar Eisemann
Universität des Saarlandes, Max Planck Institut Informatik

Sylvain Paris
Adobe Systems, Incorporated

Frédo Durand
CSAIL, Massachusetts Institute of Technology

Local Layering

In a conventional 2D painting or compositing program, graphical objects are stacked in a user-specified global order. This paper shows how to relax this restriction so that users can make stacking decisions on a per-overlap basis.

James McCann
Nancy Pollard
Carnegie Mellon University

Automatic and Topology-Preserving Gradient Mesh Generation for Image Vectorization

A topology-preserving gradient mesh representation for image regions with arbitrary holes and a novel, fully-automatic algorithm that can efficiently compute such a representation. Used with a segmentation algorithm, it is now possible to automatically convert a whole image into gradient mesh representation.

Yu-Kun Lai
Tsinghua University

Shi-Min Hu
Tsinghua University

Ralph R. Martin
Cardiff University

Capacity-Constrained Point Distributions: A Variant of Lloyd's Method

This paper presents a new general-purpose method for optimizing existing point sets. The resulting distributions possess high-quality blue noise characteristics and adapt precisely to given density functions. The method is similar to the commonly used Lloyd's method but avoids its drawbacks.

Michael Balzer
Thomas Schlömer
Oliver Deussen
Universität Konstanz

Physically Based Modeling: From Contact to Capture

Friday, 7 August | 1:45 - 3:30 pm
Hall E 1-2

Session Chair
Adam Bargteil
University of Utah
Submit a Question →

Asynchronous Contact Mechanics

This paper presents a method for reliable simulation of elastica in complex contact scenarios. The focus is on firmly establishing three parameter-independent guarantees: simulations of well-posed problems (a) have no interpenetrations, (b) obey causality, momentum- and energy-conservation laws, and (c) complete in finite time.

David Harmon
Etienne Vouga
Breannan Smith
Columbia University

Rasmus Tamstorf
Walt Disney Animation Studios

Eitan Grinspun
Columbia University

Interactive Simulation of Surgical Needle Insertion and Steering

This paper presents algorithms for simulating and visualizing insertion and steering of needles through deformable tissues for surgical training and planning. Novel features include a fast mesh-maintenance algorithm and physics-based methods for needle-tissue coupling.

Nuttapong Chentanez
University of California, Berkeley

Ron Alterovitz
University of North Carolina at Chapel Hill

Daniel Ritchie
Lita Cho
Kris K. Hauser
Ken Goldberg
Jonathan R. Shewchuk
James F. O'Brien
University of California, Berkeley

Capture and Modeling of Non-Linear Heterogeneous Soft Tissue

The major practical contribution of this work is the ability to model rich non-linear deformations without complex decisions about material models and parameters. The method relies on a simple acquisition system, a novel material representation through spatially varying interpolation of fitted linear models, and an efficient deformation-synthesis method.

Bernd Bickel
ETH Zürich

Moritz Baecher
Harvard University

Miguel A. Otaduy
URJC Madrid

Wojciech Matusik
Adobe Systems, Incorporated

Hanspeter Pfister
Harvard University

Markus Gross
ETH Zürich

Physically Guided Liquid Surface Modeling From Videos

This paper presents an image-based reconstruction framework to model real liquid scenes captured by stereoscopic video. The algorithm combines stereo reconstruction with automatically calculated, physically based constraints, which allows effective modeling of complex and dynamic objects such as fluids.

Huamin Wang
Georgia Institute of Technology

Miao Liao
University of Kentucky

Qing Zhang
University of Kentucky

Ruigang Yang
University of Kentucky

Greg Turk
Georgia Institute of Technology

Rendering and Visibility

Friday, 7 August | 1:45 - 3:30 pm
Hall E 3

Session Chair
Jason Lawrence
University of Virginia
Submit a Question →

An Efficient GPU-Based Approach for Interactive Global Illumination

A GPU-based method for interactive global illumination that integrates complex effects such as multi-bounce indirect lighting, glossy reflections, caustics, and arbitrary specular paths.

Rui Wang
Zhejiang University

Rui Wang
University of Massachusetts

Kun Zhou
Minghao Pan
Hujun Bao
Zhejiang University

Single Scattering in Refractive Media With Triangle Mesh Boundaries

Refractive media such as glass and amber can create surprisingly rich internal caustics even from simple shapes. This paper presents new techniques to explicitly find refracted illumination paths and their energy contributions for the most common geometric representation (triangle meshes with interpolated normals) and demonstrates both CPU and GPU results.

Bruce Walter
Shuang Zhao
Cornell University

Nicolas Holzschuch
INRIA, Universités de Grenoble

Kavita Bala
Cornell University

Rendering and Visibility *continued*

Frequency Analysis and Sheared Reconstruction for Rendering Motion Blur

Based on a frequency analysis for motion-blurred images, this technique shears the reconstruction filter and adapts the sampling at each pixel to match the underlying motion of the signal. Motion-blurred images can be rendered with many fewer samples.

Kevin Egan
Columbia University

Yu-Ting Tseng
Columbia University

Nicolas Holzschuch
INRIA, Universités de Grenoble

Frédo Durand
CSAIL, Massachusetts Institute of Technology

Ravi Ramamoorthi
University of California, Berkeley

Adaptive Global Visibility Sampling

This paper introduces a global visibility algorithm which computes visibility for the whole space of possible viewing positions simultaneously and in a progressive manner by using efficient visibility sampling strategies. The method provides a practical solution to visibility preprocessing and enables new applications in interactive visibility analysis.

Jiří Bittner
Czech Technical University in Prague

Oliver Mattausch
Vienna University of Technology

Peter Wonka
Arizona State University

Vlastimil Havran
Czech Technical University in Prague

Michael Wimmer
Vienna University of Technology

Computational Cameras

Friday, 7 August | 3:45 - 5:30 pm
Hall E 1-2

Session Chair
Tim Weyrich
University College London
Submit a Question ➡➡

Invertible Motion Blur in Video

Linear motion smear in a photo is non-invertible, but this method makes the blur in a video invertible by changing exposure time of successive frames. The paper demonstrates an automatic deblurring approach by creating jointly invertible PSF, estimating PSF, and segmenting moving parts on a non-uniform background without special camera hardware.

Amit Agrawal
Yi Xu
Mitsubishi Electric Research Laboratories

Ramesh Raskar
Media Lab, Massachusetts Institute of Technology

Dark Flash Photography

This camera-and-flash system offers dazzle-free photography by hiding the flash in the non-visible spectrum. A pair of images is captured, one using a multi-spectral flash, the other using the dim ambient illumination. Then the photos are combined to generate a high-quality output image.

Dilip Krishnan
Rob Fergus
New York University

4D Frequency Analysis of Computational Cameras for Depth-of-Field Extension

This paper examines the design of extended depth-of-field systems in the 4D light-field space and derives a bound on the maximal frequency content they can hope to preserve. It also analyzes existing computational-imaging designs and proposes a new lens that extends the depth of field of all known designs.

Anat Levin
The Weizmann Institute of Science

Samuel W. Hasinoff
Paul Green
Frédo Durand
William T. Freeman
CSAIL, Massachusetts Institute of Technology

Bokode: Imperceptible Visual Tags for Camera-Based Interaction From a Distance

Bokodes are tiny barcodes (3 x 3 mm) that encode binary information in angle. The defocus blur of a camera positioned up to four meters away captures this pattern to decode identity, and six-degree-of-freedom pose (angle and distance).

Ankit Mohan
Grace Woo
Shinsaku Hiura
Quinn Smithwick
Ramesh Raskar
Media Lab, Massachusetts Institute of Technology

BIOLOGIC: A NATURAL HISTORY OF DIGITAL LIFE

DAYS & HOURS

Monday, 3 August   9 am - 6 pm
Tuesday, 4 August   9 am - 6 pm
Wednesday, 5 August   9 am - 6 pm
Thursday, 6 August   9 am - 6 pm
Friday, 7 August   9 am – noon

LOCATION

Rooms 352-355

The artworks chosen for the SIGGRAPH 2009 juried art exhibition explore what can happen when nature and technology combine. Recent projects by 11 artists representing 10 countries offer both serious and playful scenarios in which biological forms and life processes are grafted together with digital code and devices. All of the projects are kinetic, most are interactive, and many are large installations that immerse the viewer in fantastic environments of shivering tendrils, singing strands of hair, and fuzzy, cloud-like surfaces that respond when stroked. The complex technologies and intriguing topics encountered in the exhibition offer viewers a compelling survey of ideas and issues that characterize contemporary life - a tangle of digital devices, natural processes, and us.

A Special Issue of *Leonardo, The Journal of the International Society of the Arts, Sciences and Technology* will feature the artists and projects included in BioLogic along with SIGGRAPH 2009 Art Papers →. The exhibition is also closely related to Generative Fabrication →, the Design & Computation exhibition. Together, the two exhibitions present an enthralling range of art and design projects that incorporate biological information and processes.

Related session:

Panel: BioLogic and Generative Fabrication →

Thursday, 6 August | 10:30 am - 12:15 pm
Room 265-266

Reception
Celebrating the Special Issue of Leonardo and SIGGRAPH 2009 Art & Design Galleries

Tuesday, 4 August, 1:30 - 3:30 pm
Lobby outside Rooms 353-355

Drink a toast to the SIGGRAPH special issue of Leonardo and the SIGGRAPH 2009 art and design galleries. Talk with the artists, designers, and Art Papers authors about their work. Meet the members of the SIGGRAPH 2009 committee who organized this year's exhibits of digital art and design.

Artifacts from a Parallel Universe: Tentative Architecture of Other Earth_Coastline Inhabitants

Artifacts from a Parallel Universe is a garment that emulates the breathing of its wearer, and its form is inspired by marine coral. Using sensors and shape-memory alloys embedded in hand-knitted and felted wool, this garment blurs the boundaries between garment, technology, environment, and wearer. Eskandar is an artist and architect. This piece was produced by Grant Davis in collaboration with Joshua Hernandez (electronics) and Christopher O'Leary (photography).

Xárene Eskandar
UCLA Design | Media Arts, Architecture

Biological Instrumentation

Biological Instrumentation is a time-based spatial installation of mimosa plants, each connected by a series of tubes to an air compressor and wired with audio speakers and other electronic equipment. Algorithmically triggered compressed air forces the plants to contract. As the plants begin to open their leaves again, sound signals play from the audio speakers. This work explores the poetics involved in creating new relationships between machines and plant life. Nina Tommasi is an Austrian-born media artist and architect.

Nina Tommasi

Electric Eigen-Portraits
Face Shift

Electric Eigen-Portraits and Face Shift are original performances of algorithmic facial choreography exhibited as two video works. These works turn a computer-controlled human face into a medium for kinetic art. Arthur Elsenaar is an artist and an electrical engineer, finishing his PhD work investigating the choreographic capabilities of the computer-controlled human face. He collaborated with Remko Scha, artist, programmer, and professor of computational linguistics at the University of Amsterdam.

Arthur Elsenaar
Nottingham Trent University

Fur-Fly

Fur-Fly is a tactile display composed of individual pieces of faux fur that uses sensor-driven computer technology to control the movement of the components in response to the user and to transform the visual effects projected onto the surface. The texture of the display surface encourages interaction. Kumiko Kushiyama is an artist, interaction designer, and professor at Tokyo Metropolitan University. Shinji Sasada is an artist and advanced computer graphics designer. Soichiro Takeyama is studying advanced technology and computer graphics at Japan Electronics College.

Kumiko Kushiyama
Tokyo Metropolitan University

Shinji Sasada
Soichiro Takeyama
Japan Electronics College

Growth Rendering Device

Growth Rendering Device is a kinetic installation that records the growth of a pea plant over a 24-hour period. It displays a dialog among plant, environment, machine, and maker all working to thrive, to grow. David Bowen is an artist and assistant professor of sculpture and physical computing at the University of Minnesota Duluth. His work has been featured in exhibitions nationally and internationally.

David Bowen
University of Minnesota Duluth

Hylozoic Soil

Hylozoic Soil is a visually striking and multifaceted installation. Made up of a network of micro-controllers, proximity sensors, and shape-memory alloy actuators, this interactive environment draws the viewer into its shimmering depths. Philip Beesley is an artist, architect, and professor of architecture at the University of Waterloo. Hylozoic Soil was recently awarded first-prize honors at VIDA 11.0.

Philip Beesley
University of Waterloo

Mr. Lee Experiment

Mr. Lee Experiment is an interactive installation that allows the viewer to move human experimental subjects between different environments that can then be observed. In this work, humans have been reduced to the same status as other species, that of experimental subjects. Sanghun Lee, Jayoung Kim, Hyomi Mun, Jungmi Kim, and Junghwan Sung, all from the Media Department at SoongSil University, have created this work drawing on expertise across interactive media art, sound art, filmmaking, hardware and software design, and electronics.

Sanghun Lee
Jayoung Kim
Hyomi Mun
Jungmi Kim
Junghwan Sung
Soongsil University

MSOrgm (Motivational Sensitive Organism)

MSOrgm (Motivational Sensitive Organism) is a robot designed to interact with the viewer in a more personal and subtle way. This robot plant presents the viewer with restrained and graceful gestures, and collaborates with viewers' movements using cameras and facial recognition software. Scottie Huang is an artist and architect interested in tangible human-computer interfaces. Shen-Guan Shih is an associate professor in the Department of Architecture at National Taiwan University of Science and Technology.

Scottie Chih-Chieh Huang
Shen-Guan Shih
National Taiwan University of Science and Technology

One

One is an interactive piece consisting of a single drop of ink in a suspended Petri dish and a large projection of the same drop. Viewer interaction with the suspended dish is the means of evolution for the animated ink blot. Yoon Chung Han is an artist and designer specializing in interactive media design. Gautam Rangan is an artist and designer creating animations for the Discovery Science channel. Erick Oh is an award-winning animation artist based in Los Angeles.

Yoon Chung Han
Gautam Rangan
UCLA Design | Media Arts

Erick Oh
UCLA Department of Film, Television, and Digital Media

Post Global Warming Survival Kit

Post Global Warming Survival Kit is an installation that can only be experienced in infrared. In this post-apocalyptic world, viewers are invited to experience something that is at once bleak and beautiful, at a coastal outpost at land's end. Petko Dourmana is a media artist based in Sofia, Bulgaria. Post Global Warming Survival Kit was one of eight works nominated for a Transmediale 2009 Award.

Petko Dourmana

TRANSDUCERS

TRANSDUCERS is an installation composed of several glass tubes, each encasing a single human hair collected from different individuals. Triggered by the machinery, the human hair is stimulated to react, and the reaction is transduced into an audible output. Every audible result provides a technological interpretation of identity. Verena Friedrich is a German artist with a deep interest in science and technology. Shown internationally, her work has also been granted the \\international\media\award\2005 for science and art from ZKM Karlsruhe.

Verena Friedrich
University of Art and Design Offenbach

GENERATIVE FABRICATION

DAYS & HOURS

Monday, 3 August	9 am - 6 pm
Tuesday, 4 August	9 am - 6 pm
Wednesday, 5 August	9 am - 6 pm
Thursday, 6 August	9 am - 6 pm
Friday, 7 August	9 am – noon

LOCATION

Rooms 356

The SIGGRAPH 2009 Design & Computation Gallery explores non-linear and biological processes in design and digital fabrication through selected works of art, architecture, and design. The work's inherently generative nature encourages many lines of investigation along two main paths:

Generative design - algorithm and process, explorations of phase space and path-dependent emergent phenomena, form-making versus form-finding, and iterative design such as simulation, analysis, and optimization.

Digital fabrication - the interplay between digital representation and the crafting of physical objects; formation of structures by aggregation, weaving, and layered manufacturing; and exploitation of organic and composite material properties.

Related session:

Panel: BioLogic and Generative Fabrication →

Thursday, 6 August | 10:30 AM - 12:15 PM
Room 265-266

Reception
Celebrating the Special Issue of Leonardo and SIGGRAPH 2009 Art & Design Galleries

Tuesday, 4 August, 1:30-3:30
Lobby outside Rooms 353-355

Drink a toast to the SIGGRAPH special issue of Leonardo and the SIGGRAPH 2009 art and design galleries. Talk with the artists, designers, and Art Papers authors about their work. Meet the members of the SIGGRAPH 2009 committee who organized this year's exhibits of digital art and design.

Monumental Nets →

Sculpture that synthesizes traditional fabrication methods with digital form-finding to create monumental public sculptures.

Janet Echelman
Buro Happold
Consulting Engineers

Schiara Lantern →

A large, volumetric lantern made of translucent fiberglass composite panels formed on CNC-milled molds.

Greg Lynn
Greg Lynn/FORM

Bill Kreysler
Kreysler & Associates

Complex Form in Timber →

Constructing free-form architecture in timber using parametric design and computer-controlled fabrication tools.

Fabian Scheurer
designtoproduction

Assemblages →

Architects pursuing design ideas based on Quasicrystals, forms that are rigorously modular yet grow wild.

Chris Lasch
Benjamin Aranda

MyLight.MGX →

A family of lamp designs that are unique for each customer, made with rapid manufacturing techniques.

Materialise.MGX

Holy Ghost →

A chair designed using genetic algorithms to determine modifications to the iconic Louis Ghost chair by Philippe Starck.

Lionel Theodore Dean

Ground Substance →

A hybrid architectural design and biological research unit that demonstrates new modes of thinking in design and material construction.

Sabin+Jones LabStudio

Pluripotent Structures →

An investigation into adaptive and variable formal and structural organizations that have more than one possible outcome yet maintain coherence.

Ferda Kolatan+Erich Schoenenberger
su11 architecture+design

INFORMATION AESTHETICS SHOWCASE

DAYS & HOURS

Monday, 3 August	9 am - 6 pm
Tuesday, 4 August	9 am - 6 pm
Wednesday, 5 August	9 am - 6 pm
Thursday, 6 August	9 am - 6 pm
Friday, 7 August	9 am – noon

LOCATION

Rooms 274-277

The emergent field of information aesthetics combines a rich variety of technical and artistic disciplines. Designers and new media artists are joining scientific visualization, informatics, and medical imaging specialists to create purposive, predictive, and creative representations of information. SIGGRAPH 2009 is highlighting this field in recognition of the increasingly prominent role that information visualization and data graphics are assuming in our digitally mediated culture.

The Information Aesthetics Showcase includes 2D and 3D prints, interactive and presentational screen-based works, multimodal installation environments, and physical objects that reveal information. In keeping with this year's theme, Networking the Senses, the works shown here engage not only the visual, but also auditory, kinesthetic, and tactile modalities. The relationship to information expressed in these exemplary pieces ranges from straightforward visualization of data to fanciful re-invention and transformation of it. Presenters include computational journalists, visual and material artists, biological researchers and neuro-scientists, graphic designers, scientific visualization developers, historians, cultural theorists, and digital media center collaborators.

Related sessions:

Keynote Speaker
Steve Duenes ➡

Graphics Director, New York Times
Wednesday, 5 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

Panel
The State of Aesthetic Computing or Info-Aesthetics ➡

Monday, 3 August | 3:45 - 5:30 pm
Auditorium B

Talks
Information Aesthetics: Designing Interactions ➡

Monday, 3 August | 8:30 - 10:15 am
Auditorium B

24X7@PHL:Vectoring

24X7ATPHL:Vectoring is an investigation into a novel use of time-based animation software and procedural modeling as a method
for visualizing time-based quantitative data via construction of a qualitative, two-dimensional rendering.

Robert Trempe
Temple University

A_B_ peace & terror etc. The computational aesthetics of love & hate

A geopolitical survey of the 192 member states of the United Nations that reveals the quantitative degree to which each contributes to peace and terror in the world.

Peter Crnokrak
The Luxury of Protest

c-loc Software

Time-and-space-mapping software with which anyone can simultaneously visualize chronological and geographical data as three-dimensional graphics. It is suitable for people who want to investigate the relationship between time-and-space information in fields such as archeology, ethnology, and history.

Yasushi Noguchi
Tokyo Polytechnic University

c-loc Software Project Team

Cultural Analytics Research Environment

Cultural Analytics is a new emerging field that uses data mining and interactive visualizations of large sets of cultural data in the humanities context. The presented projects demonstrate ideas behind the Cultural Analytics Research Environment, an open platform for cultural analytics research currently being constructed at the California Institute for Telecommunication and Information (Calit2) and the University of California, San Diego.

Lev Manovich
Jeremy Douglass
Sergie Magdalin
Falko Kuester
So Yamaoko
University of California, San Diego

decibel 151

decibel 151 is an art installation and a music interface that uses spatial audio technology and ideas of social networking to turn individuals into "walking soundtracks" as they move around each other in a shared real space and listen to each other in a shared virtual space.

Michela Magas
Goldsmiths, University of London

Rebecca Stewart
Queen Mary University of London

Benjamin Fields
Goldsmiths, University of London

Height Restrictions

Height Restrictions uses procedural modeling as a tool for visualizing information about building size and density in Center City Philadelphia.

Robert Trempe
Temple University

I'm Not There: Extending the Range of Human Senses to Benefit Wildlife Corridors

In an immersive environment, users experience extended senses of sight and sound in ways normally perceived only by other animals. This is a prototype for a real-time project intended to provide freedom to roam remote places with enhanced senses and, as a result, benefit wildlife corridors around the world.

Carol LaFayette
Fred Parke
Philip Galanter
Ann McNamara
Texas A&M University

Katrina Project: NO-LA

The Katrina Project: NO-LA involves collaborators from art, design, behavioral science, journalism, and community outreach. A database-driven, activist website explores the psychological and social effects of the storm and its aftermath through interviews with and works by filmmakers, artists, dancers, musicians, architects, and cooks in New Orleans and Los Angeles.

Victoria Vesna
W.H. Lucas
University of California, Los Angeles

Claes Andersson
Sveriges Radio

Jay Yan
University of California, Los Angeles

Graduate Students
Kimberly Townes
Andreas Colubri
Estevan Carlos Benson

Undergraduate Students
Spring 2006 Print Class of W.H. Lucas

UCLA Center for Community Partnerships

Landmark Status

This study exposes the virtual connections of landmark buildings in Center City Philadelphia through a process of NURBS surface "pulling" and "contouring",ù then extracting the information to display emergent patterns of tall building development.

Robert Trempe
Temple University

MBTI Map (The)

The MBTI map represents relationships among the words that describe people's personalities using the methodology of knowledge visualization and subway lines as a metaphor.

Seokhyun Jang
Daum Communications

Seonhee Kang
Joohee Bae
Suejean Ko
Jisu Lee
Kyungwon Lee
Ajou University

MSNBC Hurricane Tracker

Stamen worked with MSNBC to bring hurricane tracking data from the National Hurricane Center online in an interactive, visual form. The data include the past, present, and forecast location of storms, contours for areas affected by high wind speeds, and the probability of hurricane winds throughout the United States.

Michal Migurski
Stamen Design

Multiscale Meta-Shape Grammar Objects for: ...a grain of sand turns the balance and ATLAS in silico

This aesthetically impelled work explores the use of n-dimensional glyphs generated by a custom meta-shape grammar algorithm to visually personify individual records from a massive metagenomics dataset comprised of 17.4 million sequences and places biological data in a human context to reflect upon the digitization of nature and culture.

Ruth West
University of California, Los Angeles

JP Lewis
Weta Digital

Todd Margolis
Joachim Gossmann
Jurgen Schulze
Daniel Tenedorio
Rajvikram Singh
University of California, San Diego

News Knitter

News Knitter focuses on knitted garments as an alternative medium to visualize large scale data. Live news feed from the Internet that is broadcasted within 24 hours or a particular period is analyzed, filtered and converted into a unique visual pattern for a knitted sweater.

Ebru Kurbak
Mahir M. Yavuz
Universität für künstlerische und industrielle Gestaltung Linz

Oakland Crimespotting

This tool for understanding crime in cities can inspire local governments to use data visualization for public release of many different kinds of data.

Michal Migurski
Tom Carden
Stamen Design

OpenStreetMap 2008: A Year Of Edits

An animation that clearly shows, at planetary scale, the intensity and patterns of work by contributors to the wiki-style mapping project, OpenStreetMap.

Hal Bertram
ITO World Ltd.

Out of Statistics: Beyond Legal

With an aesthetic approach, this project produces a series of abstract drawings as archival-ink digital prints on rice paper. The embedded images in this series are generated from US crime statistics using an algorithm developed from the artists' study of experimental hand drawings.

Rebecca Ruige Xu
Missouri State University

Sean Hongsheng Zhai
floatingcube.org

Passing "Place for Games"

A high-resolution 3D art visualization that presents a detailed reconstruction of Kizhi, a world-famous Russian heritage site, developed using the latest concepts in real-time graphics, including complex illumination with dynamic-irradiance environment mapping, shadow mapping, and complex materials with normal and gloss mapping.

Daria Tsoupikova
University of Illinois at Chicago

Robert Kooima
Louisiana State University

Rhythm Analysis; A Temporal Stereopsis of Urban Telecommunication Data Topography

This inspirational installation reveals a stereoscopic representation of temporal and spatial telecommunication data. It is an urban-communication indicator of 24 hours of everyday life in a central area of Seoul, created by transparent LED display sheetsù of conductive carbon nanotube.

Eunju Han
Royal College of Art

Sky Oracle: Immersive Flowchart Representation for the Annexation of Tibet (The)

The Sky Oracle on the University of Florida's Second China Island in Second Life applies an interactive, immersive aesthetic to representation of structured information in the form of a control-flow diagram (a representation of both information and software).

Paul Fishwick
Julie Henderson
Elinore Fresh
Rasha Kamhawi
Amy Jo Coffey
University of Florida

Benjamin Hamilton
SAIC Corporation

STOC: Stock Ticker Orbital Comparison

An interactive data visualization that uses the metaphor of a planetary system to map parameters of stocks in the S&P 500 to animated visual outputs.

James Grant
Todd Spencer
Richard Armijo
University of Advancing Technology

Synchronous Objects for One Flat Thing, Reproduced

Synchronous Objects is an interactive screen-based work that illuminates, reinterprets, and transforms the choreographic structures in William Forsythe's dance One Flat Thing, reproduced through a vivid collection of information objects designed by a team of multidisciplinary researchers at The Ohio State University.

Maria Palazzi
Norah Zuniga Shaw
The Ohio State University

William Forsythe
The Forsythe Company

Matthew Lewis, Beth Albright, Michael Andereck, Sucheta Bhatawadekar, Hyowon Ban, Andrew Calhoun, Jane Drozd, Joshua Fry, Melissa Quintanilha, Anna Reed, Benjamin Schroeder, Lily Skove, Ashley Thorndike, Mary Twohig, Ola Ahlqvist, Peter Chan, Noel Cressie, Stephen Turk
The Ohio State University

Jill Johnson, Christopher Roman, Elizabeth Waterhouse
The Forsythe Company

Scott deLahunta
Amsterdam School of the Arts

Patrick Haggard
University College London

Alva Noe
University of California, Berkeley

Touch the Invisibles

A novel interface that can superimpose tactile information onto images displayed on a computer monitor was used to produce an artwork on the subject of how humans perceive the real and digital world through the sense of touch.

Junji Watanabe
PRESTO Japan Science & Technology Agency

Eisuke Kusachi
Creator

NOSIGNER (Eisuke Tachikawa)
Designer

Hideyuki Ando
Osaka University

Towards the Memory Tower

This digital installation explores the role of oscillatory brain network states in memory consolidation. The goal is to reconnect the science of the brain with the experiences that the brain engenders and to communicate complex neuroscientific understanding in a meaningful and stimulating way to a wider audience.

Timothy Senior
Duke University

Visual Genealogy: Mr. Park, Myrang-Hwarok Clan

Visual genealogy reveals the cognitive meanings of a complex dataset. In this case, the data are life and death. The artwork shows a family tree of Mr. Park (Myrang clan, Hwarok party).

Jin Wan Park
Gyuwan Choe
Chung-Ang University

VisualPoetry - Generative Graphic Design for Poetry on the Road

VisualPoetry is a set of computer programs that generate the visuals for the literature festival Poetry on the Road. While the visual output is completely different every year, all visuals are based on the same concept: the programs turn poems into images.

Boris Müller
Fachhochschule Potsdam

Florian Pfeffer
one/one communication

well-formed.eigenfactor: Visualizing Information Flow in Science

Interactive visualizations based on Eigenfactor Metrics and hierarchical clustering to explore emerging patterns in citation networks. A cooperation between the Eigenfactor Project (data analysis) and Moritz Stefaner (visualization).

Moritz Stefaner
Fachhochschule Potsdam

Martin Rosvall
Carl Bergstrom
University of Washington, Seattle

DAYS & HOURS

Monday, 3 August   9 am - 6 pm
Tuesday, 4 August   9 am - 6 pm
Wednesday, 5 August   9 am - 6 pm
Thursday, 6 August   9 am - 6 pm
Friday, 7 August   9 am - noon

LOCATION

Rooms 337 - 342 & 346 - 351

EMERGING TECHNOLOGIES

SIGGRAPH 2009's Emerging Technologies presents innovative technologies and applications in many fields, including displays, robotics, input devices, and interaction techniques. The demos are available for attendees to try out and discuss with the creators.

Emerging Technologies includes a mix of works invited by the organizers and works selected from juried submissions to the SIGGRAPH 2009 online submission system.

Emerging Technologies abstracts are presented in the Full Conference DVD-ROM that Full Conference attendees receive with their registration.

CATEGORIES

Rooms 337-339	Input Interfaces	Room 348	Robotics
Room 340	Visualization	Room 349	Audio Experiences
Rooms 341-342	Alternative Displays	Rooms 350-351	Haptics and Virtual Reality
Rooms 346-347	Experimental Sensory Experiences		

A Multimodal Floor for Virtual Environments

Rooms 350-351
Categories: Haptics and Virtual Reality

This interface is intended for immersive virtual-reality and augmented-reality environments in which users walk over "natural" ground surfaces such as snow and ice. To date, human-scale immersive environments that incorporate interactive floor surfaces have been predominantly focused on interactive presentation of visual and auditory display linked to a virtual-environment simulation. However, as we walk in natural environments, we receive continuous, multisensory information about the nature and composition of the ground surface – the crush of dry leaves under our feet, the soft compression of grass. The static nature of floor surfaces in existing virtual-environment simulations typically bears little resemblance to natural ground materials, and this creates a perceptual conflict with the dynamic visual and (when present) auditory feedback that users are typically provided in such an environment.

This project illustrates a novel approach to reconciling perceptual conflict, based on synchronous auditory, vibrotactile, and visual feedback provided through a floor surface in response to users' steps. An array of force sensors in the floor and on-body motion capture acquires the movements of users. Multimodal feedback is generated in real time using physically motivated rendering models for the vibrotactile, auditory, and visual response of the respective virtual material to the steps of a user. This feedback is displayed responsively, at the site of each footstep, via an array of high-fidelity, low-cost vibrotactile and acoustic actuators embedded within the floor, in addition to top-down video projection. Potential future applications of this technology can be envisioned in areas such as immersive virtual-reality training simulations, responsive floor surfaces for entertainment parks, and interactive rehabilitation systems.

Alvin Law
Jessica Ip
Benjamin Peck
Yon Visell
Paul Kry
Jeremy Cooperstock
Severin Smith
McGill University

A New Dual-Clickpad Remote Controller for Consumer Electronics

Room 340
Category: Visualization

Panasonic new Easy Touch Remote Controller provides tangible and intuitive interactions by means of sensor interpretation providing context recognition for out of the box experiences. These interaction experiences benefit from new Universal Design (UD) interaction concepts based on hand gestures and visual feedback.

The intelligent interpretation of multiple sensory information combined with powerful graphic capabilities of today consumer electronics allows the development of completely new user experiences. The Easy Touch Remote Controller features pointing capability and natural keyboard entry which relies on the dual touch-pad and holding style detection. In addition, indirect pointing, hand/hold/gesture recognition, orientation recognition and control with no-line of site using wireless technology allows the realization of natural and flexible interfaces for a wide variety of applications.

Jean-Claude Junqua
David Kryze
Panasonic San Jose Laboratory

AmbiKraf: An Embedded Non-Emissive and Fast-Changing Wearable Display

Room 341
Category: Alternative Displays

AmbiKraf is a novel non-emissive fabric display that combines the technologies of thermochromic ink with semiconductor heating and cooling to facilitate multicolor, fast-changing fabric displays. Merging of these two technologies creates revolutionary animated and interactive fabric displays. Key contributions are the robustness of the fabric display and a rapidly changing, multi-color capability.

Previous wearable displays are limited in practical usage due to their lack of robustness, high emissivity, one-way control, and slow color change. Emissive displays draw too much attention, and are obtrusive and distractive. Thermochromic inks, which are robust and practically usable over current non-emissive technologies, are used here with customized color-actuation temperatures optimized to suit the wearer's comfort and the speed of color change. Thermochromic inks are mixed and screen printed onto the fabric, enabling easy implementation and a robust display. Light-weight semiconductor Peltier junctions intertwined into the fabric are used as temperature actuators, providing rapid heating and cooling on the same module. A matrix of Peltier modules is controlled with a tuned control circuit, introducing a novel form of fabric display that can show various animated sequences.

With this breakthrough combination of technology, the AmbiKraf demonstration ranges from simple calming animated displays to novel fashion-based interaction scenarios that enable bidirectional, display-based multimodal communication. The robust bidirectional control combined with high- speed color changing supersedes current non-emissive technologies, thus making AmbiKraf a more convincing and practical leap in wearable technology.

Roshan Lalintha Peiris
Adrian David Cheok
James Keng Soon Teh
Owen Noel Newton Fernando
Andrea Wen Yingqian
Andre Jiande Lim
Pan Yi
Doros Polydorou
Keio-NUS CUTE Center

Kian Peng Ong
futuract

Mili Tharakan
Kris Hoogendoorn
Keio-NUS CUTE Center

An Interactive Retrographic Sensor for Touch, Texture and Shape

Room 337
Category: Input Interfaces

Retrographic sensing is a novel method for measuring surface texture and shape. It uses a sensor made of clear elastomer with a painted skin to non-destructively change an object's reflectance characteristics. When an object is pressed into the sensor, the painted skin conforms to the shape of the object. Viewed from behind, the object appears as a shaded surface, and the shape of the surface can be estimated using photometric stereo techniques. The resulting system can reconstruct high-resolution 2.5-D surface data at interactive rates.

Micah Johnson
Alvin Raj
Edward Adelson
Massachusetts Institute of Technology

Anthropomorphization of a Space With Implemented Human-Like Features

Room 348
Category: Robotics

This anthropomorphization method uses human-like features like eyes and arms that are attached to the target. The anthropomorphized space can use gestures, pointing, emotion, and expression to initiate interaction. The method is easy to use, allows various representations, and extends the application of HCI studies.

With this method, it is possible to use metaphors for pointing to the location of an artifact. For example, when the printer is jammed, it can say: "I have a stomach ache". These metaphors would be impossible using an independent agent. This method also indirectly avoids the uncanny valley (strong repulsion between an industrial robot and a human) proposed by Mori. By using human-like features, we can verify separately what parts or actions of parts are positive and empathic for users and what parts or actions are negative. We can research anthropomorphization that is not uncanny by changing the humanoids' parts, without constraining the humanoid.

Hirotaka Osawa
Keio University

Kentaro Ishii
Japan Science and Technology Agency, ERATO

Toshihiro Osumi
Ren Ohmura
Michita Imai
Keio University

Baby-Type Robot: YOTARO

Rooms 346-347
Category: Experimental Sensory Experiences

YOTARO is a new type of interactive robot that combines expressions, movements, and physiological characteristics. It displays a variety of emotions and reactions, such as smiling, crying, sleeping, anger, and sneezing. The robot is controlled by an emotion-control system based on inputs, such as touching, soft and warm facial expressions, or shaking a rattle. Reactions are displayed as voices, facial expressions, hand and leg movements, sniveling, and skin-color changes.

Hiroki Kunimura
Wagner Tetsuya Matsuzaki
Masatada Muramoto
Chiyoko Ono
Madoka Hirai
Toshiaki Uchiyama
Kazuhito Shiratori
Junichi Hoshino
University of Tsukuba

Back to the Mouth

Rooms 346-347
Category: Experimental Sensory Experiences

This interactive system uses mouth odor and breathing action to trigger events. The user aims a blowgun-type device (hose, IR camera, an airflow sensor, and an odor sensor) to direct exhaled air toward a group of monsters that are affected by specific mouth odors. The user's breath odor is weakened or strengthened by drinking green tea or eating snacks.

In tests, many users have been amazed by the system. To defeat the monsters, some children have even learned to eat foods they dislike.

Takuya Iwamoto
Yusuke Sasayama
Kanazawa Institute of Technology

Mitsuo Motoki
Takayuki Kosaka
Kanazawa Technical

Bloxels: Glowing Blocks as Volumetric Pixels

Room 342
Category: Alternative Displays

A Bloxel is a translucent cubical block that glows in full color and communicates with neighboring bloxels. Each bloxel obtains its color data from a lower bloxel through infrared high-speed flickers and transfers a series of color data to an upper bloxel. In this way, bloxels serve as volumetric pixels that can display meaningful content as a whole. This module-based approach introduces a ground-breaking display technology. Moreover, as an augmented version of children's block play, bloxels will have a significant impact in physical computing and tangible interfaces.

Bloxels features three technical innovations:

1. A bloxel consists of two full-color LEDs for display, nine infrared LEDs for data transmission, a photo detector, a battery, and a micro-controller. The infrared LEDs are placed so they can achieve data transmission even when neighboring bloxels are not completely in contact with each other.

2. The system's data-processing method enables a simple system configuration. Because each bloxel communicates only with neighboring bloxels, 3D sensors or cameras are not necessary to track their positions.

3. A horizontal tabletop display system sends signals to the base of the stacked bloxels. The specialized DLP projector can emit high-speed, flickering pixel-by-pixel signals to the base, which allows users to realize several kinds of applications.

Bloxels can be useful in educational and entertainment systems, as well as display technologies and human interfaces.

Jinha Lee
The University of Tokyo

Yasuaki Kakehi
Keio University

Takeshi Naemura
The University of Tokyo

CityMurmur

Room 340
Category: Visualization

The traditional topological forms of mapping and representing the city are becoming inadequate as new forces shape urban development. To meet these new needs, cartographers are building new maps based on co-extensive visions that define and visualize the city's physical and social networks. These new mapping activities not only describe quantitative data, but also create new narrative forms.

The CityMurmur project addresses this issue by sketching an image that shows the influence of media on the city. It describes information flows by linking them to physical geography. In addition to the noticeable city and the historic city, CityMurmur reveals a number of emerging cities shaped by invisible but real drivers. It depicts a city as seen by local media, full of places and events distributed over the territory; a city of international media, reduced to the crucial point of political and cultural activities; the cultural city and the sports city; and all the cities created by intersections of media traces. Each city is outlined by faint signals that are real and important when they are considered as a whole.

Online newspapers, information agencies, blogs, personal web sites, and thematic media are monitored to highlight the pattern of perceptions in the urban space. This monitoring activity leads to creation of an atlas that produces different maps based on news sources, themes, and time. The atlas allows users to understand the urban space as a function of the city's media attention, biases, and social and cultural diversity.

Giorgio Caviglia
Marco Quaggiotto
Donato Ricci
Gaia Scagnetti
Michele Graffieti
Samuel Granados Lopez
Daniele Guido
Writing Academic English

CRISTAL: Control of Remotely Interfaced Systems Using Touch-Based Actions in Living Spaces

Rooms 338-339
Category: Input Interfaces

The number of digital appliances and media in domestic environments has risen drastically over the last decade. For example, living rooms now include digital TVs, DVD and Blu-ray players, digital picture frames, digital gaming systems, electronically moveable window blinds, and robotic vacuum cleaners. As these devices become more compatible with computer networking (for example, internet-ready TVs, streaming digital picture frames, and WiFi gaming systems, such as Nintendo's Wii and Sony's Playstation), and as wired and wireless network infrastructures become more prevalent in our homes, new opportunities arise for developing centralized control of these myriad devices and media into so called "universal remote controls". But many remote controls lack intuitive interfaces for mapping control functions to several devices, which leads to trial-and-error button pressing or experimentation with graphical user interface controls, instead of efficient interaction.

CRISTAL was developed to address this issue. It simplifies control of digital devices in and around the living room. The system provides a novel experience for controlling devices in a home environment by enabling users to directly interact with those devices on a live video image of the living room using multi-touch gestures on a digital tabletop.

Thomas Seifried
Christian Rendl
Florian Perteneder
Jakob Leitner
Michael Haller
Upper Austria University of Applied Sciences

Daisuke Sakamoto
JST ERATO Igarashi Design UI Project

Jun Kato
The University of Tokyo

Masahiko Inami
Keio University

Stacey Scott
University of Waterloo

Crystal Zoetrope

Room 342
Category: Alternative Displays

The crystal zoetrope is a new visual medium that could make everyday objects more interactive and interesting. Traditional three-dimensional zoetropes generally consist of hundreds of physical-animation objects, each located at a particular position in space by means of physical supports. Consequently, most three-dimensional zoetropes have a complicated structure and tend to be bulky. This project employs the sub-surface laser engraving (SSLE) technique to directly engrave three-dimensional models into a crystal block and create a crystal zoetrope with a DC motor and 20 5W LEDs. Animation objects are embedded in a single crystal block that requires no supports, so even subtle 3D particle animations such as fog or stars can be produced without difficulty.

A miniaturized crystal zoetrope is embedded in a table with an acrylic board that assures a compelling image, thanks to the high luminance contrast between the inside and outside of the container. Viewers can intuitively control and enjoy the speed, direction, or brightness of the animation just by rubbing the surface of the table.

This new 3D-animation technique is equally applicable to other everyday objects or environments. Lighting, walls, floors, advertising, and toys could all be embedded with these zoetropes.

Woohun Lee
JinHa Seong
Korea Advanced Institute of Science and Technology

Digital Decal

Rooms 338-339
Category: Input Interfaces

This innovative interaction technique handles graphic images in a pen-based computing environment. With Digital Decal, ordinary paper replaces special decal films. Users simply place a sheet of paper printed with graphic images on the tablet screen and rub on it with a pen. The rubbed images are transferred directly to the screen in the same manner as a traditional decal.

Digital Decal is based on an elaborate mechanism for real-time cycles of scanning an image and painting on a tablet monitor. The prototype uses an optical-fiber bundle to transfer the image under the tip of the DecalPen to a color sensor. The sensor determines the average RGB values of the image and sends them to the computer. The position of the pen is monitored at intervals of 10 milliseconds. The computer then paints pixels in the detected color where the DecalPen is pointing.

DecalPen can be used as a medium of artistic expression as well as an intuitive user interface. Users can copy interesting graphic images to a screen intuitively by simple rubbing, and they can edit the images to express their feelings or ideas.

Woohun Lee
Geehyuk Lee
Jiseok Song
Boram Lee
Hyunjung Kim
Korea Advanced Institute of Science and Technology

Embodied and Mediated Learning in SMALLab: A Student-Centered Mixed-Reality Environment

Rooms 338-339
Category: Input Interfaces

SMALLab is a mixed-reality learning environment that has reached over 35,000 students and educators in classrooms and museums across the country. It brings together emerging practices in human-computer interaction with contemporary research in the learning sciences. With 3D object tracking and real-time audio/visual and robotic feedback, the body serves as an expressive interface for learning experiences that are embodied, multimodal, and collaborative.

In this highly participatory demo, attendees experience a number of different learning scenarios drawn from physics, chemistry, earth science, english language learning, social wellness, and special education. These scenarios have been realized through an iterative co-design process that includes media researchers, classroom teachers, and curriculum specialists. The demo serves as a context for discussion of our research on mixed-reality technologies for learning. Recent studies demonstrate significant student learning gains and increases in teacher performance when SMALLab is used in a conventional classroom.

David Birchfield
Ellen Campana
Sarah Hatton
Mina Johnson-Glenberg
Aisling Kelliher
Christopher Martinez
Loren Olson
Philippos Savvides
Lisa Tolentino
Kelly Phillips
Sibel Uysal
Arizona State University

Funbrella: Making Rain Fun

Rooms 346-347
Category: Experimental Sensory Experiences

Funbrella allows users to experience rain in distant places and different times. Generally, people experience rain in sounds, sights, and sometimes smells; this system exploits the vibration perceived through an umbrella's handle to let people feel the rain. The extremely simple vibration structure is based on a speaker and a microphone, which record and provide vibrations.

The demo presents two applications:

1. Crazy Rain. In this scenario, Funbrella stores many types of rain in advance, including not only normal rain with three levels of strength, but also odd rains such as water from a bucket and "rains" recorded with snake toys, marbles, BBs, and spaghetti. In this application, participants experience impossible or unlikely rains.

2. Tele-Rain, in which two participants hold Funbrellas apart from each other, and one's rain is transmitted to the other in real time.

Ai Yoshida
Yuichi Itoh
Kazuyuki Fujita
Maya Ozaki
Tetsuya Kikukawa
Ryo Fukazawa
Yoshifumi Kitamura
Fumio Kishino
Osaka University

gCubik: Real-Time Integral Image Rendering for a Cubic 3D Display

Room 342
Category: Alternative Displays

gCubik provides a shared, interactive 3D visual experience in graspable cubic display. Users view color, stereo, and full-motion parallax 3D scenes, viewable from any direction, without special glasses. The autostereoscopic effect is delivered by newly designed wide-field-of-view integral photography lens arrays on each face of the display. In this demonstration, real-time rendering of the IP images allows users to interactively manipulate the 3D objects in the scene with simple finger gestures.

Roberto Lopez-Gulliver
Shunsuke Yoshida
Sumio Yano
Naomi Inoue
Mao Makino
National Institute of Information
and Communications Technology

Graphical Instruction for a Garment-Folding Robot

Room 348
Category: Robotics

An interactive graphical editing interface that tells intelligent robots how to complete tasks in dynamic environments. Although natural language has often been considered the ideal communication method for robots, it lacks efficiency in specifying tasks that require visual (geometric) information. Likewise, learning from demonstration can be useful for robots, but such methods are often too complex to be generalized for any system.

This project demonstrates a specialized graphical editor that allows the user to abstract and specify instructions for a robot by performing simple editing operations (clicking and dragging) through the interface. For example, a robot can be taught to fold garments. The demonstration shows that this approach is particularly effective for allowing end-users to customize a robot's behavior according to their particular needs, which cannot be conveyed by a single, pre-programmed solution for a general audience.

Yuta Sugiura
Keio University/JST, ERATO

Takeo Igarashi
The University of Tokyo/JST, ERATO

Hiroki Takahashi
Waseda University/JST, ERATO

Tabare Akim Gowon
Harvard University/JST, ERATO

Charith Lasantha Fernando
Maki Sugimoto
Masahiko Inami
Keio University/JST, ERATO

HeadSPIN: A One-to-Many 3D Video Teleconferencing System

Room 341
Category: Alternative Displays

Our 3D teleconferencing system enables true eye contact between a three-dimensionally transmitted subject and multiple participants in an audience. The subject's face is scanned in 3D at 30 feet per second and transmitted in real time to a horizontal-parallax-only 3D display. The display uses a rapidly spinning mirror surface to reproject a life-size 3D view of the subject's face. This dynamic 3D face is visible over a wide 180-degree field of view by multiple audience members simultaneously without any 3D glasses. The subject can then turn to face and talk to any audience member.

To achieve two-way eye contact, the system captures 2D video from a cross-polarized camera reflected to the position of the displayed subject's eyes. Then it displays this 2D video feed on a large screen in front of the person being scanned, replicating the viewpoint of the person's virtual self. This image is used to interactively track the position of the eyes of all of the observers in the scene, allowing the 3D display to create the correct vertical perspective for each of the viewers around the device. The result is a one-to-many 3D teleconferencing system that can reproduce the effects of gaze, attention, and eye contact often missed in traditional teleconferencing systems.

Andrew Jones
Magnus Lang
Graham Fyffe
Xueming Yu
Jay Busch
University of Southern California,
Institute for Creative Technologies

Ian McDowall
Fakespace Labs

Mark Bolas
University of Southern California,
Institute for Creative Technologies
& School of Cinematic Arts

Paul Debevec
University of Southern California,
Institute for Creative Technologies

ILoveSketch

Rooms 338-339
Category: Input Interfaces

ILoveSketch is a 3D curve-sketching system that captures some of the affordances of pen and paper for professional designers, allowing them to directly alter conceptual 3D curve models. The system coherently integrates existing techniques of sketch-based interaction with a number of new and enhanced features. Novel contributions of the system include automatic view rotation to improve curve sketchability, an axis widget for sketch surface selection, and implicitly inferred changes between sketching techniques. It also improves on a number of existing ideas such as a virtual sketchbook, simplified 2D and 3D view navigation, multi-stroke NURBS curve creation, and a cohesive gesture vocabulary.

Seok-Hyung Bae
Ravin Balakrishnan
Karan Singh
University of Toronto

Interactive Cooking Simulator

Rooms 346-347
Category: Experimental Sensory Experiences

Interactive Cooking Simulator uses visual information from the physical and chemical changes that occur during the cooking process to help users understand theoretical operations. In real cooking, we cannot sense the effects of cooking in real time. For example, temperatures inside the food ingredients cannot be monitored even with a thermography camera. But the Interactive Cooking Simulator can simulate states inside and outside the ingredients, including heat and moisture

The system consists of three major elements:

1. 3D shape model and dynamic simulation, which simulates the dynamics of food ingredients as they are turned in the frying pan.

2. Heat, moisture, and chemical-reaction simulation expressed using the finite-element method.

3. Haptic interaction.

With this system, users observe what happens during cooking, apply this understanding to improve cooking skills, and learn that anyone can enjoy cooking.

Fumihiro Kato
Yusuke Hanaoka
Tu Nguyen Ngoc
Danial Keoki
The University of Electro-Communications

Hironori Mitake
Takafumi Aoki
Tokyo Institute of Technology

Shoichi Hasegawa
The University of Electro-Communications

Jhai Sustainable Telemedicine Solution

Room 340
Category: Visualization

Jhai supports sustainable telemedicine in remote villages in India and Laos. It works off-grid, at low bandwidth, at low cost. It is an integrated solution that includes business templates, hardware, software, and training. The organizers have co-created 70 businesses in Laos, and they have received requests from 60 countries.

Lee Thorn
Jhai Foundation

Rajeev Kumar
Neurosynaptic Communications Pvt Ltd

Mark Allen
Jhai Foundation

Pen de Touch

Rooms 350-351
Categories: Haptics and Virtual Reality

Pen de Touch is a pen-shaped handheld device for haptic interactions with virtual environments. Unlike conventional haptic displays, which provide vibrations that do not effectively represent actual sensations, this device provides kinesthetic sensations to the user's fingers, and the user's movements are not restricted by mechanical linkages.

Development of an ungrounded haptic display that can provide continual kinesthetic sensations has not been reported previously. Pen de Touch is based on the novel hypothesis that the kinesthetic sensations felt at the user's fingers are sufficient to provide touch sensations of touch, which allows the device to be relatively small. When a user holds the device, the base is fixed to the index finger, which is inserted in a ring, and the index finger, middle finger, and thumb grasp the grip. When the tip of the device touches a virtual object, the grip is pulled back toward the base by three motors installed in the base, generating kinesthetic sensations on the skin and muscles of the fingers.

The simplicity and representational ability of Pen de Touch make it suitable for various kinds of conventional virtual-reality systems without haptic augmentation. It will soon be applied to haptically augmented interactions for multiple users in public domains such as museums.

Sho Kamuro
Kouta Minamizawa
Naoki Kawakami
The University of Tokyo

Susumu Tachi
Keio University

PhotoelasticTouch: Transparent Rubbery Interface Using an LCD and Photoelasticity

Room 342
Category: Alternative Displays

PhotoelasticTouch is a tabletop system designed to facilitate touch-based interaction with real objects made from transparent elastic material. The elastic material provides a realistic haptic interface, which when combined with the visual content displayed on the LCD tabletop, enables a coupling of the physical world and digital content. The system utilizes the photoelastic properties of transparent rubber to detect when a user pushes, pulls, or pinches the object, while the LCD provides appropriate visual feedback in accordance with the stress applied to the rubber.

The technical contribution of this work is the use of the transparent photoelastic material to detect stress applied to tangible objects on the LCD. Previous force-sensitive rubbery interfaces require special markers to be embedded inside the elastic material, which impose restrictions on the shape of the object. PhotoelasticTouch does not require any markers and does not place any restrictions on the shape of the object. Therefore, the proposed system enables intuitive haptic interfaces for various interactive applications like video games and digital signage using a free-form tangible interface.

PhotoelasticTouch is composed of an LCD and an overhead camera, both fitted with a quarter-wavelength filter. When a user applies pressure to the elastic material on the LCD by pinching or pushing, the deformed area transforms incoming light into elliptically polarized light that is captured as a high-intensity region by the camera. The orientation and power of the force can be calculated by monitoring the position and size of the high-intensity region.

We have developed an entertainment application using a transparent elastic face. The user can interact with the 2.5-dimensional face model by (for example) pinching the cheek or squeezing the nose. In response to these inputs, the system displays changes in facial expression.

Toshiki Sato
Haruko Mamiya
Taro Tokui
Hideki Koike
The University of Electro-Communications

Kentaro Fukuchi
Japan Science and Technology Agency

Pull-Navi

Rooms 346-347
Category: Experimental Sensory Experiences

This new interface for walking navigation pulls users' ears. The system is composed of two clips attached to the earlobes, six DC motors to pull each ear in three directions, and a helmet that holds the motors. In experimental sessions, users were inevitably tempted to move right or left when their ears were pulled to the right or left. When both ears were pulled forward or backward, the users were tempted to walk faster or slower. Interestingly, when both ears were pulled up or down, the users were tempted to walk up or down stairs if stairs were available.

Pull-Navi has three advantages compared to previous walking-navigation systems:

1. It is more natural. The ear-pulling interface is quite small force, and users moved in the guided direction without any pain or enforced feelings. This is presumably because our ears were pulled for navigation when we were young.

2. Numerous degrees of freedom. While most previous tactile navigation systems achieved at most two-DOF navigation, our new interface can direct full three-DOF movements (right, left, front, back, up, and down). This feature is quite useful for indoor situations, such as navigation in a complex department store moving through a subway station.

3. Compact architecture. The system uses small, lightweight motors to pull the ears, and further miniaturization is easy. A prototype mounted on eyeglasses has already been developed.

Many tactile navigation systems have been developed, but, except for a few devices used by visually handicapped people, none of them is practical. Pull-Navi is designed to be the first successful tactile walking-guidance system.

Yuichiro Kojima
Yuki Hashimoto
Shogo Fukushima
Hiroyuki Kajimoto
The University of Electro-Communications

SCOPE

Room 337
Category: Input Interfaces

SCOPE gives traditional games a second chance, via augmented reality. Thanks to SCOPE, players have access to various functions (power, life, magic, experience, attack, etc.) and virtual accessories (weapons, tools, protection) that are commonly found in video games. Using tangible toys (figurines, robots) and equipped with head-mounted displays, players operate in a real place with accessories from their own toy boxes. However, thanks to augmented reality, they can also work with virtual elements that they do not tangibly possess. The objective of this project is to create an imaginative and engrossing environment, while creating value for old discarded toys.

Frantz Lasorne

Scratch Input

Rooms 338-339
Category: Input Interfaces

When this simple sensor is incorporated into mobile devices, it allows any suitable surface to be appropriated for gestural finger input, opening many new interaction possibilities.

Scratch Input is the first acoustic-based input system that seeks to appropriate common surfaces for input. The technique is highly mobile, appropriating surfaces wherever the user happens to go and demonstrating that not all input devices have to be special purpose, but instead can be co-opted from the environment.

The sensor is inexpensive and may provide a feasible path to truly ubiquitous finger input on mobile devices or home and office walls.

Chris Harrison
Scott Hudson
Julia Schwarz
Carnegie Mellon University

Sound Scope Headphones

Room 349
Category: Audio Experiences

Sound Scope Headphones let users control an audio mixer with natural movements. When listening to music, listeners sometimes want to hear particular parts more clearly or reduce the volume of other parts. This is possible with commercial audio mixers that perform multi-channel recording and mix-downs. But commercial audio mixers are too complicated for musical novices.

This device controls an audio mixer with three sensors: a digital compass, a tilt sensor, and a distance sensor. The sensors, mounted on the headphones, detect natural movements of the head or a hand placed behind an ear when the user is listening to music.

Previous headphones with sensors that detect the direction the user is facing or the location of the head can intensify musical presence and create a realistic impression, but they do not control the volumes and panpots of each part. Sound Scope Headphones allow a listener to scope a particular portion of music. For example, when listening to jazz, you might want to clearly hear the guitar or reduce the sound of the sax. By moving your head left or right, you can hear the music from a frontal position. By looking up or down, you can better hear the parts allocated to a more distant or near position. By simply putting your hand behind your ear, you can adjust the distance sensor and focus on a particular part you want to hear.

Masatoshi Hamanaka
SeungHee Lee
University of Tsukuba

Texmoca

Room 342
Category: Alternative Displays

Texmoca is a texture-pattern generation system that uses real smoke. It uses the properties of the convection phenomena to generate variable geometrical patterns.

Nichrome heaters arranged like a matrix generate smoke. A laser sheet shows a cross section of smoke, like a CT scan image. Updrafts of smoke generated by the heaters converge at the top of the device. Because many particles of smoke gather in at the top, more laser light is reflected there, and viewers can see a geometrical, linear image derived from shining troughs.

The position of the troughs can be changed by the thermal-energy balance of the heaters, which is controlled by software. This patterned-generation algorithm is similar to the Voronoi diagram in computational geometry (a unique characteristic compared to other patterned smoke generators). Though the system's geometrical trough pattern is programmable, the fluctuation of the smoke texture is concentrated where the convection energy becomes weak. So the system offers users both the enjoyment of recognizing the designed pattern and the pleasure of perceiving the fluctuating smoke texture.

This system could be applied to interior and display design. Using special-application software for pattern composition, designers could use the "smoke composer" to easily unite a unique pattern sequence and design their own "music of smoke".

This project is sponsored by CREST (JST).

Masato Sekine
Kyoko Kuroda
Tatsuma Segawa
Hiroya Tanaka
Keio University

The Sleighing Simulator 2.0

Room 346-347
Category: Experimental Sensory Experiences

Sensation of speed is one of the important factors in designing enjoyable entertainment systems such as motion rides. Motion platforms display a sense of acceleration, but visual information is essential for delivering an overall sense of speed. This prototype system uses LED-matrix arrays in a peripheral visual display that augments speed sensation. It consists of a sleigh-like input device, a conventional display in front of the user, and the peripheral display, which enhances users' sense of speed.

Yu Okano
Hiroyuki Kajimoto
Takuya Nojima
The University of Electro-Communications

The UnMousePad: The Future of Touch Sensing

Room 338-339
Category: Input Interfaces

The UnMousePad is a flexible and inexpensive multi-touch input sensor based on a novel principle: interpolating force-sensitive resistance (IFSR). IFSR devices can acquire high-quality, anti-aliased images of pressure over a surface at high frame rates. This new touch-sensing technology has a wide range of potential applications in many sectors of society, because it enables multi-touch pressure imaging at low cost in a wide variety of form factors.

This demo shows various form factors and applications of IFSR sensors, ranging from uses in portable electronic devices, electronic paper, and desktop computing environments to applications in musical instruments, gaming, and entertainment. The goal is to inspire thinking about what the world would be like if common everyday objects were augmented with the ability to capture the subtleties of human touch.

Ilya Rosenberg
Ken Perlin
Charles Hendee
Alexander Grau
Nadim Awad
Adrian Secord
Merve Keles
New York University

Christian Miller
University of Texas at Austin

Julien Beguin
Gotham Wave Games

Touchable Holography

Room 350-351
Categories: Haptics and Virtual Reality

Recently, mid-air displays are attracting a lot of attention in the fields of digital signage and home TV, and many types of holographic displays have been proposed and developed. Although we can "see" holographic images as if they are really floating in front of us, we cannot "touch" them, because they are nothing but light.

This project adds tactile feedback to the hovering image in 3D free space. Tactile sensation requires contact with objects, but including a stimulator in the work space dilutes the appearance of holographic images. The Airborne Ultrasound Tactile Display solves this problem by producing tactile sensation on a user's hand without any direct contact and without diluting the quality of the holographic projection.

Takayuki Hoshi
Masafumi Takahashi
Kei Nakatsuma
Hiroyuki Shinoda
The University of Tokyo

Twinkle: Interface for Using Handheld Projectors to Interact with Physical Surfaces

Room 349
Category: Audio Experiences

Twinkle is a novel interface for interaction with an arbitrary physical surface using handheld projectors. It determines of the features of the physical environment and displays images and sounds that are generated according to these features.

The system enables various applications. One example: an interface for music composition and musical performance. The pitch of a sound is determined by the size of the object illuminated by the projector. The color of the object and the user's motion determine the tone and the volume, respectively, of the sound. Users can create melody and rhythm by laying out objects on a surface. This interface enables users to compose and play music based on intuition, without any knowledge of music theory.

The system is composed of a handheld projector and a camera fixed to the projector. It is quite simple and does not need other motion-tracking systems. The camera has two roles: to estimate the user's motion and to recognize the features of the physical surface, which allows it to calculate the projector's position relative to the surface and the distance between the projector and the surface. An optical-flow technique enables estimation of the direction and velocity of the user's hand motion on a two-dimensional surface. Various existing image-processing methods can be used to recognize the features of the physical surface.

Takumi Yoshida
The University of Tokyo

Hideaki Nii
Keio University

Naoki Kawakami
The University of Tokyo

Susumu Tachi
Keio University

Versatile Training Field: the Wellness Entertainment System Using Trampoline Interface

Rooms 338-339
Category: Input Interfaces

The Versatile Training Field (VTF) is based on the wellness concept: "Change a lifestyle habit and live life to the fullest". The system is composed of an input device and a PC, a short-focus projector, and two large-scale screens. The input device consists of a mini trampoline and a position-sensitive-detector beneath the center of the trampoline, which measures change on the trampoline bed. When the system detects the type and state of the exercise and calculates the viewpoint of the user in VR space, the short-focus projector displays the view on large screens in front of and below the user. Users see themselves exercising in virtual reality.

Hiroshi Mori
Kazuhito Shiratori
Tomoyuki Fujieda
Jun'ichi Hoshino
University of Tsukuba

Virtualization Gate

Rooms 350-351
Categories: Haptics and Virtual Reality

This project associates multi-camera 3D modeling, physical simulation, and tracked head-mounted displays for a strong full-body immersion and presence in virtual worlds. Three-dimensional modeling is based on the EPHV algorithm, which provides an exact geometrical surface according to input data. The geometry enables computation of full-body collisions with virtual objects animated by a physical simulation. Since the algorithm is exact, it allows for consistent texture mapping and yields qualitative models. This full-body representation can thus be rendered on a distant site for telepresence. It can also be rendered into a HMD.

Users see their 3D models superposed with their real bodies occluded by the HMD. Since the displays are held in front of the eyes, the image projection is not impaired by elements of the real world. With a fixed screen, even in an immersive Cave-like configuration, users would not be able to see a virtual object in their palms, because their hands would occlude the light emitted by the displays. With our approach, users see the 3D model of their hands and the virtual object correctly positioned in their palms. It enables a first-person viewing and occlusion-free, co-located interactions. The 3D modeling system makes no assumption about the scene observed. One or several persons can stand in the acquisition space. The number of persons only affects the model quality and the computation time.

We presented a similar concept, the Grimage platform, in SIGGRAPH 2007 Emerging Technologies. But the acquisition space was limited to a small volume for modeling the user's hands, and images were rendered on a fixed screen positioned behind the acquisition space, providing little immersion and only third-person interactions.

Benjamin Petit
Thomas Dupeux
INRIA

Jean-Denis Lesage
Grenoble Universités

Hervé Mathieu
INRIA

Edmond Boyer
Grenoble Universités

Bruno Raffin
INRIA

François Faure
Grenoble Universités

Clément Ménier
Florian Geffray
4D View Solutions

Laurence Boissieux
Michaël Adam
Florent Falipou
INRIA

Richard Broadbridge
4D View Solutions

POSTER VIEWING

Monday, 3 August	9 am - 6 pm
Tuesday, 4 August	9 am - 6 pm
Wednesday, 5 August	9 am - 6 pm
Thursday, 6 August	9 am - 6 pm
Friday, 7 August	9 am - noon

POSTER SESSIONS

An opportunity for authors to meet with attendees.

Tuesday, 4 August	12:15 - 1:15 pm
Thursday, 6 August	12:15 - 1:15 pm

LOCATION

Auditorium Lobby

POSTERS

Posters offer a light-weight, low-tech method for presenting student, in-progress, and late-break-ing work. They are displayed throughout the conference week for attendees to browse at their leisure. Poster topics range from applications of computer graphics to novel interactive techniques to in-depth research on specific topics. Posters also present work submitted to the ACM Student Research Competition.

POSTER CATEGORIES

ACM STUDENT RESEARCH COMPETITION SEMI-FINALIST
1A – 13A

ANIMATION
15A – 21A

ART
22A – 24A

HARDWARE
25A – 27A

HUMAN COMPUTER INTERACTION
28A – 30A

IMAGE & VIDEO PROCESSING
31A – 36B

INTERACTION
37A – 45A

MODELING
46A – 52A

MUSIC
53A – 54A

PHYSICS SIMULATION
55A – 57A

RENDERING
58A– 65A

SCIENTIFIC VISUALIZATION
66A – 67B

VIRTUAL REALITY/AUGMENTED REALITY
68A – 71B
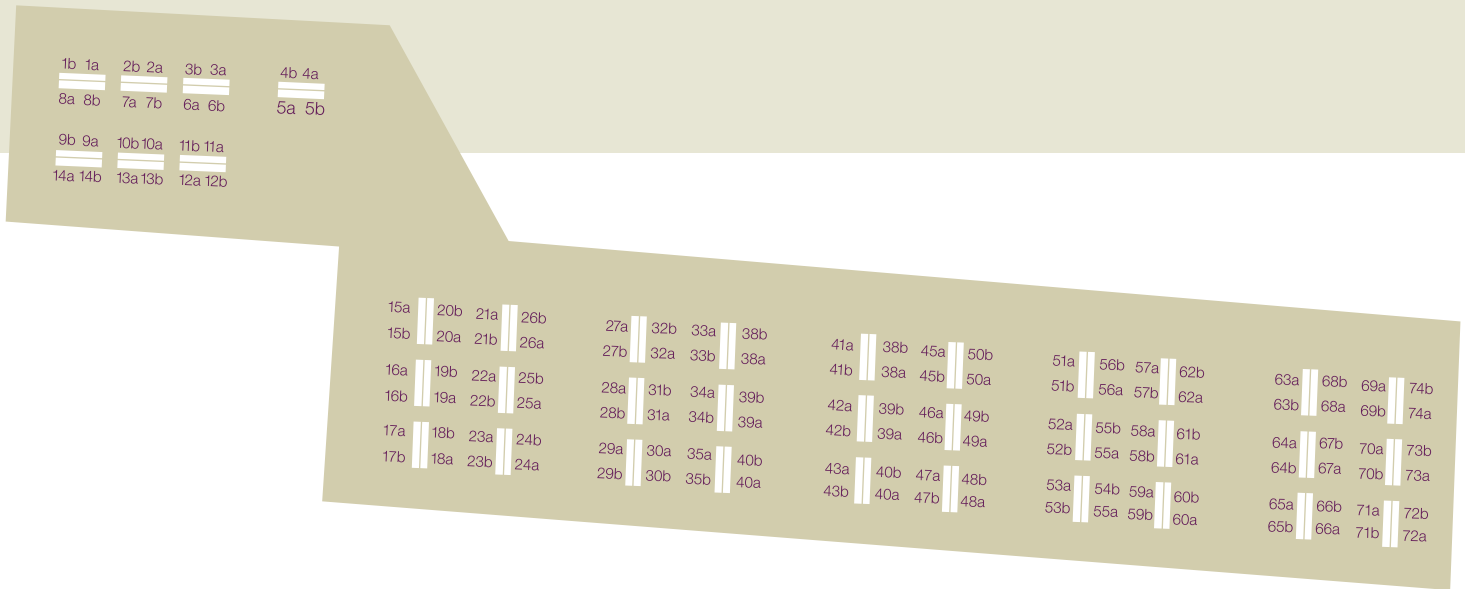
Animation

15A. Animating Character Images in 3D Space

Bing-Yu Chen, Shih-Chiang Dai
National Taiwan University

Shuen-Huei Guan
Digimax

Tomoyuki Nishita
The University of Tokyo

15B. Animating Lip-Sync Speech Faces by Dominated Animeme Models

Fu-Chung Huang
University of California, Berkeley

Yu-Mei Chen, Tse-Hsien Wang, Bing-Yu Chen
National Taiwan University

Shuen-Huei Guan
Digimax

16A. CG Animation for Piano Performance

Nozomi Kugimoto, Kota Takai, Rui Miyazono, Kosuke Omori, Takeshi Fujimura, Shinichi Furuya, Haruhiro Katayose, Hiroyoshi Miwa, Noriko Nagata
Kwansei Gakuin University

16B. Characteristic Gait-Animation Synthesis From Single-View Silhouette

Shinsuke Nakamura, Masashi Shiraishi Shigeo Morishima
Waseda University

Mayu Okumura Yasushi Makihara Yasushi Yagi
Osaka University

17A. Extraction of Characteristic Postures in a Dance by Statistical Analysis of a Database of Motion Data

Takeshi Miura , Kazutaka Mitobe
Akita University

Takaaki Kaiga
Digital Art Factory, Warabi-za Co., Ltd.

Takashi Yukawa
North Asia University

Toshiyuki Taniguchi Hideo Tamamoto
Akita University

17B. Directable Anime-Like Shadow Based on Water-Mapping Filter

Yohei Shimotori Shiori Sugimoto Shigeo Morishima
Waseda University

18A. Expressive Facial Subspace Construction From Key Face Selection

Ryo Takamizawa Takanori Suzuki Hiroyuki Kubo Akinobu Maejima Shigeo Morishima
Waseda University

18B. Model-Based Synthesis of Visual Speech Movements From 3D Video

James Edge Adrian Hilton Philip Jackson
The University of Surrey

19A. Muscle-Based Facial Animation Considering Fat-Layer Structure Captured by MRI

Hiroto Yarimizu Yasushi Ishibashi Hiroyuki Kubo Akinobu Maejima Shigeo Morishima
Waseda University

19B. Pliant Motion: Integration of Virtual Trajectory Control Into LCP Based Physics Engines

Takashi Tokizaki Shoichi Hasegawa
The University of Electro-Communications

20A. Polygonal Functional Hybrids for Computer Animation and Games

Denis Kravtsov Oleg Fryazinov Valery Adzhiev Alexander Pasko Peter Comninos
NCCA, Bournemouth University

20B. Retrieval of Motion-Capture Data Based on Short-Term Feature Extraction

Jianfeng Xu Haruhisa Kato Akio Yoneyama
KDDI R&D Laboratories Inc.

21A. Story Engine for Interactive Characters

Katsutoki Hamana Hiroshi Mori Atsushi Nakano Junichi Hoshino
University of Tsukuba

Art

22A. GreenLite Dartmouth: Unplug or the Polar Bear Gets It

Evan Tice, Tim Tregubov, Kate Schnippering, Yoon-Ki Park, Ray diCiaccio, Max Friedman, Jennifer Huang, Justin Slick, Giulia Siccardo, Jessica Glago, Stephanie Trudeau, Daniel Gobaud, Daniel Garcia, Craig Slagel, Lorie Loeb
Dartmouth College

22B. H-LINK 3D: Hyper-Learning Interface and Navigation Kit in 3D Virtual Worlds

Saba Kawas
North Carolina State University

23A. Himawari: A Plant Robot

Akira Nakayasu Kiyoshi Tomimatsu
Kyushu University

23B. IArtist\: A Self-Learning Computer Artist

Benjamin Raynal
Institut d'electronique et d'informatique Gaspard-Monge
Université Paris Est Marne-la-Vallée

Xavier Gouchet
French Algorists

Vincent Nozick Venceslas Biri
Institut d'electronique et d'informatique Gaspard-Monge
Université Paris Est Marne-la-Vallée

24A. Thermotaxis

Takuji Narumi
The University of Tokyo

Akagawa Tomohiro
Tokyo University of the Arts

Young Ah Seong Michitaka Hirose
The University of Tokyo

Hardware

25A. Adaptive Coded Aperture Projection

Max Grosse
Bauhaus-Universität Weimar

Gordon Wetzstein
University of British Columbia

Anselm Grundhoefer Oliver Bimber
Bauhaus-Universität Weimar

25B. Mobile Tagging & Mixed Realities

Martha Gabriel
Universidade de São Paulo /Centro Universitário Belas Artes de São Paulo

26A. Rendering of Vector Objects on Curved Surface Using Pivot Triangle Primitives

Norihiro Nakamura Yoshiyuki Kokojima Yasunobu Yamauchi
Toshiba Corporation Research & Development Center

26B. Three-Dimensional Auto-Stereoscopic Animated Image With a Long Viewing Distance Using High-Precision Image Correction

Takehito Teraguchi Hiromasa Yamashita Ken Masamune Takeyoshi Dohi Hongen Liao
The University of Tokyo

27A. The UnMousePad – The Future of Touch Sensing

Ilya Rosenberg Ken Perlin Charles Hendee Alexander Grau Nadim Awad Adrian Secord Merve Keles
New York University

Christian Miller
University of Texas at Austin

Julien Beguin
Gotham Wave Games, Inc.

Human Computer Interaction

28A. A Saccade-Contingent Display for Suppressing Color Breakup

Wei-Chung Cheng
National Chiao Tung University

Jih-Fon Huang
Industrial Technology Research Institute

28B. Mobile-Screen Transition Animations

Jussi Huhtala
Ari-Heikki Sarjanoja
Nokia Research Center

Jani Mäntyjärvi
Technical Research Centre of Finland

Minna Isomursu
Jonna Häkkilä
Nokia Research Center

29A. rAir Flow Menus: Toward Reliable 3D Gestural Input For Radial Marking Menus

Danny Rado
University of Minnesota

29B. Thermo-Pict

Kensuke Takada
Kyoko Higurashi
Tatsuhiko Suzuki
Misako Ota
Tetsuaki Baba
Kumiko Kushiyama
Tokyo Metropolitan University

30A. Using Eye Tracking to Analyze Stereoscopic Filmmaking

Celambarasan Ramasamy
Donald House
Andrew Duchowski
Brian Daugherty
Clemson University

Image & Video Processing

31A. 3D-Model-Based Face Replacement in Video

Yi-Ting Cheng
Virginia Tzeng
Yu Liang
National Taiwan University

Chuan-Chang Wang
Next Media Animation Limited

Bing-Yu Chen
Yung-Yu Chuang
Ming Ouhyoung
National Taiwan University

31B. A Comparison of Three Methods of Face Recognition for Home Photos

Che-Hua Yeh
Pei-Ruu Shih
Kuan-Ting Liu
Yin-Tzu Lin
Huang-Ming Chang
Ouhyoung Ming
National Taiwan University

32A. Augmenting a Camera With a Thermometer

Joern Loviscach
Fachhochschule Bielefeld

32B. Automatic Colorization of Grayscale Images Using Multiple Images on the Web

Yuji Morimoto
Yuichi Taguchi
Takeshi Naemura
The University of Tokyo

33A. Data-Driven Diffuse-Specular Separation of Spherical Gradient Illumination

Tongbo Chen
Abhijeet Ghosh
Paul Debevec
University of Southern California, Institute for Creative Technologies

33B. Deblurring With Rank-Structured Inverse Approximations

Mary Hudachek-Buswell
Catherine Matos
Clayton State University

Michael Stewart
Georgia State University

34A. Image-Based DressUp System

Nari Kim
Jong-Chul Yoon
In-Kwon Lee
Yonsei University

34B. Image Panoramic System for Mobile Devices

Yingen Xiong
Xianglin Wang
Marius Tico
Chia-Kai Liang
Kari Pulli
Nokia Research Center

35A. Proportional Constraint for Seam Carving

Kei Utsugi
Takuma Shibahara
Takafumi Koike
Hitachi Ltd.

Takeshi Naemura
University of Tokyo

35B. Ray Tracing to get 3D Fixations on VOIs From Portable Eye Tracker Videos

Susan Munn
Jeff Pelz
Rochester Institute of Technology

36A. Uniform Looking Vector Plot With Streamline Fragmentation

Naoki Kawai
Dai Nippon Printing Co., Ltd.

36B. Video Segmentation With Motion Smoothness

Chung-Lin Wen
Yu-Ting Wong
Bing-Yu Chen
National Taiwan University

Youichi Sato
The University of Tokyo

Interaction

37A. A Random Cursor Matrix to Hide Graphical Passwords

Alice Boit
Universität Potsdam

Thomas Geimer
Joern Loviscach
Fachhochschule Bielefeld

37B. A Selective-Rendering Algorithm Based on Memory Schemas

Alexandros Zotos
Katerina Mania
Technical University of Crete

Nicholaos Mourkoussis
University of Sussex

38A. BiDi Screen: Depth and Lighting Aware Interaction and Display

Matthew Hirsch
Massachusetts Institute of Technology

Douglas Lanman
Brown University

Ramesh Raskar
Henry Holtzman
Massachusetts Institute of Technology

38B. Bloxels: Glowing Blocks as Volumetric Pixels

Jinha Lee
The University of Tokyo

Yasuaki Kakehi
Keio University

Takeshi Naemura
The University of Tokyo

39A. collecTable: A Natural Interface for Music Collections

Maria Paula Saba
Universidade Federal do Rio de Janeiro

Luiz Velho
Instituto Nacional de Matemática Pura e Aplicada

Andre Maximo
Universidade Federal do Rio de Janeiro

39B. The Design and Evaluation of a Lightweight Multi-View Interaction Metaphor for 3D Visualization in the CAVE

Andrew Bragdon
David Laidlaw
Brown University

40A. Factors Formatting Perceptual Impression in 3D Cyber Spaces: A Cross-Cultural Study of Korean and American Users

Mi-Sun Lee
Mi-Gi Han
Joo-Youn Park
Su-e Park
Seoul Women's University

40B. LipMouse – A Novel Multimodal Human-Computer Interaction Interface

Andrzej Czyzewski
Piotr Dalka
Bozena Kostek
Gdansk University of Technology

41A. MYGLOBE: Cognitive Map as Communication Media

Fumitaka Ozaki
Takuo Imbe
Shin Kiyasu
Yusuke Mizukami
Yuta Sugiura
Naohito Okude
Masahiko Inakage
Masahiko Inami
Maki Sugimoto
Adrian Cheok
Shuichi Ishibashi
Keio University

41B. PCCD: Parallel Continuous Collision Detection

DukSu Kim
Sung-eui Yoon
Korea Advanced Institute of Science and Technology

42A. Pen de Touch

Sho Kamuro
Kouta Minamizawa
Naoki Kawakami
The University of Tokyo

Susumu Tachi
Keio University

42B. Real Map-Based Interface for Browsing Content on Mobile Devices

Kazuhiko Yamamoto
Taketoshi Ushiama
Reiji Tsuruno
Toki Takeda
Kyushu University

43A. Sketch-Based Annotations in Google Earth

Christian Schulze
Laurens Nienhaus
Fachhochschule Bremen

Joern Loviscach
Fachhochschule Bielefeld

43B. Smart Pen – Ä New Multimodal Computer Control Tool for Dyslexia Therapy

Andrzej Czyzewski
Piotr Odya
Agnieszka Grabkowska
Michal Grabkowski
Bozena Kostek
Gdansk University of Technology

44A. TypeTile: A Keyboard System That Decorates Characters Depending on the Way of Typing

Yasuko Hayashi
Kensei Jo
The University of Tokyo

Yasuaki Kakehi
Keio University/Presto, Japan Science and Technology Agency

Takeshi Naemura
The University of Tokyo

44B. Utilizing Photos As Program Themes

Kai-Yin Cheng
Ko-Yuan Chou
Sheng-Jie Luo
Bing-Yu Chen
National Taiwan University

45A. Virtual Stroboscope for Robot Motion Design

Tatsuya Ishikawa
Shoichi Hasegawa
The University of Electro-Communications

Modeling

46A. 3D Reconstruction of Planetary Nebulae Using Hybrid Models

Stephan Wenger
Magnor Marcus
Technische Universität Braunschweig

Morisset Christophe
Steffen Wolfgang
Universidad Nacional Autónoma de México

46B. A Natural Smile Synthesis From an Artificial Smile

Hiroki Fujishiro
Takanori Suzuki
Shinya Nakano
Akinobu Maejima
Shigeo Morishima
Waseda University

47A. Accurate Skin-Deformation Model of Forearm Using MRI

Kentaro Yamanaka
Shinsuke Nakamura
Shota Kobayashi
Waseda University

Akane Yano
Sony Corporation

Masashi Shiraishi
Shigeo Morishima
Waseda University

47B. Aging Model of Human Face by Averaging Geometry and Filtering Texture in Database

Satoko Kasai
Shigeo Morishima
Waseda University

48A. City Generator: GIS Driven Genetic Evolution in Urban Simulation

Ming Tang
Tang & Yang Architects, LLC

48B. Defining and Computing Mixed-Dimensional Skeletons

Lu Liu
Tao Ju
Washington University in St. Louis

49A. Dynamic Simplicial Meshes

Sebastian Pena Serna
Fraunhofer-IGD

Andre Stork
Fraunhofer-IGD, Technische Universität Darmstadt

49B. AeroSynth: Aerial Scene Synthesis from Images

David Nilosek
Karli Walli
Carl Salvaggio
John Schott
Rochester Institute of Technology

50A. Inca Reconstruction Using Shape Grammar

Jingyuan Huang
Stephen Mann
Bill Cowan
University of Waterloo

50B. Lace Curtain: Modeling and Rendering of Woven Structures Using BRDF/BTDF -- Production of a Catalog of Curtain Animations --

Yoshiki Mizushima
Shuhei Nomura
Genki Umeizumi
Noriko Nagata
Kwansei Gakuin University

Yoshiyuki Sakaguchi
Digital Fashion Ltd.

51A. Numerical Simulation of Fluid Flow on Complex Geometries Using the Lattice-Boltzmann Method and CUDA-Enabled GPUs

Eugen Riegel
Thomas Indinger
Technische Universität München

51B. Representing 3D Mesh With Attributed Root Trees

Yu-Bin Yang
Jin-Jie Ling
Nanjing University

52A. User Studies on the Feasibility of Oblique Contouring

Ross Sowell
Lu Liu
Tao Ju
Cindy Grimm
Washington University in St. Louis

Christopher Abraham
Garima Gokhroo
Daniel Low
Washington University School of Medicine

Music

53A. A Visual Beat Detection System for Grid-Based Interactive Percussion and Synchronization

Trishul Mallikarjuna
Georgia Institute of Technology

53B. The Blues Machine

Marcelo Cicconet
Ilana Paterman
Paulo Cezar Carvalho
Luiz Velho
Instituto Nacional de Matemática
Pura e Aplicada

54A. Pandeiro Funk: Experiments on Rhythm-Based Interaction

Sergio Krakowski
Luiz Velho
Instituto Nacional de Matemática
Pura e Aplicada

Francois Pachet
Sony CSL/Paris

Physics Simulation

55A. A Data-Driven Visual Simulation of Fire Phenomena

Moohyun Cha
Korea Institute of Machinery and Materials

55B. Desired Deformation of Continuum Surfaces in 3DCG Animation by Time-Varying Stable Forms

Ippei Takauchi
Masatoshi Ochiai
Hiromu Saito
Ryo Asakura
Motofumi Hattori
Kanagawa Institute of Technology

56A. The Framework of Sound Rendering for Particle-Based Physics

Kazuhiko Yamamoto
Kyushu University

56B. Physics for Animation Artists

Alejandro Garcia
Alice A. Carter
J. Courtney Granner
David Chai
San Jose State University

57A. Real-Time Droplet Modeling Using Color-Space Environment Matting

Biswarup Choudhury
Pisith Hao
Sharat Chandran
Indian Institute of Technology, Bombay

Rendering

58A. Autonomous Lighting Agents in Global Illumination

Adrien Herubel
Venceslas Biri
Institut d'electronique et d'informatique
Gaspard-Monge

Farchad Bidgolirad
Duran Duboi

58B. Beyond Triangles: Gigavoxels Effects in Video Games

Cyril Crassin
INRIA Rhône-Alpes

Fabrice Neyret
LJK/INRIA/Grenoble Universities/CNRS

Sylvain Lefebvre
INRIA Sophia-Antipolis

Miguel Sainz
NVIDIA Corporation

Elmar Eisemann
MPI Informatik, Universität
des Saarlandes

59A. Cosine Lobe Based Relighting From Gradient Illumination Photographs

Graham Fyffe
University of Southern California,
Institute for Creative Technologies

59B. Curvature-Dependent Local Illumination Approximation for Translucent Materials

Hiroyuki Kubo
Mai Hariu
Shuhei Wemler
Shigeo Morishima
Waseda University

60A. Direct Illumination From Dynamic Area Lights

Greg Nichols
Chris Wyman
University of Iowa

60B. Gaussian Projection: A Novel PBR Algorithm for Real-Time Rendering

Sajid Farooq
Paul Siebert
University of Glasgow

61A. Interactive Lighting Manipulation Application on GPU

Borom Tunwattanapong
Paul Debevec
University of Southern California,
Institute for Creative Technologies

61B. Layered Solid Texture Synthesis From a Single 2D Exemplar

Kenshi Takayama
The University of Tokyo

Takeo Igarashi
The University of Tokyo, JST/ERATO

62A. Oriental Stylization With Strokes and Shades

Seungju Bang
Kyoungju Park
Chung-Ang University

62B. Painterly Caricature Maker

Yoon-Seok Choi
Electronics and Telecommunications
Research Institute

In-Kwon Lee
Yonsei University

Bon-Ki Koo
Electronics and Telecommunications
Research Institute

63A. RACBVHs: Random-Accessible Compressed Bounding Volume Hierarchies

Tae-Joon Kim
Sung-eui Yoon
Korea Advanced Institute of Science
and Technology

63B. Reflection Model of Metallic Paints for Reflectance Acquisition

Masashi Baba
Naoki Asada
Hiroshima City University

64A. Single-Pass Rendering of Composable Volumetric Lens Effects

Jan-Phillip Tiesel
Christoph W. Borst
University of Louisiana at Lafayette

64B. Variance Minimization Light-Probe Sampling

Kuntee Viriyotha
University of Southern California

Paul Debevec
University of Southern California,
Institute for Creative Technologies

65A. Virtual Video Camera: Image-Based Viewpoint Navigation Through Space and Time Christian Lipski

Christian Linz
Kai Berger
Marcus Magnor
Technische Universität Braunschweig

Scientific Visualization

66A. Data Visualization for a Stream Ecosystem and its Watershed

Ouida Meier
Western Kentucky University

66B. The Journey of the Cystic Fibrosis Gene

Phoebe Coleman
University of Colorado Denver

67A. Spatio-Temporal Sensing and Visualizing of CO_2

Takashi Nariya
Young Ah Seong
Tomoko Hashida
Takeshi Naemura
The University of Tokyo

67B. Visualization Laboratory for Earth Sciences: A Multidisciplinary Learning Environment

Aguilar Alejandro Sierra
Universidad Nacional Autónoma de México

Virtual Reality/ Augmented Reality

68A. Augmented Reality Underwater

Lisa Blum
Wolfgang Broll
Fraunhofer-Institut für Angewandte Informationstechnik

Stefan Müller
Universität Koblenz

68B. Bare-Hand Interaction in Tabletop-Augmented Reality

Bruno Fernandes
Joaquin Fernández
Universitat Politècnica de Catalunya

69A. Flexible Foot Interface for Versatile Training Field

Hiroshi Mori
Kazuhito Shiratori
Tomoyuki Fujieda
Jun'ichi Hoshino
University of Tsukuba

69B. Haptic Ring: Touching Virtual Creatures in Mixed-Reality Environments

Takafumi Aoki
Hironori Mitake
Tokyo Institute of Technology

Shoichi Hasegawa
The University of Electro-Communications

Makoto Sato
Tokyo Institute of Technology

70A. Non-Photorealistic 3D Video-Avatar

Daniel Tokunaga
Ricardo Nakamura
Romero Tori
Escola Politécnica da Unversidade de São Paulo

70B. Robot RockStars

Sheila Tejada
Brooklyn College

71A. SteganoScan: Persistence of Vision Display With Pixel-Level Visible Light Communication Projector

Ryo Kishi
The University of Tokyo

Yasuaki Kakehi
Keio University/Presto, Japan Science and Technology Agency

Takeshi Naemura
The University of Tokyo

71B. Stereoscopic Display Technique for Web3D Images

Kazuhisa Yanaka
Kanagawa Institute of Technology

Student Research Competition Semi-Finalists

ACM Student Research Competition Presentations
Finalists in the ACM Student Research Competition present their work to SIGGRAPH 2009 attendees and receive their prizes.

Friday, 7 August | 10:30 am - 12:15 pm
Rooms 265-266

1A. 3D Reconstruction of Planetary Nebulae Using Hybrid Models

Stephan Wenger
Magnor Marcus
Technische Universität Braunschweig

Morisset Christophe
Steffen Wolfgang
Universidad Nacional Autónoma de México

1B. Adaptive Coded Aperture Projection

Max Grosse
Bauhaus-Universität Weimar

Gordon Wetzstein
The University of British Columbia

Anselm Grundhoefer
Oliver Bimber
Bauhaus-Universität Weimar

2A. Augmented Reality Under Water

Lisa Blum
Wolfgang Broll
Fraunhofer-Institut für Angewandte Informationstechnik

Stefan Müller
Universität Koblenz

2B. Automatic Colorization of Grayscale Images Using Multiple Images on the Web

Yuji Morimoto
Yuichi Taguchi
Takeshi Naemura
The University of Tokyo

3A. Autonomous Lighting Agents in Global Illumination

Adrien Herubel
Venceslas Biri
Institut d'electronique et d'informatique Gaspard-Monge

Farchad Bidgolirad
Duran Duboi

3B. Bare-Hand Interaction in Tabletop-Augmented Reality

Bruno Fernandes
Joaquin Fernández
Universitat Politècnica de Catalunya

4A. Beyond Triangles: Gigavoxels Effects in Video Games

Cyril Crassin
INRIA Rhône-Alpes

Fabrice Neyret
LJK/INRIA/Grenoble Universities/CNRS

Sylvain Lefebvre
INRIA Sophia-Antipolis

Miguel Sainz
NVIDIA Corporation

Elmar Eisemann
MPI Informatik, Universität des Saarlandes

4B. BiDi Screen: Depth- and Lighting-Aware Interaction and Display

Matthew Hirsch
Massachusetts Institute of Technology

Douglas Lanman
Brown University

Ramesh Raskar
Henry Holtzman
Massachusetts Institute of Technology

5A. Bloxels: Glowing Blocks as Volumetric Pixels

Jinha Lee
The University of Tokyo

Yasuaki Kakehi
Keio University

Takeshi Naemura
The University of Tokyo

5B. Curvature-Dependent Local Illumination Approximation for Translucent Materials

Hiroyuki Kubo
Mai Hariu
Shuhei Wemler
Shigeo Morishima
Waseda University

6A. Defining and Computing Mixed-Dimensional Skeletons

Lu Liu
Tao Ju
Washington University in St. Louis

6B. Direct Illumination From Dynamic Area Lights

Greg Nichols
Chris Wyman
University of Iowa

7A. GreenLite Dartmouth: Unplug or the Polar Bear Gets It

Evan Tice
Tim Tregubov
Kate Schnippering
Yoon-Ki Park
Ray diCiaccio
Max Friedman
Jennifer Huang
Justin Slick
Giulia Siccardo
Jessica Glago
Stephanie Trudeau
Daniel Gobaud
Daniel Garcia
Craig Slagel
Lorie Loeb
Dartmouth College

7B. Haptic Ring: Touching Virtual Creatures in Mixed-Reality Environments

Takafumi Aoki
Hironori Mitake
Tokyo Institute of Technology

Shoichi Hasegawa
The University of Electro-Communications

Makoto Sato
Tokyo Institute of Technology

8A. Interactive Lighting Manipulation Application on GPU

Borom Tunwattanapong
Paul Debevec
University of Southern California, Institute for Creative Technologies

8B. Layered Solid Texture Synthesis From a Single 2D Exemplar

Kenshi Takayama
The University of Tokyo

Takeo Igarashi
The University of Tokyo, JST/ERATO

9A. Muscle-Based Facial Animation Considering Fat-Layer Structure Captured by MRI

Hiroto Yarimizu
Yasushi Ishibashi
Hiroyuki Kubo
Akinobu Maejima
Shigeo Morishima
Waseda University

9B. Pandeiro Funk: Experiments on Rhythm-Based Interaction

Sergio Krakowski
Luiz Velho
Instituto de Matemática Pura e Aplicada

François Pachet
Sony CSL/Paris

10A. Pen de Touch

Sho Kamuro
Kouta Minamizawa
Naoki Kawakami
The University of Tokyo

Susumu Tachi
Keio University

10B. Polygonal Functional Hybrids for Computer Animation and Games

Denis Kravtsov
Oleg Fryazinov
Valery Adzhiev
Alexander Pasko
Peter Comninos
NCCA, Bournemouth University

11A. Proportional Constraint for Seam Carving

Kei Utsugi
Takuma Shibahara
Takafumi Koike
Hitachi Ltd.

Takeshi Naemura
University of Tokyo

11B. RACBVHs: Random-Accessible Compressed Bounding Volume Hierarchies

Tae-Joon Kim
Sung-eui Yoon
Korea Advanced Institute of Science and Technology

12A. Ray Tracing to Get 3D Fixations on VOIs From Portable Eye Tracker Videos

Susan Munn
Jeff Pelz
Rochester Institute of Technology

12B. Three-Dimensional Auto-Stereoscopic Animated Image With a Long Viewing Distance Using High-Precision Image Correction

Takehito Teraguchi
Hiromasa Yamashita
Ken Masamune
Takeyoshi Dohi
Hongen Liao
The University of Tokyo

13A. Variance Minimization Light-Probe Sampling

Kuntee Viriyotha
University of Southern California

Paul Debevec
University of Southern California, Institute for Creative Technologies

THE STUDIO

DAYS & HOURS

Monday, 3 August	9 am - 6 pm
Tuesday, 4 August	9 am - 6 pm
Wednesday, 5 August	9 am - 6 pm
Thursday, 6 August	9 am - 6 pm
Friday, 7 August	9 am – noon

LOCATION

Rooms 343-345

The Studio is an environment reserved for creative output. It is a studio where artists come together to make their work, share their methods, and exchange ideas with one another and the conference at large. It mixes traditional and cutting-edge creative tools, professional artists, novices, scientists, and technicians into an inspiring learning environment. The Studio is staffed with expert volunteers who can help attendees navigate technologies and activities in order to confidently explore their own artistic ideas.

The Studio provides a broad range of opportunities for conference attendees on a variety of levels. Learning, creating, teaching and other interactions occur among conference attendees, the Studio team, our technology contributors and sponsors.

The Studio is a working "digital kitchen", a "collaboratory" for testing new ideas in digital media and computing, and for merging traditional techniques with digital processes and making computational creole.

This year's Studio "menu" serves up a host of entrées for great experiences and digits-on learning opportunities:

2D imaging, drawing, compositing, and manipulation
3D modeling, scanning, printing, and prototyping
4D animation, video, motion capture, stop motion, interactivity, music, and sound

To add another dimension for everyone, The Studio also presents a full daily program on the studio stage and classroom for workshops, lectures, and performances.

FJORG! & GameJam! Judging Ceremony

Thursday, 6 August | 6 - 8 pm
Hall E 1-2

Fun-filled and dramatic ceremony in which FJORG! and GameJam! participants present their completed projects.

FJORG!

DAYS & HOURS

Monday, 3 August   9 am - Midnight
Tuesday, 4 August   Midnight - 5 pm

LOCATION

Rooms 255-257

Teams of animators from around the world forgo sleep and resist several staged distractions for 32 non-stop hours to produce the best character-driven animation in the universe. Teams are formed based on participants' skills and expertise.

Corporate Sponsor

THE TEAMS

PEANUT BUTTER JELLY
Paola E. Paulino
Brendan Carroll
Joo Young Lee
Ringling College
of Art + Design

The Stepped Children
Jorge Garcia
Dan Lane
Liron Topaz
Ringling College
of Art + Design

Squid Juice
Kelly Mermelstein
Taylor Cook
Vadim Kiyaev
Pratt Institute

Sparkle Kittens
Alejandra Quintas
Gianna Ruggiero
Kent Muddle
Ringling College
of Art + Design

Briar Roses
Ami DeLullo
Kristin Palach
Dawn Rivers
Ringling College
of Art + Design

Prestissimo
Sasapitt Rujirat
Phon Tiramongkol
Lee Croudy
The Monk Studio

Team Riot
John Sabbath
Gayane Bagdasaryan
Shuang Chang
Rochester Institute
of Technology

OAW
HongJoong Kim
HyeSook Kim
SeJin Lee
anipark studio

A.O.M.
Christopher Monti
Linlin Si
Xuemei Song
Rochester Institute
of Technology

The Bunko Squad
Frank Suarez
Kinlyn Chou
Chase Hill
Bunko Studios, Inc.

GAMEJAM!

DAYS & HOURS

Tuesday, 4 August   6 pm - Midnight
Wednesday, 5 August   Midnight - 6 pm

LOCATION

Rooms 255-257

GameJam! hosts two competitions during the 24-hour competition. Twenty participants collaborate and create a 3D game using the Panda3D game engine. Nine participants compete in teams of three to create 2D games using Flash.

Prizes will be given for best 3D character, SIGGRAPH attendees' favorite 3D character, most lifelike 3D character, most creative 3D character, best 2D game, and SIGGRAPH attendees' favorite 2D game.

PARTICIPANTS

3D GAME PARTICIPANTS
Neil Bonsteel
Rochester Institute
of Technology

Ben Colbourn
Fullsail University

Riannon Delanoy
Rochester Institute
of Technology

John Fielding
Rochester Institute
of Technology

Brianne Francisco
Rochester Institute
of Technology

Dylan Hunter
Animation Mentor

Scott Huster
Animation Mentor

James Maloney
Bowling Green State
University

Ryan Neff
Rochester Institute
of Technology

Brian Nixon
Bowling Green State
University

Emily Oess
Animation Mentor

Rory Riggins
Rochester Institute
of Technology

Benjamin Rosales
LDSanimators.com

Elizabeth Sewell
FullSail University

Teri Shellen
Animation Mentor

Eric Savino
Fullsail University

Greg Wark
Bowling Green State
University

Toby Winder
Animation Mentor

2D GAME PARTICIPANTS
Left 3 Dead
Jonathan Holt
Michael Molinari
Andrew Deeds Walton
Ringling College
of Art + Design

Organic Lava Blocks
Chance Dodd
Melissa Guldbrand
Laurissa Hughes

The Manimators
Carlos D'Hazas
Watcharin Jariyasukdipong
Luis Salazar
Woodbury University

RESEARCH CHALLENGE

DAYS & HOURS

Tuesday, 4 August   1:45 - 3:30 pm

LOCATION

Rooms 265-266

A special session in which the selected finalists who have worked on this year's Research Challenge problem present their solutions. Judges evaluate the projects and award wonderful prizes to the teams displaying the most complete, creative, elegant, and appealing solutions.

The SIGGRAPH 2009 Research Challenge problem, announced October 2008, is: "Choose a specific animal, or a specific animal's sense, and develop a system that will enable a person to experience the physical or social world as that animal does."

THE FINALISTS

The P-War: Interactive Social Game Based on Dogs' Territorial Behaviors

Dogs have been human companions for ages, and we humans often assume that we understand them better than we actually do. P-War is an experimental game that uses GPS and mobile technologies that allows players to experience dog social dynamics from a dog's point of view while physically interacting with each other and exploring territories they mark as dogs would, using the custom-designed P-War mobile screen interface.

Younghui Kim
Sanghwa Hong
Jaeseok So

Hyuna Choi
Soomi Jeong

Hyunhee Kim
Hongik University

Project: Prey

Project: Prey simulates the auditory and visual experiences of animals of prey, including (among others) rabbits, deer, and squirrels. It allows human users to experience "hearing" with two ears that rotate 180 degrees, independently of each other. The project also provides users an opporutnity to "see" with monocular vision. Both experiences are markedly different from the auditory and visual capabilities of human beings.

Matt Canada
Felicia Collum
David Martinez

Chris Ozone
Toija Riggins
Aaron Yaw

Kara Bohnenstiel
New York City College of Technology

Catalyst: Seeing Through the Eyes of a Cat

This simulation of the cat visual system is based on neuroscientific research. It illustrates four of the major differences between the cat and human visual systems, and maps those contrasts into a space that can be readily observed by humans. This project also includes an educational game that is designed to teach players about how their vision differs from cat vision.

Jeremy Long
Anthony Estey

David Bartle
Sven Olsen

Amy Gooch
University of Victoria

An Ant's Life

In this first person interactive game, players experience the world as members of an ant colony, from hatching through successive life phases in and around the nest. The game's interface maps the antÕs dominant senses (smell, taste, and touch) to a first-person interactive audiovisual display, conveying a localized and qualitative perception of the environment. The game takes place in a fully accessible and interactive simulation of the colony and its environment, populated by other ants and critters. As the ants mature, they grow larger and stronger, their senses become more refined, and their range increases.

Alexandre Francois
Ian Altgilbers
Jessie Berlin
Alissa Cooper
Eric Gustavson

Greg Harris
Matthew Knowles
Huy Ngu
Gregory Scott
Rashmi Singhal

Eric Stewart
Daniel Thayer
Lindsay Verola
Sonny Zhao
Tufts University

SPEEDLAB

Opening Session

Monday, 3 August | 3:45 - 5:30 pm
Rooms 265-266

SpeedLab is a multi-disciplinary competition, in which teams are assigned a problem at the beginning of SIGGRAPH 2009, and they present their solutions to a panel of celebrity judges four days later. The judges select the winning teams and confer fame and prizes. Solutions will be evaluated on their creativity, practicality, and "cool factor".

It's easy to join a SpeedLab team. Attend the SpeedLab opening session, Monday, 3:45 – 5:30 pm, in Room 265-266. We invite both students and professionals to participate. Teams will be formed at SIGGRAPH 2009 based on participants' skills and expertise.

Speedlab Judging Ceremony

Friday, 7 August | 1:45 - 3:30 pm
Auditorium B

SpeedLab is an opportunity for both new and experienced researchers to meet, interact, and invent together in a spirited, upbeat atmosphere of friendly competition. It offers participants a chance to make new friends and professional contacts while working together to solve an interesting and useful problem.

COMPUTER ANIMATION FESTIVAL

The Computer Animation Festival is celebrating its 36th year as an internationally renowned forum for presentation of the world's most innovative and stimulating computer-generated animated films. The festival also offers a wide spectrum of genres: narrative animation, medical visualizations, video game and simulations demonstrated in real-time, music videos, promotional spots, and many others can be seen in one location over the course of five days.

Image courtesy of Meats Meier

SPECIAL GUEST SPEAKERS

Chris Landreth

"The Spine" and Psychologically Driven Animation
Thursday, 6 August | 10:30 am - 12:15 pm
Auditorium B

Peter Ludé

Senior Vice President, Engineering, Sony Electronics
Executive Vice President, SMPTE
Board of Directors ITVS

3D to the Home: What Can Possibly Go Wrong?
Thursday, 6 August | 8:30 - 9:15 am
Rooms 260-262

Bob Whitehill

Stereoscopic Supervisor, Pixar Animation Studios

Visual Storytelling in Three Dimensions
Thursday, 6 August | 9:15 - 10 am
Rooms 260-262

For SIGGRAPH 2009, the Computer Animation Festival introduces two new sections:
Real-Time Rendering ➜, devoted to work produced interactively in real time; and
Visual Music ➜, which includes music visualizations and other artworks that combine music and images into a captivating multi-sensory experience.

JURIED FILMS

The Computer Animation Festival Juried Films present the best of this year's visual effects, animated shorts, student animations, scientific and musical visualizations, experimental subjects, and so much more.

The Best in Show Award qualifies the winner to be considered for nomination in the Academy of Motion Picture Arts and Sciences Best Animated Short Film category. Other awards presented by the jury are the Jury Award, Best Student Film, the WTF Prize, and Honorary Mentions.

2BTextures
Bonnie Mitchell
Elainie Lillios
Bowling Green State University
USA

återbesök
Michael "Mondi" Anyango
Sweden

Absolut Dissection
Rob Smiley
MassMarket
USA

Acura "Bullet"
Nicolai Fuglsig
The Mill
USA

Alarm
Moo Hyun Jang
MESAI
South Korea

Alma
Rodrigo Blaas
Spain

Anima
Rémi Devouassoud
Elliott Kajdan
Nicolas Maurice
Julien Lasbleiz
Supinfocom Valenciennes
France

Après la Pluie
Charles-André Lefebvre
Manuel Tanon-Tchi
Louis Tardivier
Sébastien Vovau
Emmanuelle Walker
Gobelins l'ecole de l'image
France

As One
Makoto Yabuki
Tangram Co. Ltd.
Japan

Atherosclerosis
Thomas Brown
Nucleus Medical Art
USA

Audi "Unboxed"
Aaron Duffy
Russell Brooke
Passion Pictures
United Kingdom

Barclaycard 'Waterslide'
Peter Thwaites
The Mill
United Kingdom

BBC iPLayer 'Penguins'
Vince Squibb
Darren Walsh
The Mill
United Kingdom

Bedtime Stories
Adam Shankman
Cinesite
USA

Big One, The
Amit Chourasia
San Diego Supercomputer Center, University of California, San Diego
USA

Cartoon Forum Trailer
Regina Welker
Max Lang
Filmakademie Baden-Württemberg
Germany

cEvo - Teaser
Andrés Felipe Hernández
Vortice Studios
Colombia

Cherries
Cisma
boolab
Spain

Cinetique
Maxime Causeret
Arts et Technologie de l'Image
France

Coach
Nikita Ratnikov
Artem Sukharev
15 Frame Animation
Ukraine

Compare the Market "Aleks"
Darren Walsh
Passion Pictures
United Kingdom

Counterclockwise
David Muth
Royal College of Art
United Kingdom

CR Uchu-senkan Yamato 2
Yasuo Koga
Omnibus Japan Inc.
Japan

Daydreamer
Roland Womack
School of Visual Arts
USA

Dim Sum
Jin Sop Kum
Ringling College of Art & Design
USA

Dix
Bif (The Mill)
The Mill
United Kingdom

Drench "Brains Dance"
Ringan Ledridge
The Mill
United Kingdom

E.T.A.
Henrik Bjerregaard Clausen
The Animation Workshop
Denmark

ED
Pierre Alran
Francois Hosy
Olivier Renard
Nicolas Juncos
Supinfocom Arles
France

Eins (One)
Jens Bendig
MotionDesign
Germany

Engel zu Fust (Angel Afoot)
Jakob Schuh
Saschka Unseld
Studio Soi GmbH & Co.KG
Germany

Ephemeral
Tony Radevski
Jongsu Oh
Australia

Escape From the Temple
Zhou Xing
The National Academy of Chinese Theatre Arts
China

EVOBEAT
Shun Hachiya
Japan Electronics College
Japan

Facteur Mineur
Marc Czerwiec
Geoffrey Skrajewski
Arnaud Joli
François Ruiz
Supinfocom Valenciennes
France

Fernet 1882 "Mini Cab Company"
Fabian Galvez
Pickle Visual Effects & Animation
Argentina

Flame Dance
Tooru Hayai
Taiyo Kikaku Co, Ltd.
Japan

Frank had a Dream
Dae Jung
Sheridan College
Canada

French Roast
Fabrice O. Joubert
Pumpkin Factory/Bibo Films
France

friends?
Sveinbjörn J. Tryggvason
Vancouver Film School
Canada

Future Psychoanalisis
Diego Huacuja
Televisa
Mexico

Gorilla
Lucas Elliot
boolab
Spain

Greed
Alli Sadegiani
AnimationMentor
Sweden

Happy Duckling, The
Gili Dolev
Israel

Harmonic Fluid Sound Synthesis
Changxi Zheng
Doug James
Cornell University
USA

Harmonix "Rock Band II"
Pete Candeland
Passion Pictures
United Kingdom

Heavenly Appeals
David Lisbe
Ringling College of Art & Design
USA

Hellboy II: The Golden Army
Guillermo del Toro
Double Negative
United Kingdom

Heroes of the Nation
Kenny Rossett
Henri Bouvand
Romain Revert
Matthieu Villain
L'institut supérieur des arts appliqués
France

Hey
Guy Ben Shetrit
Anova Music
Israel

Hit and Run
Alex Marino and Greg Peltz
Ringling College of Art & Design
USA

Honglong Century Plaza
Deng Bohong
DANS
China

House of Numbers: Animation of the Replication of HIV
W. Scott Meador
Emagination-Media
USA

Hum
Søren Bendt Pedersen
The Animation Workshop
Denmark

Hydrodynamic Butterflies
Yoichiro Kawaguchi
The University of Tokyo
Japan

I Am Alive
Olivier Martineau
Mikros Image
France

Incident at Tower 37, The
Chris Perry
Hampshire College
USA

Insight
Salvador Simo Busom
The Animation Workshop
Denmark

Insulin Production and Type 1 Diabetes
Etsuko Uno
Drew Berry
The Walter and Eliza Hall Institute of Medical Research
Australia

Interim Camp
Vera-Maria Glahn
Marcus Wendt
Field
Germany

ITFS Spot Colorflow
Sebastian Nozon
Sascha Geddert
Roland Petrizza
Filmakademie Baden-Württemberg
Germany

ITFS Spot Scheibenwischer (Drop)
Gottfried Mentor
Filmakademie Baden-Württemberg
Germany

Jin Kai Syu
Takahiro Hayakawa
Kyushu University
Japan

Jump
Till Nowak
Framebox
Germany

KitKat "The Ultimate Break"
Akama
Wanda Productions
France

Krishna's Garden
Miriam Nagi
Ringling College of Art & Design
USA

KUDAN
Taku Kimura
Links DigiWorks Inc.
Japan

La Main des Maîtres
Adrien "CaYuS" Toupet
Clément Delatre
Vivien "Looky" Chauvet
L'Ecole Européenne Supérieure d'Animation
France

Lacoste " Future"
Akama
Wanda Productions
France

Lautriv Chromagnon Medusa (LCM)
Franz Fischnaller
F.A.B.R.I.CATORS
Italy

Lilium Urbanus
Anca Risca
Joji Tsuruga
School of Visual Arts
USA

Love_Child
Wen-Sheng Shiao
Chun-Wang Sun
National Taiwan University of Science and Technology
Taiwan

LRO Scouts for Safe Landing Sites - Stereoscopic Version
Helen-Nicole Kostis
University of Maryland Baltimore County & Scientific Visualization Studio, NASA
USA

Malaria Lifecycle, The
Drew Berry
The Walter and Eliza Hall Institute of Medical Research
Australia

Mercurius
Bret Battey
De Montfort University
United Kingdom

Minamitama District
Nobuo Takahashi
Nagoya City University
Japan

Minds
Nico Casavecchia
boolab
Spain

MIZU-HANABI
Tetsuka Niiyama
Taiyo Kikaku Co, Ltd.
Japan

Mon(s)tre (Monster-clock)
Charles Schneck
Geoffroi Ridel
Daphné Parrot
Yann Poyac
Anthony Le Saout
L'institut supérieur des arts appliqués
France

MR 316
Guillaume Poirier
Philippe Massicotte
Louis Borgeat
Guy Godin
National Research Council of Canada
Canada

Murano Togo - Lost Interiors
Kazumasa Otsuki
CAD CENTER Creative Studio
Japan

murmur
Peter Byrne
Carole Woodlock
Michaela Eremiasova
Byrne Studio
USA

MUZORAMA
Elsa Bréhin
Raphaêl Calamote
Mauro Carraro
Maxime Casaux
Emilien Davaud
Laurent Monneron
Axel Tillement
La Station Animation
France

Nine Inch Nails Ghosts 8
Shawn Faherty
USA

Nobel Center
Deng Bohong
DANS
China

Office Noise
Mads Johansen
Torben Søttrup
Karsten Madsen
Lærke Enemark
The Animation Workshop
Denmark

One Fine Day
Gretchen Glover
Ringling College of Art & Design
USA

Orange Mirrors
Ayelet Menahemi
Gravity
Israel

Oxygen
Christopher Hendryx
Ringling College of Art & Design
USA

Peking1935
Ah Tsann (Lu Canhai)
Lu Canrong
Forest & Land 3D Studio
China

Penguins of Madagascar "Gone in a Flash", The
Bret Haaland
Nickelodeon
USA

People in Red
Roni Kleiner
Gravity
Israel

Phase
Yasuhiro Kobari
Tangram Co. Ltd.
Japan

Picciotti Della Benavita
Bonsaininja Studio
Italy

Pigeon: Impossible
Lucas Martell
USA

PoPoLei
Frederic Mayer
Ciboulotstudio
France

Project: Alpha
Matthías Bjarnason
The Animation Workshop
Denmark

Radiohead "House of Cards"
James Frost
The Syndicate
USA

Reach
Luke Randall
AnimationMentor
Australia

Rebel With a Cause
Kristian Labusga
Stuttgart Media University
Germany

Rebel, The
Ben Logsdon
Roguzdon Productions
Japan

Roll'n Rock
Nico Casavecchia
boolab
Spain

Round
Kirk Hendry
United Kingdom

salia
Brian Evans
University of Alabama
USA

Scab
Marjan Moghaddam
Long Island University
USA

Scratch Me
Nico Casavecchia
boolab
Spain

Second Souffle
Maxime Causeret
Arts et Technologie de l'Image
France

Seed
Kosai Sekine
Taiyo Kikaku Co, Ltd.
Japan

Sentinels of the Heliosphere
Gregory W. Shirah
NASA
USA

Silhouettes of Jazz
Dominik Käser
Martin-Sebastian Senn
Mario Deuss
ETH Zürich
Switzerland

SOE: The Space on Earth Project & Quantum City Project
Franz Fischnaller
F.A.B.R.I.CATORS
Italy

Steel Life
Mathieu Gérard
France

Symphony
Erick Oh
University of California, Los Angeles
USA

Taming the Cat
Visual Media Lab, KAIST
South Korea

Tezcatlipoca
Robin George
Southern Adventist University
USA

The "Other World"
Eli Sverdlov
Gravity
Israel

The Beauty
Mao Qi Chao
Magic Animation Studio
China

The Curious Case of Benjamin Button
David Fincher
Digital Domain
USA

The Day The Earth Stood Still
Scott Derrickson
Cinesite
United Kingdom

The Enlightened Monk
Emily Tse
Ringling College of Art & Design
USA

The Sound of Silence
Yi-Yun Chen
Ling Tung University
Taiwan

This Way Up
Smith & Foulkes
Nexus Productions
United Kingdom

Tongue of the Hidden
David Alexander Anderson
Schofield Films
United Kingdom

Toshiba 'Time Sculpture'
Mitch Stratten
The Mill
United Kingdom

Twisted Murder
Paulo de Almada
Mandala Studio LA
USA

Unbelievable Four
Sukwon Shin
In Pyo Hong
Illusion Studio
USA

Unplan the Moment
Toni Costa
Kal Karman
boolab
Spain

Unwrapping the Mummy 3: Tomb of the Dragon Emperor
Rob Cohen
Rhythm & Hues Studio
USA

Vilnius-Guggenheim
Richard Gönci
Studio AMD
USA

Who's Gonna Save My Soul
Chris Milk
Radical Media
USA

Wild Dogs
Catherine Hicks
Ringling College of Art & Design
USA

Wilkinson "Fight for Kisses"
Akama
Wanda Productions
France

Window Pains
Paul Tillery IV
Savannah College of Art & Design
USA

World of Warcraft: Wrath of the Lich King - Intro Cinematic
Jeff Chamberlain
Blizzard Entertainment, Inc.
USA

Yankee Gal
Céline Desrumaux
Gary Levesque
Antoine Perez
François Pons
Supinfocom Valenciennes
France

EVENING THEATER

DAYS & HOURS
Monday - Thursday, 3 - 6 August, 6:30 - 9 pm

LOCATION
La Nouvelle Orleans Ballroom

The Evening Theater includes three categories of exceptional creative work:

- Live demos of outstanding real-time work.
- The Juried Reel, work selected by the Computer Animation Festival Jury from hundreds of international submissions.
- The Curated Reel, work invited by the Computer Animation Festival Chair.

Each Evening Theater show includes the same material. On Monday and Wednesday, the Juried Reel is shown first, followed by the Curated Reel. The order of presentation is reversed on Tuesday and Thursday:

Monday & Wednesday
6:30 pm   Real-Time
7 pm   Juried Reel
8 pm   Curated Reel

Tuesday & Thursday
6:30 pm   Real-Time
7 pm   Curated Reel
8 pm   Juried Reel

Short breaks after each segment allow attendees to come and go. Those with multi-day passes may extend their viewing of the Evening Theater over several days.

Evening Theater shows begin with 30-minute demos of outstanding achievements in real-time graphics: **Flower, DT4 Identity SA 1.7, Froblins, Fight Night 4**

On Monday night, the Evening Theater begins with presentations of this year's Computer Animation Festival Awards: Best of Show (which qualifies the winner to be considered for nomination in the Academy of Motion Picture Arts and Sciences Best Animated Short Film category), the Jury Award, Best Student Film, the WTF Prize, and Honorary Mentions.

Juried Reel
Festival Opening by Florian Witzel
Sillhouettes of Jazz
Project: Alpha
Barclaycard "Waterslide"
Toshiba "Time Sculpture"
Anima
friends?
Seed
Who's Gonna Save My Soul
French Roast
Wilkinson "Fight for Kisses"
Alma
ITFS Spot Colorflow
Window Pains
Unbelievable Four

Curated Reel
Festival Opening by Florian Witzel
Pigeon: Impossible
This Way Up (trailer)
SOE: The Space Earth Project
Vilnius-Guggenheim
Shade Recovered
The Spine (5-minute clip)
Live Music (Mass Animation Project)
ILM: Robots, Cyborgs, and the Final Frontier
Cloudy with a Chance of Meatballs
Digital Domain in Review
Evian "Skating Babies"
Pixar's Partly Cloudy

AFTERNOON THEATER

DAYS & HOURS	LOCATION
Monday, 3 August	1:45 - 3:30 pm **Reels: Nominees, Visual Music 1**	La Nouvelle Orleans Ballroom
Monday, 3 August	3:45 - 5:30 pm Reels: Young at Heart, Visual Music 2	La Nouvelle Orleans Ballroom
Monday, 3 August	6:30 - 7:15 pm **Reels: Visual Music Reel 1 &** **Visual Music Reel 2 (repeated)**	Rooms 271-273
Wednesday, 5 August	3:45 - 5:30 pm **Reels: Real Time in Real Time**	La Nouvelle Orleans Ballroom
Thursday, 6 August	3:45 - 5:30 pm **Reels: 2 Cool 4 School**	La Nouvelle Orleans Ballroom
Friday, 7 August	8:30 - 10:15 am **Reels: Digital Schoolhouse**	La Nouvelle Orleans Ballroom
Friday, 7 August	10:30 am - 12:15 pm **Reels: The Underneath**	La Nouvelle Orleans Ballroom
Friday, 7 August	1:45 - 3:45 pm **Reels: Jury Chair's Reel,** **Festival Chair's Reel**	La Nouvelle Orleans Ballroom

3D SCREENINGS

DAYS & HOURS	LOCATION
Thursday, 6 August	6:30 - 9 pm **3D Clip and Trailer Screening** A mix of clips in stereo from trailers to short films.	Rooms 271-273
Thursday, 6 August	7 - 9 pm **3D Festival Track Kick-Off: Screening** **of "Coraline"**	Rooms 260-262
Friday, 7 August	11:30 am - 12:15 pm **3D Clip and Trailer Screening** A mix of clips in stereo from trailers to short films.	Rooms 260-262

SPECIAL SCREENING

DAYS & HOURS	LOCATION
Friday, 7 August	1:45 - 3:45 pm **"Cloudy With a Chance of Meatballs":** **Select Cuts**	Rooms 260-262

Computer Animation Festival

AFTERNOON REELS

Nominees Reel

Monday, 3 August | 1:45 - 3:30 pm
La Nouvelle Orleans Ballroom

SIGGRAPH 2009 Computer Animation Festival Nominees

W.T.F. (The Well Told Fable) Nominees
friends?
Unbelieveable Four
Fernet 1882 "Mini Cab Company"

Student Prize Nominees
Dim Sum
Incident at Tower 37
Project: Alpha

Jury Award Nominees
Dix
Love_Child
Anima

Best of Show Nominees
Engel zu Fust (Angel Afoot)
French Roast
Silhouettes of Jazz

Honorable Mention
Alma

Winners announced Monday at the beginning of the Evening Theater.

Visual Music Reel 1

Monday, 3 August | 1:45 - 3:30 pm
La Nouvelle Orleans Ballroom
Monday, 3 August | 6:30 - 7:15 pm
Room 271-273

2BTextures
Mercuris
Interim Camp
Murmur
Evobeat
Hydrodynamic Butterflies
Phase
Night Fishing with Cormorants
Jin kai Suy
Energie

Visual Music Reel 2

Monday, 3 August | 3:45 - 5:30 pm
La Nouvelle Orleans Ballroom
Monday, 3 August | 6:30 - 7:15 pm
Rooms 271-273

Salia
Cinetique
återbesök

Chronomops
200 Nanowebbers
Counterclockwise
Sensorium
Scab
Sprots and Dyversions
All That Remains

Young at Heart

Monday, 3 August | 3:45 - 5:30 pm
La Nouvelle Orleans Ballroom

PoPoLei
Alarm
Cinesite VFX Highlights: Bedtime Stories
Cinesite VFX Highlights: The Day
The Earth Stood Still
The Incident at Tower 37
The Penguins of Madagascar "Gone in a Flash"
Office Noise
Lilium Urbanus
Frank Had a Dream
Après la Pluie
Cartoon Forum Trailer
Krishna's Garden
The Enlightened Monk
Oxygen
Wild Dogs
Dim Sum
Insight
Engel zu Fust (Angel Afoot)

2 Cool 4 School

Thursday, 6 August | 3:45 - 5:30 pm
La Nouvelle Orleans Ballroom

Daydreamer
Harmonix "Rock Band II"
Flame Dance
As One
cEvo - Teaser
Lacoste "Future"
Kitkat "The Ultimate Break"
Fernet 1882 "Mini Cab Company"
Tezcatlipoca
Hellboy II: The Golden Army
Hum
Round
Drench "Brains Dance"
Toshiba 'Time Sculputure'
Orange Mirrors
Watchmen
Chroma Chameleon
Neotel "No Restrictions"
VW "Polo Dog"
BA "Aquarium"
Bridgestone "Taters"
Audi Quatro "Carver
Second Souffle
Acura "Bullet"

Absolute Dissection
Taming the Cat
ITFS Spot "Colorflow"
ITFS Spot Scheibenwischer
Wanted & The Dark Knight
Reach
Yankee Gal
Harry Potter and the Half-Blood Prince
Rock n' Roll
Scratch Me
Gorilla
Cherries
Unplan the Moment
Symphony
Audi "Unboxed"
Compare the Market "Aleks"
BBC iPlayer 'Penguins'
Hey
Radiohead "House of Cards"
CR Uchu-senkan Yamato 2
Nine Inch Nails Ghosts 8
Jump

Digital Schoolhouse

Friday, 7 August | 8:30 - 10:15 am
La Nouvelle Orleans Ballroom

Sentinels of the Heliosphere
MR 316
Harmonic Fluid Sound Synthesis
The Malaria Lifecycle
Insulin Production and Type 1 Diabetes
The Curious Case of Benjamin Button
Future Psychonalysis
The Emily Project
Rebel With a Cause
The Big One
Smasung: "Visit to Grandma's House"
Steel Life
Escape From the Temple
Eins (One)
Murano Togo (Lost Interiors)
Unwrapping the Mummy 3: Tomb of the Dragon Emperor
People in Red
Minds
Tongue of the Hidden
Peking 1935
Nobel Center
Honglong Century Plaza
Minamitama District
Atherosclerosis
Lautriv Chromagnon Medusa (LCM)
House of Numbers: Animation of the Replication of HIV
Mizu-Hanabi
The Sound of Silence
Love_Child

The Underneath

Friday, 7 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

Kudan
La Main des Maitres
Twisted Murder
The Rebel
I Am Alive
World of Warcraft: Wrah of the Lich
King - Intro Cinematic
Facteur Mineur
Piccotti Della Benavita
Muzorama
Coach
Greed
One Fine Day
Heavenly Appeals
Hit and Run
Ephemeral
ETA
Monster Clock
The Beauty
Heroes of the Nation
Dix

Evening Theater in the Afternoon

Friday, 7 August | 1:45 - 3:45 pm
La Nouvelle Orleans Ballroom

Juried Reel
Silhouettes of Jazz
Project: Alpha
Anima
friends?
Seed
Who's Gonna Save My Soul
French Roast
Alma
Window Pains
Unbelievable 4

Curated Reel
Vilnius-Guggenheim
This Way Up (trailer)
SOE: The Space Earth Project & Quantum City Project
Wilkinson "Fight for Kisses"
Shade Recovered
Live Music (Mass Animation Project)
ILM: Robots, Cyborgs, and the Final Frontier
The Spine
Barclaycard 'Waterslide'
Pigeon Impossible
Digital Domain in Retrospect
Cloudy with a Chance of Meatballs

REAL-TIME RENDERING

For the first time, the Computer Animation Festival features a section focused entirely on real-time computer graphics. In recent years, the graphics capabilities and production values of videogames on consoles and computers have grown dramatically. This section of the festival shows the latest examples of videogames and real-time simulations that push the boundaries of what users and viewers have come to expect.

To help emphasize the difference between these works and the pre-rendered works in the Screenings, real-time pieces are demonstrated on their actual platforms. In addition, a selection of the games will be available for attendees to try out in the SIGGRAPH 2009 Sandbox.

REAL-TIME RENDERING DEMOS

Evening Theater
Monday-Thursday. 6:30 pm
La Nouvelle Orleans Ballroom

Real Time Live
Wednesday, 5 August | 3:45 - 5:30 pm
La Nouvelle Orleans Ballroom

REAL-TIME RENDERING TALKS

Immersive and Impressive: The Impressionistic Look of Flower on the PS3 ➜
Wednesday, 5 August | 1:45 - 3:30 pm
La Nouvelle Orleans Ballroom

Building Story in Games: No Cut Scenes Required ➜
Thursday, 6 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

REAL-TIME RENDERING PRODUCTION SESSIONS

Big, Fast and Cool: Making the Art for Fight Night 4 & Gears of War 2 ➜
Wednesday, 5 August | 8:30 - 10:15 am
La Nouvelle Orleans Ballroom

REAL-TIME RENDERING WORKS

DT4 Identity SA
Tatsuo Unemi
Daniel Bisig
Soka University

Fight Night Round 4
Frank Vitz
Jenny Freeman
Rick Stringfellow

Froblins
Abraham Wiley
Natalya Tatarchuk
Christopher Oat
Jeremy Shopf
AMD

Flower
John Edwards
thatgamecompany

Gears of War 2
Wyeth Johnson
Epic Games

NVIDIA's Medusa Demo
Mark Swain
NVIDIA Corporation

OLE Coordinate System
Jun Fujiki
Kyushu University

Real-Time Car Turbulence
Jonathan Cohen
NVIDIA Corporation

Real-Time Hair Simulation and Rendering on the GPU
Sarah Tariq
NVIDIA Corporation

Real-Time Rendering and Animation of Trees
Ralf Habel
Institut für Computergraphik und Algorithmen

Split Second
David Jefferies
Disney Interactive

STEREOSCOPIC 3D: RESEARCH, APPLICATIONS, AND ENTERTAINMENT

SPECIAL GUEST SPEAKERS

Peter Ludé
Senior Vice President, Engineering, Sony Electronics
Executive Vice President, SMPTE
Board of Directors ITVS

Thursday, 6 August | 8:30 - 9:15 am
Rooms 260-262

3D to the Home: What Can Possibly Go Wrong?
There are over two million 3D-ready televisions already in US house-holds, but the industry remains divided about delivering stereoscopic content to the home. How much programming will be available, how will it be delivered, and by when? Will consumers need to wear those funny glasses? Will the world adopt 3D standards, or will competing formats emerge? Will the images on the small screen look as good as in the cinema? Peter Ludé will review these thorny topics and address the technical, business, and creative decisions that will be required over the next few years in the transition to 3DTV.

Bob Whitehill
Stereoscopic Supervisor, Pixar Animation Studios

Thursday, 6 August | 9:15 - 10 am
Rooms 260-262

Visual Storytelling in Three Dimensions
In combination with other visual techniques such as color and compo-sition, stereography (if used wisely) can enhance mood, evoke emo-tion, and draw an audience further into a film's story. Using examples from "UP", "Toy Story", and "Toy Story 2", Bob Whitehill discusses the use of 3D as a visual storytelling device in Pixar's films.

3D SCREENINGS

3D Clip and Trailer Screening
A mix of clips in stereo from trailers to short films.
Thursday, 6 August | 6:30 - 9 pm
Rooms 271-273

3D Festival Track Kick-Off: Screening of "Coraline"
Thursday, 6 August | 7 - 9 pm
Rooms 260-262

Pixar's "Tokyo Mater" 3D
Friday, 7 August | 11:30 am - 12:15 pm
Rooms 260-262

3D Clip and Trailer Screening
A mix of clips in stereo from trailers to short films.
Friday, 7 August | 10 - 11:30 am
Rooms 260-262

SPECIAL SCREENING

"Cloudy With a Chance of Meatballs": Select Cuts
Friday, 7 August | 1:45 - 3:45 pm
Rooms 260-262

PANELS

The Masters Speak: Game Developers Weigh in on True 3D Gaming →
Thursday, 6 August | 8:30 - 10:15 am
Rooms 271-273

Beyond The Big Screen: The Evolution of 3D Standards in Cinema, Broadcast, and the Home →
Thursday, 6 August | 10:30 am - 12:15 pm
Rooms 271-273

A Journey From Outer to Inner Space: Scientific and Biomedical Stereoscopic Visualization →
Thursday, 6 August | 3:45 - 5:30 pm
Rooms 271-273

PRODUCTION SESSIONS

"Cloudy With a Chance of Meatballs": Making Mouthwatering 3D →
Wednesday, 5 August | 1:45 - 3:30 pm
La Nouvelle Orleans Ballroom

Monsters vs. Stereo: How Stereo Affected Production on "Monsters vs. Aliens" →
Thursday, 6 August | 10:30 am - 12:15 pm
Rooms 260-262

G-Force 3D: Guinea Pigs, Gadgets and Post-Production Stereoscopic Filmmaking →
Thursday, 6 August | 1:45 - 3:30 pm
Rooms 260-262

"Coraline": The Changing Face of Animation →
Thursday, 6 August | 3:45 - 5:30 pm
Rooms 260-262

VISUAL MUSIC

Films and sessions that combine music and images, whether created by solo filmmakers or as part of a collaboration, to showcase the wide range of approaches and achievements in Visual Music.

VISUAL MUSIC FILMS

återbesök
Michael Anyango
Sweden

200 Nanowebbers (Invited)
Ruth Jarman
Joe Gerhardt
Semiconductor Films
United Kingdom

2BTextures
Bonnie Mitchell
Elainie Lillios
Bowling Green State University
USA

All That Remains (Invited)
Stephanie Maxwell
Michaela Eremiasova
Rochester Institute of Technology
USA

Chronomops (Invited)
Tina Frank
Tina Frank Design
Austria

Counterclockwise
David Muth
Royal College of Art
United Kingdom

Energie! (Invited)
Thorsten Fleisch
Fleisch Film
Germany

Mercurius
Bret Battey
De Montfort University
United Kingdom

murmur
Peter Byrne
Carole Woodlock
Michaela Eremiasova
Rochester Institute of Technology
USA

Night Fishing With Cormorants (Invited)
Betsy Kopmar
Expression College
USA

Salia
Brian Evans
University of Alabama
USA

Scab
Marjan Moghaddam
Long Island University
USA

Sensorium (Invited)
Karen Aqua
Ken Field
Conical Music
USA

Sports and Diversions (Invited)
Bum Lee
USA

COURSE

The Making of "Shade Recovered": Networked Senses at Play →
Monday, 3 August | 8:30 - 10:15 am
Rooms 243-245

TALK

See What You Feel: A Study in the Visual Extension of Music →
Matthew Bain Music Performance and Talk
Monday, 3 August | 6 - 8 pm
Rooms 243-245

VISUAL MUSIC TALKS

Monday, 3 August | 1:15 - 5:45 pm
Rooms 243-245

From Pythagoras to Pixels: The Ongoing Trajectory of Visual Music →
1:15 - 1:45 pm

Designing Instruments for Abstract Visual Improvisation →
2 - 2:30 pm

Modulated Feedback: The Audio-Visual Composition "Mercurius" →
2:45 - 3:30 pm

Visual Music and the True Collaboration of Art Forms and Artists →
3:45 - 4:15 pm

What Sound Does Color Make? →
4:30 - 5 pm

Exploring Shifting Ground: Creative Intersections Between Experimental Animation and Audio →
5:15 - 5:45 pm

URBAN PLANNING

DAY & LOCATION

Tuesday, 4 August
Rooms 271-273

URBAN PLANNING TALKS

The Evolution of Revolution of Design: From Paper Models and Beyond →
8:30 - 9:20 am

Green From the Ground Up: Infrastructure Rehabilitation and Sustainable Design →
1:45 - 2:50 pm

Model Rebuilding for New Orleans Transportation →
3 - 4:05 pm

Model-Based Community Planning, Decision Support, and Collaboration →
4:15 - 5:30 pm

PRODUCTION SESSIONS

Seating in Production Sessions is on a first-come, first-served basis. Please be sure to arrive early for the Production Sessions you wish to attend.

The Computer Animation Festival presents insider updates on the production secrets behind recent feature films.

Building Benjamin Button: A Blending of "Technique-ologies"
Monday, 3 August | 8:30 - 10:15 am
La Nouvelle Orleans Ballroom

Artists from Digital Domain and Lola take an expansive look at the main techniques and technologies developed and deployed to create the CG head of Benjamin Button, and the aging and "youthening" of the character. The panelists present behind-the-scenes images and clips to educate and entertain, and discuss concepts of invention, artistry, and technology.

Ed Ulbrich
Steve Preeg
Jonathan Litt
Marco Maldonado
Paul Lambert
Digital Domain

Robots, Cyborgs, and the Final Frontier: An Inside Look at "Transformers: Revenge of the Fallen", "Terminator Salvation", and "Star Trek"
Tuesday, 4 August | 1:45 - 5:30 pm
La Nouvelle Orleans Ballroom

Industrial Light & Magic sheds light on the visual effects in the next chapter of the Transformers series and looks at the latest installments of two legendary franchises.

Terminator:
Marc Chu
Philippe Rebours
Industrial Light & Magic

Star Trek:
Roger Guyett
Hilmar Koch
John Goodson
Industrial Light & Magic

Transformers 2:
Jeff White
Scott Benza
Jason Smith
Industrial Light & Magic

Big, Fast and Cool: Making the Art for Fight Night 4 & Gears of War 2
Wednesday, 5 August | 8:30 - 10:15 am
La Nouvelle Orleans Ballroom

With the arrival of high-def game consoles, super-realistic graphics with immersive CG environments, characters, and VFX are no longer the exclusive territory of film. This session looks at how the art of Fight Night 4 and Gears of War have exploded the boundaries of what's possible in real time.

Moderator
Evan Hirsch

Panelists
Jenny Freeman
Frank Vitz
Electronic Arts, Canada

Wyeth Johnson
Epic Games

"Cloudy With a Chance of Meatballs": Making Mouthwatering 3D
Wednesday, 5 August | 1:45 - 3:30 pm
La Nouvelle Orleans Ballroom

The Sony Pictures Imageworks production team discusses and demonstrates the creative and technological elements that helped them achieve the most delicious event since macaroni met cheese. This behind-the-scenes look at the making of an epic food-filled film featuring food clouds and spaghetti twisters reviews the early design decisions that drove the look of the film, the global illumination renderer used to bring the movie to life, and more.

Rob Bredow
Karl Herbst
Danny Dimian
Sony Pictures Imageworks

Monsters vs. Stereo: How Stereo Affected Production on "Monsters vs. Aliens"
Thursday, 6 August | 10:30 am - 12:15 pm
Rooms 260-262

This session tracks the impact of stereo from concept to delivery on the production of "Monsters vs Aliens", the first animated feature for which stereo was integrated into the primary filmmaking process. Discover the lessons learned and how stereo affected the production pipeline from art, story, and editorial to layout and animation, and finally to lighting and effects.

Moderator
Darin Grant
Dreamworks Animation

Panelists
Ken Bielenberg
Mahesh Ramasubramanian
Phil Captain 3D McNally
Rich Shiba
Dreamworks Animation

G-Force 3D: Guinea Pigs, Gadgets and the Stereoscopic Post-Production Workflow
Thursday, 6 August | 1:45 - 3:30 pm
Rooms 260-262

The journey of this traditionally shot hybrid CG and live action film from flat elements to dimensional experience used a variety of visual effects techniques and created a breakthrough workflow for stereoscopic film production.

Rob Engle
Dan Lobl
Sony Pictures Imageworks

Matt DeJohn
In-Three, Inc.

"Coraline": The Changing Face of Animation
Thursday, 6 August | 3:45 - 5:30 pm
Rooms 260-262

An overview of how 3D printing technology was used to change the way stop-motion animation was used in the creation of the characters in "Coraline".

Brian McLean
LAIKA, Inc.

Neil Ranney
Objet Geometries Inc.

PANELS

Computer Animation Festival Panels explore current and future techniques, controversies, and productions in animation, visual effects, and visualization.

Getting a Job in CG for Entertainment: Visual Effects, Animation, and Games ➔
Monday, 3 August | 1:45 - 3:30 pm
Rooms 260 - 262

Keeping a Job in CG for Entertainment: Visual Effects, Animation, and Games ➔
Monday, 3 August | 3:45 - 5:30 pm
Rooms 260 - 262

Building Digital Cities ➔
Tuesday, 4 August | 9:20 - 10:15 am
Rooms 271-273

Will GPUs Change the Face of Rendering CGI for Motion Pictures? ➔
Tuesday, 4 August | 1:45 - 3:30 pm
Rooms 260-262

Tomorrow's Yesterday: Scientific and Biomedical Visualization ➔
Wednesday, 5 August | 8:30 - 10:15 am
Rooms 271-273

Deconstructing "Watchmen" ➔
Thursday, 6 August | 8:30 - 10:15 am
La Nouvelle Orleans Ballroom

The Masters Speak: Game Developers Weigh in on True 3D Gaming ➔
Thursday, 6 August | 8:30 - 10:15 am
Rooms 271-273

Beyond The Big Screen: The Evolution of 3D Standards for Cinema, Broadcast, and the Home ➔
Thursday, 6 August | 10:30 am - 12:15 pm
Rooms 271-273

The Mass Animation Project and the Future of Crowd-Sourced Creativity ➔
Thursday, 6 August | 1:45 - 3:30 pm
La Nouvelle Orleans Ballroom

A Journey from Outer to Inner Space: Scientific and Biomedical Stereoscopic Visualization ➔
Thursday, 6 August | 3:45 - 5:30 pm
Rooms 271-273

TALKS

In Computer Animation Festival Talks, musicians, programmers, artists, researchers, gamers, and filmmakers explain their recent work and future projects.

Visual Music Talks ➔
Monday, 3 August | 1:15 - 5:45 pm
Rooms 243-245

Matthew Bain Music Performance and Talk ➔
Monday, 3 August | 6 - 8 pm
Rooms 243-245

2009 Japan Animation Festival Review ➔
Monday, 3 August | 1:45 - 3:30 pm
Rooms 271-273

Urban Planning Talks ➔
Tuesday, 4 August | 8:30 am - 5:30 pm
Rooms 271-273

Making Pixar's "Partly Cloudy": A Director's Vision ➔
Tuesday, 4 August | 3:45 - 5:30 pm
Hall E 1-2

From Pitchvis to Postvis: Integrating Visualization Into the Production Pipeline ➔
Wednesday, 5 August | 10:30 am - 12:15 pm
Rooms 271-273

Immersive and Impressive: The Impressionistic Look of Flower on the PS3 ➔
Wednesday, 5 August | 1:45 - 3:30 pm
Rooms 271-273

Real Time Live ➔
Wednesday, 5 August | 3:45 - 5:30 pm
La Nouvelle Orleans Ballroom

Building Story in Games: No Cut Scenes Required ➔
Thursday, 6 August | 10:30 am - 12:15 pm
La Nouvelle Orleans Ballroom

Real-Time Design Review and Collaboration for Global Infrastructure Projects ➔
Thursday, 6 August | 1:45 - 3:30 pm
Rooms 271-273

BIRDS OF A FEATHER

Attendees who want to get together with others who share their interests, goals technologies, environments, or backgrounds are invited to attend a Birds of a Feather session. For a listing of the Birds of a Feather days, times, and locations see the SIGGRAPH 2009 Conference Locator.

3D Printing for Art and Visualization
Jeremy Swan
swanjere (at) mail.nih.gov

ACCAD/OSU Alumni Gathering
Elaine Smith
Elaine (at) accad.ohio-state.edu

ACM SIGGRAPH Cartographic Visualization Project Birds of a Feather Meeting
Theresa Marie Rhyne
tmrhyne (at) nscu.edu

AnimationMentor.com Gathering
Molly Wolfsehr
molly (at) animationmentor.com

Animux: Free Software for Animators
Mark Puttnam
mark (at) animux.org

Beyond the Screens: How to Turn Everything Into Interactive Media
Umyot Boonmarlart
umyotb (at) gmail.com

Blender Foundation, Artist Showcase
Ton Roosendaal
Ton (at) blender.org

Blender Foundation, Community Meeting
Ton Roosendaal
Ton (at) blender.org

BRL-CAD: Open-Source Solid Modeling
Christopher Sean Morrison
siggraph (at) brlcad.org

Collaborative Undergraduate Computing Studios Facilitating Decentralized Participation
Margaret Lomas Carpenter
marge (at) viz.tamu.edu

COLLADA BOF
Rita Turkowski
marketing (at) khronos.org

Come Meet the SIGGRAPH Student Services (S3) Committee
Lou Harrison
lou_harrison (at) siggraph.org

Computer Graphics for Simulation BOF
John F. Richardson
Richards (at) spawar.navy.mil

Computer Graphics Pioneers Reception
Michael Macedonia
MMacedonia (at) forterrainc.com

DIVERSE - Flexible Open-Source VE API
John Kelso
Kelso (at) nist.gov

Dynamic Simulation Birds of a Feather
Mark A. McLaughlin
mark.mclaughlin (at) disney.com

Friends of the Art Institutes
Jennifer Lasater
jlasater (at) edmc.edu

Interactive Ray Tracing
Peter Shirley
pshirley (at) nvidia.com

Interdisciplinary Computer Graphics Education
Jasminka Hasic
jhasic (at) gmail.com

Leonardo Town Hall Meeting
Pam Grant-Ryan
pgr (at) leonardo.info

Molecular Graphics
Jeremy Swan
swanjere (at) mail.nih.gov

Motion Graphics BOF
Gil Irizarry
Gil (at) conoa.com

OpenCL BOF
Neil Trevett
ntrevett (at) nvidia.com

OpenGL BOF
Barthold Lichtenbelt
marketing (at) khronos.com

OpenSG Birds of a Feather
Dirk Reiners
mail (at) dirkreiners.com

OpenSceneGraph BOF
Paul Martz
Pmartz (at) skew-matrix.com

Purdue University Reunion
James Sprinkles
jsprink (at) purdue.edu

RIT Alumni Reception
Ron Goldberg
rjgrar (at) rit.edu

Second Multi-User Virtual Environments Meeting (MUVEmoot)
Chris Thorne
Dragonmagi (at) gmail.com

Sharing Ideas in Teaching 3D Animation
Richard Lapidus
lapidus (at) morainevalley.edu

Shotgun Users Group
Kevin Porterfield
kp (at) shotgunsoftware.com

SIGGIG: Gays in Graphics
Jeffrey Weekley
jdweekle (at) nps.edu

SIGGRAPH Pin Collectors Showcase
Christopher Sean Morrison
siggraph (at) brlcad.org

Simulating Humans and Animals
Philippe Beaudoin
beaudoin (at) cs.ubc.ca

Taipei ACM SIGGRAPH Reunion
Bing-Yu Chen
robin (at) ntu.edu.tw

Teaching Computer Graphics in Context
Steve Cunningham
rsc (at) cs.csustan.edu

Teaching Math Through Game Development
Mitch Williams
Mitch.williams (at) 3d-online.com

Temerity Pipeline User Group
Jim Callahan
jim (at) temerity.us

Tokyo ACM SIGGRAPH Chapter Party
Yukio Ando
Yukio.andoh (at) gmail.com

UNC SIGGRAPH Alumni Reception
Courtney Ferriter
ferriter (at) cs.unc.edu

Using Computer Graphics in Performance
Marla Schweppe
marla_schweppe (at) siggraph.org

Web3D CAD Working Group
Anita Havele
Anita.havele (at) web3d.org

Web 3D User Interface Working Group
Anita Havele
Anita.havele (at) web3d.org

Women in Animation - Men are Welcome Too!
Pamela Thompson
pamrecruit (at) q.com

X3D Medical Working Group
Anita Havele
Anita.havele (at) web3d.org

X3d, MIDI, and Sound
Anita Havele
Anita.havele (at) web3d.org

INTERNATIONAL RESOURCES

DAYS & HOURS

Sunday, 2 August	2 - 6 pm
Monday, 3 August	8 am - 6 pm
Tuesday, 4 August	8 am - 6 pm
Wednesday, 5 August	8 am - 6 pm
Thursday, 6 August	8 am - 6 pm
Friday, 7 August	8 am - 2 pm

LOCATION

Hall G (SIGGRAPH Village)

Learn how the industry is evolving worldwide and collaborate with attendees from five continents. The International Center offers bilingual tours of SIGGRAPH 2009 programs, informal translation services, and space for meetings, talks, and demonstrations. Throughout the year, the International Resources program facilitates worldwide collaboration in the SIGGRAPH community, provides an English Review Service to help submitters whose first language is not English, and encourages participation in all conference venues, activities, and events.

INTERNATIONAL RESOURCES COMMITTEE

Scott Lang (USA)
International Resources Co-Chair
Bergen County Academies
Languages: English

Sandro Alberti (Mexico, USA)
International Resources Co-Chair
fen-om; Universidad de Guadalajara
Languages: Spanish, Italian, English

Matt Adcock (Australia)
English Review Coordinator
CSIRO Australia
Languages: English

Alexis Casas
International Resources Booth Manager
Delacave
Languages: English, French, Spanish, German

Miho Aoki (Japan)
Arctic Region Supercomputing Center,
University of Alaska Fairbanks
Languages: Japanese, English

Kirsten Cater (United Kingdom)
University of Bristol, United Kingdom
Languages: English

Alexia Convers (France, USA)
Studio PCH
Languages: French, Spanish, English,
Czech, Serbo-croatian

Wobbe F. Koning (The Netherlands)
Montclair State University
Languages: Dutch, German, English

Yong Tsui Lee (Singapore)
Nanyang Technological University
Languages: Mandarin, English

Patrick Marais (South Africa)
University of Cape Town
Languages: English

Marilenis Olivera (Venezuela, USA)
Stanford University
Languages: Spanish, English

INTERNATIONAL RESOURCES EVENTS

LOCATION

Hall G (SIGGRAPH Village)

Informative international sessions on the current state of computer graphics around the world, organized by representatives of ACM SIGGRAPH and affiliated societies.

SpaceTime Animation Screening

Monday, 3 August, through Thursday, 6 August
10 am - 1 pm

Digital review of projects accepted to the annual SpaceTime competition. Featuring the state of creative computer-based student work from around the globe.
Contact: mjbarr (at) mtsu.edu (Marc Barr)

Overview of SIGGRAPH 2009 (with Japanese interpreter)

Monday, 3 August
1 - 3 pm

Members of the SIGGRAPH 2009 Committee present an overview of the conference and highlights of their programs.
Contact: mihoalaska (at) gmail.com (Miho Aoki)

SpaceTime Student Exhibition Opening

Monday, 3 August
3:30 - 4:30 pm

Opening and Awards presentation for ACM SIGGRAPH SpaceTime Student Exhibition.
Contact: mjbarr (at) mtsu.edu (Marc Barr)

CG in Latino Countries

Monday, 3 August
4:30 - 5:30 pm

A brief overview of the state of CG in Latino countries. The session ends with a celebratory piñata.
Contact: marilenis (at) gmail.com (Marilenis Olivera)

Inter-Society for the Electronic Arts (ISEA) Open Forum

Tuesday, 4 August
1 - 2:30 pm

ISEA is an international non-profit organization fostering interdisciplinary academic discourse and exchange among culturally diverse groups and individuals working with art, science, and emerging technologies. This discussion includes information about the organization, the upcoming ISEA Symposium to be held in the Ruhr region, Germany in 2010, and plans for the future of ISEA, including the new Headquarters based at The University of Brighton, UK and the launch of the ISEA archive site. All interested members of the electronic arts community are welcome to attend, to learn about future symposia and share ideas for potential organizational collaborations.
Contact: sue.gollifer (at) googlemail.com (Sue Gollifer)

Communicating and Understanding Camera Culture

Tuesday, 4 August
2:30 - 4 pm

This forum features Ramesh Raskar (Camera Culture, MIT Media Lab), who is presenting the SIGGRAPH 2009 Course Next Billion Cameras, and provides an opportunity to discuss "camera culture" with people in various fields. The session focuses on next-generation cameras and how our lives will change to adapt to these new inventions. Presented in English with a Japanese interpreter.
Contact: ayumi.miyai (at) cgartgs.or.jp (Ayumi Miyai, CG Arts)

Professional Chapters and Student Chapters Start-Up Meeting

Wednesday, 5 August
12:30 - 1:30 pm

The Professional and Student Chapters of ACM SIGGRAPH span the globe. Within their local areas, chapters continue the work of ACM SIGGRAPH on a year-round basis via their meetings and other activities. Each chapter consists of individuals involved in education, research and development, the arts, industry, and entertainment who are interested in the advancement of computer graphics and interactive techniques, related technologies, and their applications. Chapter members gather throughout the year at meetings, site visits, conferences, video screenings, art shows, and special events.

This session explains how to start and run a successful ACM SIGGRAPH Professional or Student Chapter. Topics regarding the process are outlined in detail by members of the Chapters Committee, and the session concludes with a Q&A session.
Contact: scott (at) siggraph.org (Scott Lang)

Animation by Japanese Students

August 5, Wednesday
1:30 - 2 pm

DCAJ shows some of the animation works by young Japanese students which won prizes at Didital Creators Cometition 2008 (DCC 2008). Also, animations submitted by young Korean, Canadian and Malaysian artists will be included.
Contact: suzuki (at) dcaj.or.jp (Toshio Suzuki)

Industrial Application of CG in Japan

August 5, Wednesday
2 - 3 pm

DCAJ presents some of Japanese companies practicing highly advanced industrial application of CG technology.
Contact: suzuki (at) dcaj.or.jp (Toshio Suzuki)

Art & Economics of Animation in Latin America

Wednesday, 5 August
3 - 4:15 pm: Presentation
4:15 - 5 pm: Latin Snacks

Presentations by Latin America chapters and producers, including short demo. The goal of this talk is to shed light on the quality of animation that can - and is - being produced in Latin America. The types of service that clients can expect, as well as the costs and time involved in producing animation in Latin America, are also discussed.
Contact: alejandro.perelman (at) avsistemas.com (Alejandro Perelman)

Chapters Business Meeting

Thursday, 6 August
9 - 10 am: Meeting

The annual Business Meeting for the ACM SIGGRAPH Chapters.
Contact: scott (at) siggraph.org (Scott Lang)

ACM SIGGRAPH EXECUTIVE COMMITTEE

President
G. Scott Owen
Georgia State University

Vice President
James Foley
Georgia Institute of Technology

Treasurer
Jeff Jortner
Sandia National Laboratories

Directors-at-Large

Marie-Paule Cani
Grenoble Universities & INRIA

Rob Cook
Pixar Animation Studios

Paul Debevec
University of Southern California,
Institute for Creative Technologies

Scott Lang
Bergen County Academies

Kathryn Saunders
Kathryn Saunders Design Inc.

Peter Schröder
California Institute of Technology

Ex-Officio Executive Committee Members

SIGGRAPH Conference Advisory Group Chair
Jackie White
California State University, Los Angeles (retired)

*SIGGRAPH Asia Conference Advisory
Group Chair*
Thierry Frey

SIGGRAPH Conference Chief Staff Executive
Bob Niehaus
Talley Management Group, Inc.

SIGGRAPH Asia Chief Staff Executive
Adrian Sng
Koelnmesse

SIGGRAPH Conference Strategic Advisor
Gregg Talley
Talley Management Group, Inc.

ACM Program Director
Ginger Ignapoff
ACM

ACM SIGGRAPH Project Manager
Erin Butler
SmithBucklin Corporation

ACM SIGGRAPH Committee Chairs

Chapters Committee
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Bergen County Academies

Communications Committee
Kathryn Saunders
Kathryn Saunders Design Inc.

Digital Arts Committee
Jacquelyn Ford Morie
Institute for Creative Technologies

Education Committee
Marc Barr
Middle Tennessee State University

External Relations Committee
Alain Chesnais
Tucows Inc.

Information Services
Jenny Dana

Nominations Committee
Alain Chesnais
Tucows Inc.

Publications Committee
Stephen N. Spencer
University of Washington

Small Conferences Committee
Brian Wyvill
University of Victoria

Student Services Committee
Lou Harrison
North Carolina State University

SIGGRAPH 2009 COMMITTEE

ACM SIGGRAPH is a diverse group of researchers, artists, developers, filmmakers, scientists, and other professionals, who share an interest in computer graphics and interactive techniques. The community values excellence, passion, integrity, volunteerism, and cross-disciplinary interaction.

SIGGRAPH 2009 Conference Chair
Ronen Barzel

ACM SIGGRAPH Conference Chief Staff Executive
Bob Niehaus
Talley Management Group, Inc.

SIGGRAPH 2009 Conference Manager
Francesca Regan
Talley Management Group, Inc.

Art Papers Chair
Jacquelyn Martino
IBM Watson Research Center

Audio Visual Support/General Services
Freeman Audio Visual Solutions/ Freeman

Computer Animation Festival Consultant
Emru Townsend
(1969 - 2008)
Frames Per Second Magazine

Computer Animation Festival Executive Producer
Carlye Archibeque
LightStage, LLC

Conference Administration
Talley Management Group, Inc.

Conference Arts Director
Rebecca Strzelec
Penn State Altoona

Conference Director-at-Large
Andrew Glassner

Conference Director of Encounters
Mk Haley
Disney-ABC Television Group

Conference Director of Future Thinking
Cindy Grimm
Washington University in St. Louis

Conference Director of Interactive Play
Drew Davidson
Carnegie Mellon University

Conference Director of Knowledge Transfer
Dave Shreiner
ARM Ltd.

Conference Director of Operations
John Fujii
Hewlett-Packard Company

Conference Director of Production Communities
Jim Hillin
Digital Domain

Conference Industry Relations Director
Pete Braccio
Monterey Bay Aquarium Research Institute

Conference Management/ Marketing and Media
SmithBucklin Corporation

Courses Chair
Mashhuda Glencross
University of Manchester

Curated Art Chair
Makai Smith
Bentley Systems

Donations Chair
Megan Kreiner
DreamWorks Animation

Emerging Technologies Chair
Manabu Sakurai
QBay Consulting, LLC

Emerging Technologies Curation Chair
Daniel Wigdor
Microsoft Surface

Exhibition Management
Hall-Erickson, Inc.

FJORG! Chair
Patricia Beckmann-Wells
Bunsella Films

Game Papers Chair
Tracy Fullerton
University of Southern California

GameJam! Chair
Tina Ziemek
University of Utah

Games Project Lead
Stephen Jacobs
Rochester Institute of Technology

General Submissions Chair
Dena DeBry
Buttonwillow Six

Graphic Design/Editing/Web Site
Q LTD

GraphicsNet Chair
David Spoelstra
MediaMachine LLC

Information Aesthetics Showcase Chair
Victoria Szabo
Duke University

International Resources Co-Chairs
Sandro Alberti
fen-om; Universidad de Guadalajara

Scott Lang
Bergen County Academies

Juried Art Chair
Elona Van Gent
University of Michigan

Music Program Producer
Amy Morie
Amy Morie Landscape Design

Late-Breaking Chair & Sessions Coordinator
Helen-Nicole Kostis
University of Maryland Baltimore County & Scientific Visualization Studio, NASA

Organizational Development
Bob Berger
The Scooter Store

Publications
Stephen N. Spencer
ACM SIGGRAPH Publications Committee Chair
University of Washington

Real-Time Rendering Chair
Evan Hirsch

Sandbox Chair
Eli Neilburger

SIGGRAPH 2009 +1 Outreach Chair
Jerome Solomon
Industrial Light & Magic

SIGGRAPH 2010 Conference Chair
Terrence Masson
Northeastern University

SIGGRAPH 2011 Conference Chair
Pete Braccio
Monterey Bay Aquarium Research Institute

SIGGRAPH 2012 Conference Chair
Rebecca Strzelec
Penn State Altoona

The SIGGRAPH Information System (SIS)
The OPAL Group

Student Volunteers/Ex-Student Volunteers Chair
Nicolas Gonzalez
STTARR Project, Princess Margaret Hospital (UHN)

The Studio Chair
Matthew Hollern
The Cleveland Institute of Art

Technical Papers Chair
Thomas Funkhouser
Princeton University

Visual Music Project Lead
Dennis Miller
Northeastern University

ACM SIGGRAPH

In the span of 35 years, ACM SIGGRAPH has grown from a handful of computer graphics enthusiasts to a diverse group of researchers, artists, developers, filmmakers, scientists, and other professionals who share an interest in computer graphics and interactive techniques. Our community values excellence, passion, integrity, volunteerism, and cross-disciplinary interaction. We sponsor not only the annual SIGGRAPH conference, but also focused symposia, chapters in cities throughout the world, awards, grants, educational resources, online resources, a public policy program, and the SIGGRAPH Video Review. The second annual SIGGRAPH ASIA conference will be held in Yokohama, Japan, December 2009.

Membership

The SIGGRAPH community depends on your support. Help us continue our global efforts in education, communications, and advocacy by joining ACM SIGGRAPH for $42 per year ($30 per year for students, $47 for Pioneers, and $28 for Eurographics members). Become an ACM SIGGRAPH member and receive a siggraph.org email alias, access to the archive of SIGGRAPH Proceedings in the ACM Digital Library, Computer Graphics e-Quarterly, discounted registrations on ACM SIGGRAPH sponsored programs and events including the annual SIGGRAPH and SIGGRAPH Asia conferences and partner conferences such as Eurographics, as well as discounts on publications and preferred vendor deals on valuable merchandise. For more details on membership or to join online, visit **www.siggraph.org** ➜ and select "Membership." For those of you who are already members, thank you for your continued and loyal support.

ACM

ACM SIGGRAPH's parent organization is ACM, the Association for Computing Machinery. ACM is the world's largest educational and scientific computing society, uniting educators, researchers, and professionals to inspire dialogue, share resources, and address the field's challenges. ACM strengthens the computing profession's collective voice through strong leadership, promotion of the highest standards, and recognition of technical excellence. ACM supports the professional growth of its members by providing opportunities for life-long learning, career development, and professional networking. Many ACM SIGGRAPH members also join ACM. The benefits of ACM membership include full access to online books and courses, the ACM Career & Job Center, subscriptions to ACM's popular email alert news digests TechNews and CareerNews, and the online newsletter Member-Net. ACM members may subscribe to the Digital Library and receive full access to the Guide to Computing Literature, which features more than one million bibliographic citations from the vast world of computing. ACM members also receive discounts on cutting-edge magazines, journals, books, and conferences. For more information, visit: **www.acm.org** ➜

Awards

ACM SIGGRAPH awards the prestigious Steven A. Coons award for lifetime achievement, the Computer Graphics Achievement Award for notable achievements, the Significant New Researcher Award for new contributors to our field, the Outstanding Service Award, and the Distinguished Artist Award for lifetime achievement in digital art. For a list of past award recipients, visit: **www.siggraph.org/awards** ➜

Education Committee

The ACM SIGGRAPH Education Committee works to support computer graphics education as well as the use of computer graphics in education. Computer graphics education encompasses technical, creative, and developmental studies in curricular areas ranging from computer science to digital arts. The Education Committee undertakes a broad range of projects and activities in support of the CG education community, such as curriculum studies, resources for educators, and SIGGRAPH conference-related activities. This includes the international, juried SpaceTime Student Competition & Exhibition and much more. For more information, please visit: **education.siggraph.org** ➜

Digital Arts Community

The ACM SIGGRAPH Digital Arts Community committee serves to foster the evolution of a strong digital arts community within the international organization and to promote a dialogue between visual artists and the larger SIGGRAPH community. It maintains an interactive Arts Portal, arts.siggraph.org, with an associated social networking site, **siggrapharts.ning.com** ➜ that provides a central place for artists and scientists to share resources, information, artwork, and opportunities. All SIGGRAPH members are invited to utilize the site to follow developments in the arts, stay connected, and identify potential collaborators. For more information visit: **arts.siggraph.org** ➜

External Relations Committee

ACM SIGGRAPH has agreements with a number of organizations and conferences around the world. To see the list of current affiliations or to inquire about what is involved in entering into such a relationship, stop by the ACM SIGGRAPH Membership booth or visit: **www.siggraph.org/affiliations** →

Professional & Student Chapters

Chapters of ACM SIGGRAPH exist in 65 cities in 16 countries around the world. They form an international multi-cultural network of people who develop, share, continue, and extend the work and achievements presented at the annual conference. Chapter members include those involved in research, development, education, art, gaming, visualization, and entertainment, just to name a few. For more information about the ACM SIGGRAPH network of chapters, or if you would like to start a Professional or Student Chapter, visit: **www.siggraph.org/chapters** →

Publications

ACM SIGGRAPH publications provide the world's leading forums for computer graphics research. Our conference series provides the largest source of citations in computer graphics literature. Publications are available to ACM SIGGRAPH members for substantial discounts. See: **www.siggraph.org/publications** →

Small Conferences and Symposia

ACM SIGGRAPH helps organize and sponsor focused conferences, workshops, and other symposia around the world on topics related to computer graphics and interactive techniques. These gatherings enable groups with specific interests to get together and exchange information. To see the list of symposia or find out how to get help for a conference you'd like to organize, stop by the ACM SIGGRAPH Membership booth or visit: **www.siggraph.org/events/symposia** →

SIGGRAPH 2010
Los Angeles, California

Interested in participating in the SIGGRAPH 2010 conference as a presenter or volunteer? Stop by the SIGGRAPH 2010 booth in Hall F Lobby, talk with the volunteer leaders who organize the annual SIGGRAPH conference, and discover how you can contribute your expertise and energy. Questions and comments are encouraged. **www.siggraph.org/s2010** →

SIGGRAPH Asia 2009
Yokohama, Japan

Start planning now to be in Yokohama for the second SIGGRAPH Asia Conference and Exhibition. Drop by our booth in Hall F Lobby and have a chat with us to find out more details. **www.siggraph.org/asia2009** →

SIGGRAPH Asia 2010
15-18 December 2010
Seoul, Korea

Drop by the SIGGRAPH Asia 2009 Booth located in Hall F Lobby for more information.

SIGGRAPH Video Review

SIGGRAPH Video Review is the world's most widely circulated video-based publication. Over 160 programs document the annual SIGGRAPH Computer Animation Festival, providing an unequaled opportunity to study state-of-the-art computer graphics techniques, theory, and applications. New releases and recent issues are available in DVD format. Visit the SIGGRAPH Review booth outside the La Nouvelle Orleans Ballroom.

Volunteers

All of the programs developed by ACM SIGGRAPH rely heavily on volunteer support. As a member, you are eligible to serve in some of ACM SIGGRAPH's most visible positions, including leading a professional chapter, chairing the annual conference, or serving on the ACM SIGGRAPH Executive Committee. For more information, see: **www.siggraph.org/gen-info/volunteer-positions.shtml** →

Annecy

Annecy has been showcasing the very best in animation for over 45 years, making it the industry's leading international competitive festival. The capacity to present and promote animation in all its different forms has made Annecy a world-wide point of reference for the animation industry.

www.annecy.org ➜

China Cartoon Industry Forum (CCIF)

Supported by the Chinese government, the China Cartoon Industry Forum was founded by the Cartoon Commission of China TV Artists Association. As the most influential Chinese conference, CCIF promotes industrialization, internationalization, and market development. CCIF operates two projects, which are 'Asian Youth Animation & Comics Contest' (AYACC) and 'China Animation& Comics Game' (CACG). Asian Youth Animation & Comics Contest is aimed to be the top annual award for Asian original animation and comic. CACG is committed to building an animation-training system to provide vocational animation and comics training courses studies for all trainees in China.

www.ccif.com.cn / www.51cacg.com ➜➜
(will be launched with English and Chinese versions soon)

Computer Graphics Arts Society (CG-ARTS)

The Computer Graphics Arts Society, officially recognized by the Ministry of Education, Culture, Sports, Science and Technology in 1992, is a publicly funded body dedicated to promoting Japanese computer graphics education from drafting curricula to the development and publication of teaching materials, nurturing instructors, and providing certification tests to evaluate the ability of each individual. It is also dedicated to developing a distinctive Japanese media arts culture in the 21st century by hosting the Computer Graphics Contest for Students since 1995 and co-organizing the Japan Media Arts Festival in conjunction with the Agency for Cultural Affairs since 1996.

www.cgarts.or.jp ➜

Digital Content Association of Japan (DCAJ)

DCAJ is a government-approved non-profit organization promoting the Japanese digital content industry. It organizes Digital Content Expo (DC EXPO) 2009 (www.dcexpo.jp) from October 22 to 25 at Miraikan Museum in Tokyo.

www.dcaj.org/outline/english/index.html ➜➜

Eurographics

The European Association for Computer Graphics is a professional association that assists members with their work and careers in computer graphics and interactive digital media. Eurographics has members worldwide and maintains close links with developments in the USA, Japan, and other countries, by inviting speakers from those countries to participate in Eurographics events and by sending representatives to other events. Eurographics 2010 will be held in Norrköping, Sweden May 3-7, 2010.

www.eg.org ➜

FMX

FMX is the primary European meeting of the digital community. Presenting cutting edge digital entertainment, the conference addresses the interests of professionals in creation, production and distribution from all corners of the industry. Innovative approaches in the animation, visual effects and gaming industries create a focus for discussions about the convergence and future of digital entertainment.

Meet top names in the industry as they present their latest achievements, interview with recruiters searching for new talent and test hard- and software innovations directly with developers – all in an open atmosphere of qualified discussion and informal encounter. The level of knowledge and experience and the openness with which it is shared has made FMX a set date for cg professionals all around the world.

www.fmx.de ➜➜

IMAGINA

IMAGINA will be held at the Grimaldi Forum in Monte-Carlo, 3- 5 February 2010. IMAGINA, The European 3D Simulation and Visualisation Event centred on solutions which assist in designing and reaching decisions through visualisation and simulation.
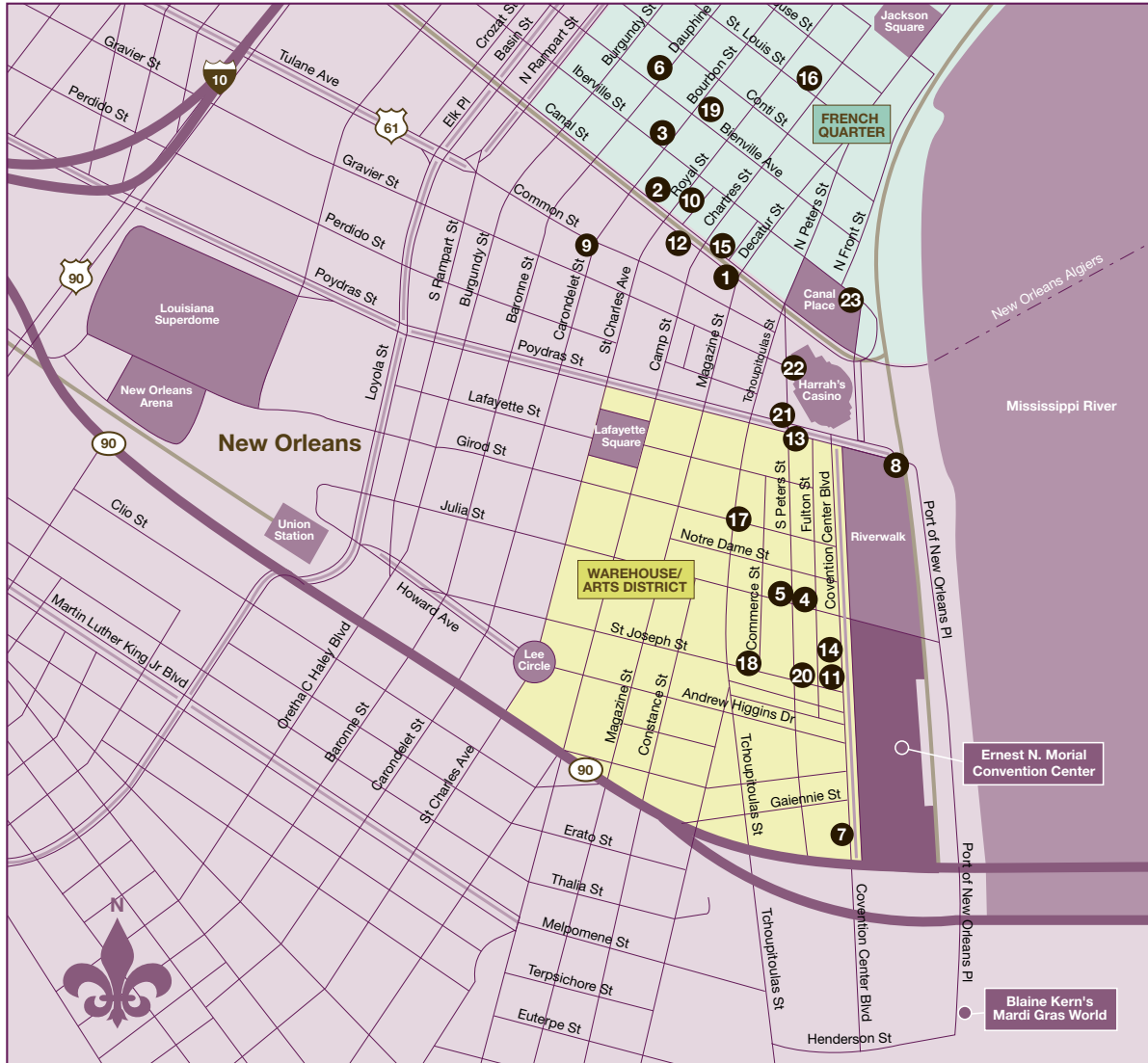
www.imagina.mc ➜➜

Laval Virtual

The 12th International Conference on Virtual Reality will be held on April 7-11, 2010, in Laval, France. First event in Europe dedicated to Virtual Reality, Realtime 3D and Interactive Techniques, Laval Virtual is where virtual reality users share their latest techniques from their fields of expertise.

www.laval-virtual.org ➜➜

## Seoul International Cartoon & Animation Festival (SICAF)

SICAF focuses on the dynamic new-media environment and presents current trends in cartoons and animation through Exhibition Convention, Animated Film Festival and SPP Market.
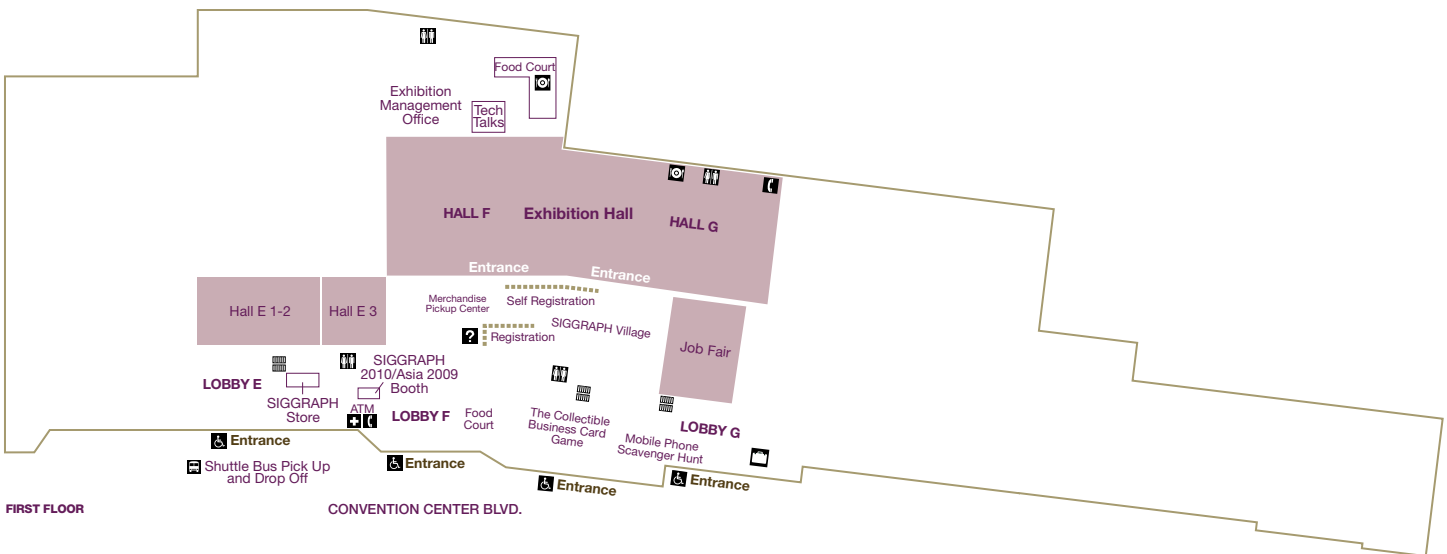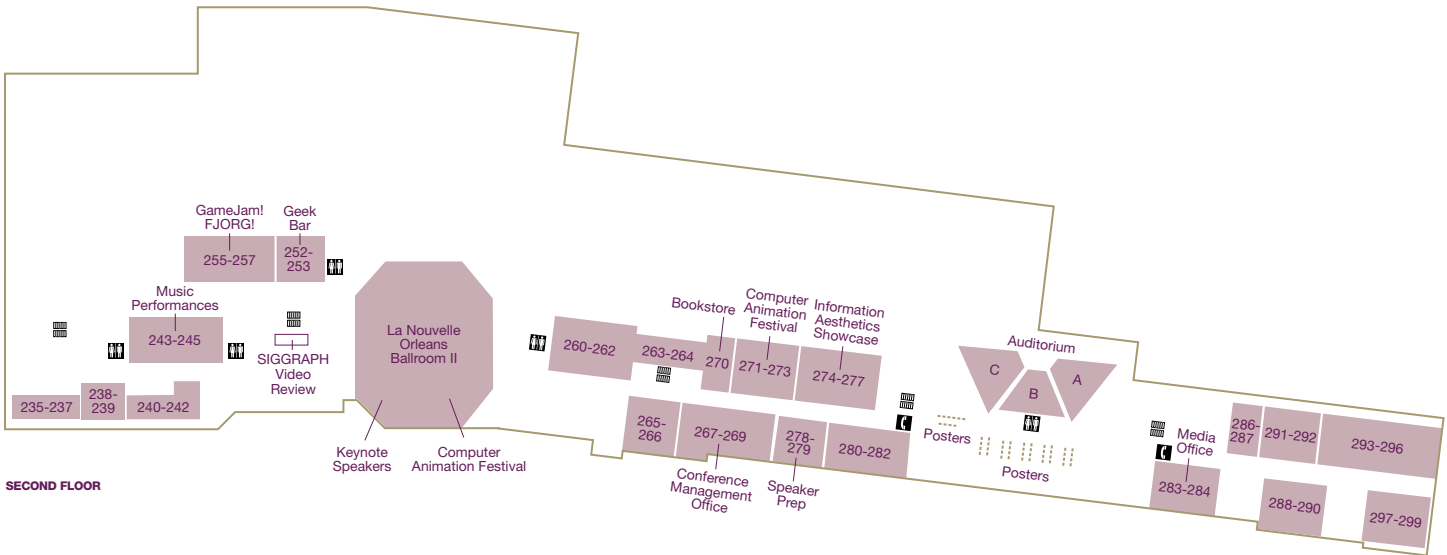
www.sicaf.org ➜➜

1 **Sheraton New Orleans**
Headquarters Hotel
+1.504.525.2500
www.sheratonneworleans.com

2 **Astor Crowne Plaza**
+1.504.962.0500
www.astorneworleans.com

3 **Chateau Bourbon**
+1.504.586.0800
www.wyndham.com

4 **Courtyard New Orleans
Convention Center**
+1.504.598.9898
www.marriott.com

5 **Embassy Suites New Orleans
- Convention Center**
+1.504.525.1993
www.embassysuite.hilton.com

6 **French Quarter Chateau
LeMoyne**
+1.504.581.1303
www.hiclneworleanshotelsite.com

7 **Hampton Inn & Suites New
Orleans Convention Center**
+1.504.566.9990
www.hamptoninn.com

8 **Hilton New Orleans Riverside**
+1.504.561.0500
www.hilton.com

9 **Holiday Inn Express -
French Quarter**
+1.504.962.0800
www.ichotelsgroup.com

10 **Holiday Inn New Orleans -
French Quarter**
+1.504.529.7211
www.ichotelsgroup.com

11 **Hotel New Orleans -
Convention Center**
+1.504.524.1881
www.hotelneworleansconventioncenter.com

12 **JW Marriott New Orleans**
+1.504.525.6500
www.marriott.com

13 **Loews New Orleans Hotel**
+1.504.595.3300
www.loewshotels.com

14 **New Orleans Marriott
at the Convention Center**
+1.504.613.2888
www.marriott.com

15 **New Orleans Marriott**
+1.504.581.1000
www.marriott.com

16 **Omni Royal Orleans**
+1.504.529.3333
www.omnihotels.com

17 **Renaissance Arts Hotel**
+1.504.613.2330
www.marriott.com

18 **Residence Inn New Orleans
Convention Center**
+1.504.522.1300
www.marriott.com

19 **Royal Sonesta Hotel**
+1.504.586.0300
www.sonesta.com

20 **Spring Hill Suites New Orleans
Convention Center**
+1.504.522.3100
www.marriott.com

21 **W New Orleans**
+1.504.525.9444
www.starwoodhotels.com

22 **Windsor Court Hotel**
+1.504.523.6000
www.windsorcourthotel.com

23 **Westin New Orleans
Canal Place**
+1.504.566.7006
www.starwoodhotels.com

KEY

- ☎ Telephones
- ? Information
- 🚻 Restrooms
- 🍴 Food & Beverage
- ✚ First Aid
- 🧳 Baggage Check
- 🚌 Shuttle Pick-up and Drop-off
- ♿ Handicap Access

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Generative Fabrication
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Biologic Art: A Natural History of Digital Art
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The Studio
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Experimental Sensory Experiences
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The Sandbox

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Posters

Auditorium
C
B
A

Posters

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Media Office

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FIRST FLOOR

Food Court

Exhibition Management Office

Tech Talks

HALL F   **Exhibition Hall**   HALL G

Entrance   Entrance

Hall E 1-2   Hall E 3

Merchandise Pickup Center
Self Registration
SIGGRAPH Village
Registration

Job Fair

LOBBY E

SIGGRAPH Store

SIGGRAPH 2010/Asia 2009 Booth

ATM

LOBBY F

Food Court

The Collectible Business Card Game

Mobile Phone Scavenger Hunt

LOBBY G

♿ Entrance

🚌 Shuttle Bus Pick Up and Drop Off

♿ Entrance

♿ Entrance

Entrance

CONVENTION CENTER BLVD.

Art Papers
ArtServe Michigan
IBM Watson Research Center
Penn State Altoona
University of Michigan

BioLogic: A Natural History of Digital Life
ArtServe Michigan
IBM Watson Research Center
Next Generation Design Leaders
   Programme, supported by
   Korean Minis
Penn State Altoona
Philip Beesley Architect Inc.
School of Art & Design, University
   of Michigan
Walt Disney Animation Studios

Computer Animation Festival
Advanced Micro Devices, Inc.
AJA Video Systems
Apple Inc.
Carnegie Mellon University
Digital Domain Productions Inc.
Doremi Labs, Inc.
Electronic Arts
FotoKem, a division of Next Lab
Industrial Light & Magic
Lenovo
LightIRON
LightStage, LLC
Microsoft Game Studios
Miranda Technologies, Inc.
Mulholland Bays
NVIDIA Corporation
PlasterCITY Digital Post
RealD
Smith Micro Software, Inc.
Sohonet Limited
Sony Electronics
Sony Pictures Imageworks
THQ Inc.

Courses
ARM Ltd.
The University of Manchester

Donations
DreamWorks, L.L.C.

Emerging Technologies
Disney ABC Digital Media
Drexel University
Microsoft Corporation
QBay Consulting, LLC
Walt Disney Parks and Resorts
Zynga, Inc.

Encounters
Wacom Co., Ltd.

FJORG!
3Dconnexion, a Logitech company
Adobe Systems Incorporated
Animation Magazine Inc.
Animotion Inc.
Autodesk, Inc.
Ballistic Media Pty. Ltd.
DreamWorks Animation L.L.C.
John Wiley & Sons, Inc.
Monterey Bay Aquarium
   Research Insitute
Nickelodeon,
   Viacom International Inc.
Noesis Interactive
O'Reilly Media, Inc.
Peachpit Press

PL Studios, Inc.
PNY Technologies, Inc.
Wacom Co., Ltd.
Walt Disney Animation Studios

GameJam!
Adobe Systems Incorporated
Animation Magazine Inc.
Animotion Inc.
Autodesk, Inc.
Ballistic Media Pty. Ltd
Carnegie Mellon University
DreamWorks, L.L.C.
John Wiley & Sons, Inc.
Noesis Interactive
NVIDIA Corporation
O'Reilly Media, Inc.
Peachpit Press
PL Studios, Inc.
PNY Technologies, Inc.
Wacom Co., Ltd.
Walt Disney Animation Studios
Xgaming, Inc

Geek Bar
Walt Disney Animation Studios

General Submissions
Buttonwillow Six
Hewlett-Packard Development
   Company, L.P.
Scientific Visualization Studio,
   NASA/GSFC
University of Maryland Baltimore
   County, GEST
Washington University in St. Louis

Generative Fabrication
Bentley Systems
Blue Sky Studios
Blumer-Lehmann AG
Kreysler & Associates
MFR Consultants
Penn State Altoona
Walt Disney Animation Studios
Z Corporation

GraphicsNet
Fluke Networks
Lee County School District
MediaMachine LLC
Monterey Bay Aquarium
   Research Institute
Network for Computational
   Nanotechnology
Purdue University
Sallie Mae
Stanford University

Information Aesthetics Showcase
Carnegie Mellon University
Duke University ISIS Program
   and Visual Studies Initiative
Renaissance Computing Institute
Stanford University

International Resources
Bergen County Academies
fen-om
Universidad de Guadalajara

Late Breaking Submissions
Scientific Visualization Studio,
   NASA/GSFC
University of Maryland Baltimore
   County, GEST
Washington University in St. Louis

Music Performances
Amy Morie Landscape Design
Cycling '74
I-CubeX
Monterey Bay Aquarium
   Research Insitute
New Orleans Music Exchange
Northeastern University
Stanford University

Outreach
Adobe Systems Incorporated
Animotion Inc.
Autodesk, Inc.
Ballistic Media Pty. Ltd
Craft Animations & Entertainment
DreamWorks
Industrial Light & Magic
Peachpit Press
Pixologic, Inc.
PL Studios, Inc.
The Gnomon School
Toon Boom Animation Inc.
Walt Disney Animation Studios

Podcasts
Adobe Systems Incorporated
Bergen County Academies
Digital Domain Productions, Inc.
Walt Disney Animation Studios

Research Challenge
John Wiley & Sons, Inc.
O'Reilly Media, Inc.
Peachpit Press

The Sandbox
Ann Arbor Distrcit Library
Carnegie Mellon University
Lenovo
Walt Disney Animation Studios

Social Games
Carnegie Mellon University
GarageGames
Georgia Institute of Technology
Rochester Institute of Technology
Savannah College of Art and Design

SpeedLab
Washington University in St. Louis

Student Volunteers
Activision, Inc.
Adobe Systems Incorporated
Animation Magazine Inc.
AnimationMentor.com
Autodesk, Inc.
Ballistic Media Pty. Ltd.
CGSociety
Computer Graphics World
Digital Domain Productions Inc.
DreamWorks Animation
DreamWorks
Electronic Arts
Escape Studios
Eyeon Software
iloura
INSIGHTS Toronto
LAIKA Inc.
Microsoft Corporation
Noesis Interactive
NVIDIA Corporation
O'Reilly Media, Inc.
Peachpit Press
Pixar Animation Studios
Pixologic, Inc.
PL Studios, Inc.

PNY Technologies, Inc.
Reel Exchange
Rhythm & Hues Studios
STTARR Project, Princess
   Margaret Hospital (UHN)
The Gnomon School
University College Dublin
University of North Carolina
   at Chapel Hill
University of Utah
Wacom Co., Ltd.
Walt Disney Animation Studios

The Studio
3D Systems Corporation
3Dconnexion, a Logitech company
Adobe Systems Incorporated
Albeton AG
Animotion, Inc.
Apple Inc.
Autodesk, Inc.
AutoDesSys, Inc.
Avid Technology, Inc.
Bunkspeed
Cakewalk, Inc.
California College of the Arts
Canon Inc.
Celemony Software GmbH
Cleveland Institute of Art
Corel Corporation
Cycling '74
Eyeon Software
Fender Musical Instruments Corporation
Geomagic, Inc.
Gibson USA
GigaPan
Hewlett-Packard Development
   Company, L.P.
I-CubeX
Image Content Technology LLC
Intel Corporation
Lenovo
Materialise Group
MAXON Computer
Monterey Bay Aquarium
   Research Insitute
Native Instruments GmbH
NewTek, Inc.
Next Engine
Northeastern University
Penn State Altoona
Phase Space
Pixologic, Inc.
PL Studios, Inc.
RDG Woodwinds
Right Hemisphere
Robert McNeel & Associates
SensAble Technologies, Inc.
Stanford University
Stratasys, Inc.
The Gnomon School
Wacom Co., Ltd.
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