Advance Program

www.siggraph.org/s2008

Contents

SIGGRAPH2008 | Evolve

The 35th International Conference and Exhibition on Computer Graphics and Interactive Techniques

CONFERENCE: MONDAY, 11 AUGUST - FRIDAY, 15 AUGUST 2008
EXHIBITION: TUESDAY, 12 AUGUST - THURSDAY, 14 AUGUST 2008

LOS ANGELES CONVENTION CENTER LOS ANGELES, CALIFORNIA USA

Sponsored by ACMSIGGRAPH

SIGGRAPH2008

Conference Registration Categories

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

		10 AUGUST	11 AUGUST	12 AUGUST	13 AUGUST	14 AUGUST	15 AUGUST
	Registration	1 - 7 pm	7:30 am - 6 pm	8 am - 6 pm	8 am - 6 pm	8 am - 6 pm	8 am - 3:30 pm
	Merchandise Pickup	1 - 7 pm	7:30 am - 6 pm	8 am - 6 pm	8 am - 6 pm	8 am - 6 pm	8 am - 3:30 pm
	SIGGRAPH Store	1 - 7 pm	7:30 am - 6 pm	8 am - 6 pm	8 am - 6 pm	8 am - 6 pm	8 am - 6 pm
■	Classes		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
■	Geek Bar		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
■	Informal Forums					8:30 am - 12:15 pm	
■	Panels		3:45 - 5:30 pm	1:45 - 5:30 pm 3:45 - 5:30 pm	8:30 - 10:15 am	10:30 am - 12:15 pm	10:30 am - 12:15 pm
■	Reception					7 - 10 pm	
■	Roundtables		10:30 am - 12:15 pm	3:45 - 5:30 pm	3:45 - 5:30 pm	1:45 - 5:30 pm	
■	Talks		8:30 - 10:15 am 3:45 - 5:30 pm	8:30 am - 3:30 pm	10:30 am - 5:30 pm	1:45 - 5:30 pm	10:30 am - 5:30 pm
■	Technical Papers			8:30 am - 5:30 pm	8:30 am - 6 pm	8:30 am - 6 pm	8:30 am - 5:30 pm
■ ●	Art & Design Galleries						
	Design & Computation		8:30 am - 6 pm	9 am - 7 pm	9 am - 6 pm	9 am - 6 pm	9 am - 2 pm
	Slow Art		8:30 am - 6 pm	9 am - 7 pm	9 am - 6 pm	9 am - 6 pm	9 am - 2 pm
■ ●	Featured Speakers		1:30 pm	1:30 pm		1:45 pm	
■ ●	FJORG!		9 am - Midnight	Midnight - 5 pm			
■ ●	International Resources		8:30 am - 6 pm	8 am - 6 pm	8 am - 6 pm	8 am - 6 pm	8 am - 4 pm
■ ●	New Tech Demos		8:30 am - 6 pm	9 am - 7 pm	9 am - 6 pm	9 am - 6 pm	9 am - 2 pm
■ ●	Posters		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 - Noon
■ ●	The Studio		1 - 6 pm	Noon - 11 pm	Noon - 11 pm	9 am - 6 pm	9 am - 2 pm
■ ▲	Computer Animation Festival						
	Talks		8:30 am - 12:15 pm 3:45 - 5:30 pm	8:30 am - 5:30 pm	8:30 am - 5:30 pm	8:30 am - 5:30 pm	
	3D Stereoscopic Talks and Screenings		8:30 am - 7:45 pm	8:30 am - 5:30 pm			
	Production Sessions		10:30 am - 12:15 pm 3:45 - 5:30 pm		1:45 - 3:30 pm	10:30 am - 12:15 pm	
	Screenings			12:30 - 11 pm	10:30 am - 11 pm	10:30 am - 11 pm	10:30 am - 3 pm
	Competition Screenings			1:45 & 5:45 pm	10:30 am & 5:45 pm	10:30 am & 5:45 pm	10:30 am
	Festival Awards Ceremony					3:45 pm	
■ ● ▲	Birds of a Feather	Throughout the week					
■ ● ▲	Exhibition			9:30 am - 6 pm	9:30 am - 6 pm	9:30 am - 3:30 pm	
■ ● ▲	Exhibitor Tech Talks			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 - 4 pm	
■ ● ▲	Special Events						
	SpeedLab		3:45 - 5:30 pm				1:45 - 3:30 pm
	Fast-Forward Technical Papers Preview Session		6 - 8 pm				
	FJORG! Viking Animation Event				6:30 - 8:30 pm		
	The Anti-Auteurs: User-Generated Content and the Evolving Videogame Ecosystem			6 - 8 pm			
	Winners of the ACM Student Research Competition						10:30 am - 12:15 pm

Conference schedule subject to change.

Evolve at SIGGRAPH 2008
and return energized to apply
everything you've learned.

An Exceptional Return on Investment

Knowing that the majority of SIGGRAPH conference attendees rely on their employers to fund their registration and travel in part or in full, we have developed the following value-based talking points for you to share with your boss.

Value
SIGGRAPH is the only place you can find best-practice-based education with an approximate cost of $30 per session*, significantly leveraging your organization's training dollars.

New Tech Demos
Only at SIGGRAPH do the most competitive, bleeding-edge minds in new technologies from around the world come together cooperatively for you to interact and engage with, bringing the future back to your organization today.

Industry Visionaries
SIGGRAPH gives you access to first-hand accounts from industry icons, who were once in your shoes, about how and where their visions and inspiration were born.

Hands-On Know How
Acquiring the most current information in an interactive environment is the only way to protect and leverage the significant investment your company has made in graphics technology.

One-Stop Shopping
With budget time right around the corner, you need to start researching options and opportunities. What better way to start than with more than 250 exhibitors from five continents all in one place?

Personally Relevant Education
One SIGGRAPH week offers nearly 300 education-based sessions to choose from, allowing you to tailor a personal education program that ensures you are learning something new and specifically relevant to your organization's needs.

Saves Time
Because, while a week out of the office seems difficult, having to take up to a year to amass the directly relevant information and education you could gain in one week would be downright daunting.

Register Early and Afford More!
If you register early, you can save enough to buy a discount airline ticket, reducing your organization's out-of-pocket costs.

Inspiration
After your SIGGRAPH 2008 experience, you'll return to work rejuvenated, ready to apply your new knowledge and newly inspired creativity.

* Based on an average attendee's participation in 25 sessions of various types over five days at the SIGGRAPH 2008 Member Discounted Registration rate.

Conference Registration Categories

- Full Conference Access
- Basic Access
- Computer Animation Festival

Conference Overview

Join an estimated 30,000 creators of computer graphics and interactive techniques in Los Angeles for five full days of world-class technical presentations, creative exploration, and the industry's largest marketplace of products and services: The Exhibition.

Test drive all the most advanced tools. See, hear, and interact with digital innovators, creative researchers, award-winning producers, provocative artists, energetic executives, and adventurous engineers. Make the connections and acquire the knowledge you need to lead the international computer graphics and interactive techniques community to the next generation of digital power.

Featured Speakers

ED CATMULL

President, Walt Disney and Pixar Animation Studios

FOUR-TIME ACADEMY AWARD WINNER

Monday, 11 August

Managing the Creative Environment

Since the late 1970s, Ed Catmull, a pioneer in the entertainment and film industry and co-founder of Pixar Animation Studios, Ed Catmull played a major role in the invention of some of the most fundamental computer graphics practices used throughout the motion picture industry. He is one of the original architects of the RenderMan rendering software system, used to create some of the world's best known animated hits, including "Toy Story" and "Finding Nemo." And he has founded three of the world's most renowned computer graphics research centers, including the computer graphics laboratory at the New York Institute of Technology and the computer division of both Lucasfilm, Ltd. and Pixar Animation Studios.

Photo: Kenny Morrison (fab DP)

CATHERINE OWENS

Artist/Director

CO-DIRECTOR, "U2 3D"

Tuesday, 12 August

Giving Technology Emotion: From the Artist's Mind to "U2 3D"

Irish artist/director Catherine Owens creates installations that evolve through painting, sculpture, photography, sound, and video. She is well known for her collaboration with the Irish band U2 on their last four world tours. She co-directed "U2 3D," a documentary of the band's live performance in South America on their 2006 Vertigo tour. "U2 3D" is the first live-action feature-length 3D digital theatrical release. In 2005, she directed U2's "Original Of The Species" video, which explored CG motion capture technology. She has also created and directed visual content and animation for the San Francisco-based group Kronos Quartet and for the Chinese Pipa player Wu Man. Owens is currently working on a new body of drawings and creating content for the next U2 album and tour.

TAKEO KANADE

Professor of Computer Science and Robotics, and Director of the Quality of Life Technology Engineerying Research Center, Carnegie Mellon University

ROBOTICS GURU

Thursday, 14 August

My Personal Take on the Last 30 Years in Robotics and Vision

Takeo Kanade works in many aspects of robotic science: computer vision, multimedia, manipulators, autonomous mobile robots, medical robotics, and sensors. He has written more than 250 technical papers and reports in these areas, and holds more than 15 patents. He has been the principal investigator of more than a dozen major vision and robotics projects at Carnegie Mellon. He is also the director of the Digital Human Research Center in Tokyo. He has received many awards, including the Franklin Institute Bower Prize, the IEEE Robotics and Automation Society Pioneer Award, and the Japan Society of Artificial Intelligence Career Accomplishment Award.

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. One-Day access does not include technical documentation or tickets for the Reception.

Conference Registration Categories

- Full Conference Access
- Basic Access
- Computer Animation Festival

Presenting sessions, art, and animations in six broad themes:

SIGGRAPH Core
The most recent work from the crossroads of science, art, and technology that celebrates the best in creativity and innovation.

Complexity and Accessibility
Managing large datasets, visualizing complexity, and presenting data on mobile devices and distributed displays.

Global Responsibility
How the social, economic, political, and environmental climate affects our lives and work, and vice versa.

Professional Development & Education
Sessions and events that provide valuable information and inspiration for attendees interested in creating a fulfilling future.

Future History
Understanding and celebrating our past as we define the future of computer graphics and interactive techniques.

Impact on Society
Positive and negative aspects of the symbiosis between technology and society.

■●
Art & Design Galleries
Monday - Friday, 11 - 15 August

Design & Computation
Explore digital fabrication technologies as well as analytical and generative design methods that connect the past and future, bridging vernacular with contemporary examples.

Slow Art
"Speed" typically evokes concepts of rapidity, stimulation, acceleration, and change. In this gallery, new-media artists reimagine speed through the paradigm of "slowness."

■●▲
Birds of a Feather
Monday - Friday, 11 - 15 August

Presentations, discussions, and demonstrations for people who share interests, goals, technologies, environments, or backgrounds. Birds of a Feather events are open to all SIGGRAPH 2008 attendees. Review a preliminary list of the Birds of a Feather sessions at:

www.siggraph.org/s2008

To schedule a Birds of a Feather session prior to arrival, fill out the online Meeting Space Request Form.

■
Classes
Monday - Friday, 11 - 15 August

Learn how to use today's and tomorrow's digital technologies to advance your personal knowledge and professional value. Classes deliver unique learning opportunities, available only at SIGGRAPH 2008, in three levels of difficulty (beginning, intermediate, and advanced).

■●▲
Exhibition
Tuesday - Thursday, 12 - 14 August

SIGGRAPH 2008 hosts the year's largest, most comprehensive exhibition of products and services for the computer graphics and interactive techniques marketplace, featuring the industry's established leaders and emerging challengers. 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.

■●▲
Exhibitor Tech Talks
Tuesday - Thursday, 12 - 14 August

Get the inside story direct from the developers of tomorrow's hot hardware, software, and systems. Join question-and-answer exchanges and one-on-one conversations with the presenters after each presentation.

■●
FJORG!
Monday - Tuesday, 11 - 12 August

Sixteen three-person teams of CG 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.

■
Geek Bar
Monday - Friday, 11 - 15 August

Real-time human networking. Streaming content from the SIGGRAPH 2008 session rooms. Wireless access. Comfy chairs. And refreshing beverages (cash bar).

■
Informal Forums
Thursday, 14 August

Exchange insights and information on every aspect of computer graphics and interactive techniques.

Conference Registration Categories

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

■●

International Resources

Monday - Friday, 11 - 15 August

Learn how the industry is evolving worldwide and collaborate with attendees from five continents. The International Center offers bilingual tours of SIGGRAPH 2008 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.

■●

New Tech Demos

Monday - Friday, 11 - 15 August

Interact with the latest systems before they become the hot topics in mainstream media and techno blogs. New Tech Demos presents innovative technologies and applications in many fields, including displays, robotics, input devices, interaction techniques,

■●▲

Job Fair

Tuesday - Thursday, 12 - 14 August

Employers and creative professionals connect before the conference via the CreativeHeads.net job board network and candidate profiling system. During SIGGRAPH 2008, they meet at the Job Fair. After the conference, they continue to explore opportunities via the CreativeHeads.net posting and profiling system.

This year's Job Fair enhancements include: classes on career development, sessions on CG and interactive techniques, demo reel review, and tips for improvement from industry veterans.

■

Panels and Roundtables

Monday - Friday, 11 - 15 August

Agree and disagree with the experts and deep thinkers who are influencing the evolution of digital media.

■●

Posters

Monday - Friday, 11 - 15 August

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.

■▲

Production Sessions

Monday - Thursday, 11 - 14 August

Exciting sessions focused on the fascinating details behind the making of some of this year's biggest digital blockbusters.

GREAT FAILED IDEAS IN PRODUCTION

Monday, 11 August

The stories behind the award-winning pictures that almost didn't make it to the big screen. It's often said that we learn more from our failures than our successes, yet we generally only share our success stories in the context of SIGGRAPH. This session gathers respected industry veterans to discuss great ideas that "failed" during the stress of real-world production.

Moderator
Rob Bredow
("Stuart Little," "Polar Express," "Surf's Up")
Sony Pictures Imageworks

Panelists
John Dykstra
("Star Wars," "Batman Forever," "Spiderman")

John Knoll
("Star Wars," "Pirates of the Caribbean")
Industrial Light & Magic

Apurva Shah
("Ratatouille," "Nemo," "Toy Story 3")
Pixar

Bill Westenhofer
("Golden Compass," "Narnia")
Rhythm & Hues

PURSUIT OF AWESOMENESS: The Making of "Kung Fu Panda"

Monday, 11 August

An in-depth roundtable discussion by the creative team on "Kung Fu Panda" from DreamWorks Animation. This session summarizes the film's creative aspirations and how they were achieved. It also presents specific case studies of three episodes: "Tai Lung Breaks Out of Prison," "Oogway Departs," and "Rope Bridge Fight."

Speakers
John Stevenson, Director
Ramone Zibach, Production Designer
Dan Wagner, Head of Character Animation
Yong Duk Jhun, Head of Layout
Clare Knight, Editor
Markus Manninen, Visual Effects Supervisor
DreamWorks Animation

MACHINES AND MONSTERS: Tippett and ILM Reveal the Secrets Within "Cloverfield" and "Iron Man"

Wednesday, 13 August

From monster-ravaged streets to the not-so-friendly skies. Tippett Studios demonstrates the evolution of their "Cloverfield" monster, from tactical shot designs that obscured the bulk of the creature to transforming a multi-camera hand-held shoot into a stunning final reveal. Then, Industrial Light & Magic unveils Tony Stark's lair, the complexities of building an iron-man, and how they swapped metal for pixels, rigging, animating, and lighting, before taking him to the skies in "Iron Man."

Speakers
Pablo Helman
Marshall Krasser
Jeff White
Industrial Light & Magic

Lori Petrini
Eric Leven
Tippett Studio

More Production Sessions ➡

Conference Registration Categories

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

SPEED RACER: How Digital Domain, ILM, and Sony Pictures Imageworks Transformed a Vintage Anime Into a Wild Ride for the 21st Century
Thursday, 14 August

As the numbers of visual effects shots per film soar into the thousands, a huge army of artists, technical directors, and managers collaborates to create dazzling spectacles. In this session, supervisors from three of the principal studios reveal the psychedelic design, elaborate car animation, and complexities of collaboration required to create a very wild cinematic ride.

Speakers
John Gaeta
Dan Glass
Overall Visual Effects Supervisors

Mohen Leo
Kim Libreri
Digital Domain

John Knoll
Industrial Light & Magic

Kevin Mack
Sony Pictures Imageworks

■
Reception
Dodger Stadium
Thursday, 14 August

Social and intellectual interaction with the movers and shakers of the international SIGGRAPH community. Plus real-world, undigitized baseball, at one of the nation's most famous ball parks: the Los Angeles Dodgers vs. the Philadelphia Phillies. Enjoy the game and touch base with the people you need to know for another year of professional success and adventure. Added bonus: 10% discount off on all Dodgers merchandise purchased during the reception.

■
Talks
Monday - Friday, 11 - 15 August

Speculative breakthroughs, work in progress, and recent achievements. Listen to the experts who use computer graphics and interactive techniques in art, cinema, advertising, design, science, and engineering. Then join the post-talk discussion.

■
Technical Papers
Tuesday - Friday, 12 - 15 August

Your only annual opportunity to hear the world's most advanced scientists and engineers in this rapidly evolving field. No other conference presents the full range of the world's most significant achievements in the field and illuminates new directions for future investigations.

■●
The Studio
Monday - Friday, 11 - 15 August

Powerful workstations, versatile software, artists, scientists, engineers, and you, collaborating to realize your most creative concepts.

■●▲
Special Events

Sessions of special interest to specific segments of the SIGGRAPH community.

SpeedLab
Monday, 11 August & Friday, 15 August

Small teams of creative, broadly multi-disciplinary people work throughout the week to create imaginative solutions to a variety of important problems. Their work is presented at the end of the week to the public and a panel of distinguished judges. We welcome participants of all backgrounds and skill levels who are open to meeting and working with other people.

If you have questions, contact:
speedlab2008@siggraph.org

Fast-Forward Technical Papers Preview
Monday, 11 August

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.

The Anti-Auteurs: User-Generated Content and the Evolving Videogame Ecosystem
Tuesday, 12 August

Though the videogame world is one expression of specialized creative talent, the landscape is changing. Major game companies are releasing titles that allow game players to literally take over the creative process, transforming game designers into tool and system designers, and users into true content creators.

This panel of pioneers explores games and user-generated content from three broad perspectives: design challenges and game-play mechanics, production and technical implementation, and business and legal implications.

FJORG! Viking Judging Ceremony
Wednesday, 13 August

Celebrity judges from the animation industry present the winner of the second annual SIGGRAPH "iron animator" competition. The session includes video highlights of the event and the animations produced by the FJORG! finalists.

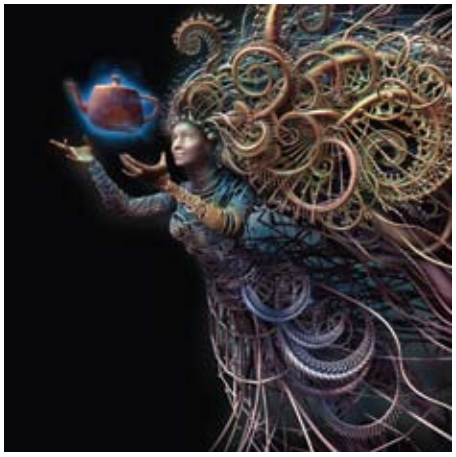
ACM Student Research Competition Presentations
Friday, 15 August

Winners of the ACM Student Research Competition at SIGGRAPH 2008 present brief summaries of the work they are displaying in the Posters program.

Image below courtesy Meats Meier

Conference Registration Categories

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



■▲

Computer Animation Festival

Sessions of special interest to specific segments SIGGRAPH 2008's newly expanded Computer Animation Festival features five days of screenings, four days of talks, three nights of all-star studio events, and two days of 3D stereoscopic panels and screenings. In addition to the always-popular juried screenings, the festival offers a full spectrum of work from around the world: Inspiring studio content, cool Flash films, experimental DemoScene animations, a historical studio retrospective, 3D game effects, a global snapshot of student work, and more.

The 2008 Computer Animation Festival presents artists and experts in talks on all aspects of production, from animation to visual effects: from shorts to full-length features, from television to movies, from art to science, from learning the history of animation to learning the craft. This is your opportunity to totally immerse yourself in the full spectrum of animation and visual effects.

Participate in the Audience Award selection and see the results at the festival's first annual award show. See the nightly screenings at LA's new Nokia Theatre for events hosted by Pixar, Sony Pictures Imageworks, and Industrial Light & Magic. Experience important talks and sessions, including a four-studio exploration of "Speed Racer," a behind-the-scenes look at "Cloverfield" and "Iron Man," and a special screening of game achievements.

Computer Animation Festival Award Nominees

Since 1999, the SIGGRAPH Computer Animation Festival has been an official qualifying festival for the Academy of Motion Picture Arts and Sciences Best Animated Short Film award. Nominees for this year's Computer Animation Festival Awards and Prizes are:

Best of Show Nominees

Bolides
Supinfocom, France

Carbon Footprint
Jellyfish Pictures, United Kingdom

Madagascar: Escape 2 Africa
DreamWorks Animation, USA

Oktapodi
Gobelins, l'école de l'image, France

The Chemical Brothers "The Salmon Dance"
Framestore CFC, United Kingdom

Jury Award Nominees

Chump and Clump
Germany

Mauvais Role
École Supérieure de Réalisation Audiovisuelle, France

Oktapodi
Gobelins, l'école de l'image, France

Our Wonderful Nature
HFF Potsdam, Germany

The Plush Life
Timothy Heath, USA

Student Prize Nominees

893
Supinfocom, France

Al Dente
Supinfocom, France

Bärenbraut
Filmakademie Baden-Württemberg, Germany

Blind Spot
Gobelins, l'école de l'image, France

Mauvais Role
École Supérieure de Réalisation Audiovisuelle, France

Registration Hours

Sunday, 10 August	1 - 7 pm
Monday, 11 August	7:30 am - 6 pm
Tuesday, 12 August	8 am - 6 pm
Wednesday, 13 August	8 am - 6 pm
Thursday, 14 August	8 am - 6 pm
Friday, 15 August	8 am - 3:30 pm

Monday, 11 August

8:30 - 10:15 am
- **Talks**

8:30 am - 12:15 pm
- **Computer Animation Festival:** Talks
- **Class:** Projectors for Graphics
- **Class:** High-Dynamic-Range Imaging for Artists
- **Class:** Massive Model Visualization
- **Class:** How to Attend SIGGRAPH 2008
- **Class:** Advances in Real-Time Rendering in 3D Graphics and Games: Part 1

8:30 am - 5:30 pm
- **Geek Bar**
- **Posters**

8:30 am - 6 pm
- **Art & Design Galleries:** *Design & Computation and Slow Art*
- **International Resources**
- **New Tech Demos**

8:30 am - 7:45 pm
- **Computer Animation Festival:** 3D Stereoscopic Talks and Screenings

9 am - Midnight
- **FJORG!**

10:30 am - 12:15 pm
- **Production Session:** Great Failed Ideas in Production
- **Roundtable:** Educators Opening Plenary and Café

1 - 6 pm
- **The Studio**

1:30 pm
- **Featured Speaker: Ed Catmull, *President, Walt Disney and Pixar Animation Studios***
  Managing the Creative Environment

3:45 - 5:30 pm
- **Class:** Advances in Real-Time Rendering in 3D Graphics and Games: Part 2
- **Class:** Sorting in Space: Multidimensional, Spatial, and Metric Data Structures for Computer Graphics Applications
- **Computer Animation Festival:** Talks
- **Production Session:** Pursuit of Awesomeness: The Making of "Kung Fu Panda"
- **Special Event:** SpeedLab: Team Creation and Problem Selection
- **Talks**

6 - 8 pm
- **Special Event:** Fast-Forward Technical Papers Preview

Tuesday, 12 August

8 am - 6 pm
- **International Resources**

8:30 - 10:15 am
- **Papers:** Image Collections & Video

8:30 am - 12:15 pm
- **Class:** High-Dynamic-Range Imaging & Image-Based Lighting
- **Class:** Get the Job You Want in Computer Graphics
- **Class:** Flow Simulations Using Particles: Bridging Computer Graphics and CFD
- **Class:** Line Drawing From 3D Models

8:30 am - 3:30 pm
- **Computer Animation Festival:** Talks
- **Talks**

8:30 am - 5:30 pm
- **Geek Bar**
- **Posters**

8:30 am - 7:45 pm
- **Computer Animation Festival:** 3D Stereoscopic Talks and Screenings

9 am - 7 pm
- **Art & Design Galleries:** *Design & Computation and Slow Art*
- **New Tech Demos**

9:30 am - 6 pm
- **Exhibition**
- **Exhibitor Tech Talks**

10 am - 4 pm
- **Job Fair**

10:30 am - 12:15 pm
- **Class:** Introduction to Computer Graphics: The Big Picture
- **Papers:** Parallelism
- **Papers:** Noisy Collisions

Noon - 11 pm
- **The Studio**

12:30 - 11 pm
- **Computer Animation Festival:** Screenings

1:30 pm
- **Featured Speaker: Catherine Owens, *Artist/Director***
  Giving Technology Emotion: From the Artist's Mind to "U2 3D"

1:45 pm
- **Computer Animation Festival:** Competition Screening

1:45 - 3:30 pm
- **Panel:** Studio Views of Student Demo Reels

1:45 - 5:30 pm
- **Class:** Computational Photography: Advanced Topics

3:45 - 5:30 pm
- **Class:** Visual Thinking Via Shape Grammars
- **Panel:** As the World Turns: Debating & Examining Online Digital Earth Technologies
- **Papers:** Characters
- **Papers:** Hair and Realistic Rendering
- **Roundtable:** Common Needs: Building and Retaining the Talent

5:45 pm
- **Computer Animation Festival:** Competition Screening

6 - 8 pm
- **Special Event:** The Anti-Auteurs: User-Generated Content and the Evolving Videogame Ecosystem

Midnight - 5 pm
- **FJORG!**

Wednesday, 13 August

8 am - 6 pm
- **International Resources**

8:30 - 10:15 am
- **Class:** Don't Be a WIMP: A 60-Second Introduction to Augmented and Virtual Reality
- **Panel:** Teaching Computer Animation for Results
- **Papers:** Real Time Rendering

8:30 am - 12:15 pm
- **Class:** OpenGL: What's Coming Down the Graphics Pipeline
- **Class:** Motion Planning and Autonomy for Virtual Humans
- **Class:** Tile-Based Methods for Interactive Applications

8:30 am - 5:30 pm
- **Geek Bar**
- **Posters**

9 am - 6 pm
- **Art & Design Galleries:** Design & Computation and Slow Art
- **New Tech Demos**

9:30 am - 6 pm
- **Exhibition**
- **Exhibitor Tech Talks**

10 am - 4 pm
- **Job Fair**

10:30 am
- **Computer Animation Festival:** Competition Screening

10:30 am - 12:15 pm
- **Class:** Visual Thinking Via Shape Grammars
- **Papers:** Faces & Reflectance

10:30 am - 5:30 pm
- **Talks**

10:30 am - 11 pm
- **Computer Animation Festival:** Screenings

Noon - 11 pm
- **The Studio**

1:45 - 3:30 pm
- **Papers:** Shape Analysis
- **Production Session:** Machines and Monsters: Tippett and ILM Reveal the Secrets Within "Cloverfield" and "IronMan"

1:45 - 5:30 pm
- **Class:** Computation & Journalism
- **Computer Animation Festival:** Talks

3:45 - 5:30 pm
- **Panel:** 35 Years of Computer Graphics: The Game Show!
- **Papers:** Texture

3:45 - 6 pm
- **Papers:** Jiggly Fluids

5:45 pm
- **Computer Animation Festival:** Competition Screening

6:30 - 8:30 pm
- **FJORG! Viking Judging Ceremony**

Thursday, 14 August

8 am - 6 pm
- **International Resources**

8:30 - 10:15 am
- **Panel:** Games: Evolving on a Order of Magnitude
- **Papers:** Computational Photography & Display

8:30 am - 12:15 pm
- **Class:** Beyond Programmable Shading: Fundamentals
- **Class:** CGAL - The Computational Geometry Algorithms Library
- **Class:** Advanced Material Appearance Modeling
- **Class:** Real-Time Physics
- **Informal Forums**

8:30 am - 5:30 pm
- **Computer Animation Festival:** Talks
- **Geek Bar**
- **Posters**

9 am - 6 pm
- **Art & Design Galleries:** Design & Computation and Slow Art
- **New Tech Demos**
- **The Studio**

9:30 am - 3:30 pm
- **Exhibition**
- **Exhibitor Tech Talks**

10 am - 4 pm
- **Job Fair**

10:30 am
- **Computer Animation Festival:** Competition Screening

10:30 am - 12:15 pm
- **Papers:** Perception & Hallucination
- **Papers:** Hair, Rods & Cloth
- **Production Session:** Speed Racer

10:30 am - 11 pm
- **Computer Animation Festival:** Screenings

1:45 pm
- **Featured Speaker: Takeo Kanade,** ***Professor of Computer Science and Robotics, and Director of Quality of Life Technology Engineering Research Center, Carnegie Mellon University***
  My Personal Take on the Last 30 Years in Robotics and Vision

1:45 - 3:30 pm
- **Papers:** Tone & Color
- **Roundtable:** Roundtable on Lighting for Feature Animation

1:45 - 5:30 pm
- **Class:** Beyond Programmable Shading: In Action
- **Class:** Principles of Appearance Acquisition and Representation
- **Class:** Know Your Rights: A Legal Primer for Software Developers, Artists, and Content Creators
- **Talks**

3:45 pm
- **Computer Animation Festival:** Awards Ceremony

3:45 - 5:30 pm
- **Papers:** Deblurring & Dehazing
- **Roundtable:** Case Studies in the Ethics of 3D Site Capture
- **Roundtable:** Roundtable on Educational Resources

3:45 - 6 pm
- **Papers:** Folding & Unfolding Surfaces

5:45 pm
- **Computer Animation Festival:** Competition Screening

7 - 10 pm
- **Reception at Dodger Stadium**

Friday, 15 August

8 am - 4 pm
- **International Resources**

8:30 - 10:15 am
- **Class:** The Art of Grant Writing
- **Class:** Psychophysics 101: How to Run Perception Experiments in Computer Graphics
- **Papers:** Humans
- **Papers:** Shape Acquisition

8:30 am - Noon
- **Posters**

8:30 am - 12:15 pm
- **Class:** Realistic Hair Simulation – Animation and Rendering
- **Class:** A Gentle Introduction to Bilateral Filtering and its Applications
- **Class:** Practical Global Illumination With Irradiance Caching

8:30 am - 5:30 pm
- **Geek Bar**

9 am - 2 pm
- **Art & Design Galleries:** Design & Computation and Slow Art
- **New Tech Demos**
- **The Studio**

10:30 am
- **Computer Animation Festival:** Competition Screening

10:30 am - 12:15 pm
- **Special Event:** ACM Student Research Competition Presentations
- **Papers:** NPR & Deformation

10:30 am - 3 pm
- **Computer Animation Festival:** Screenings

10:30 am - 5:30 pm
- **Talks**

1:45 - 3:30 pm
- **Papers:** Painting & Sketching
- **Papers:** Performance Capture
- **Special Event:** SpeedLab: Final Judging for Fun & Prizes

1:45 - 5:30 pm
- **Class:** Advanced Global Illumination Using Photon Mapping

3:45 - 5:30 pm
- **Papers:** Procedural Modeling & Design
- **Class:** Transportation Visualization

Seating in Classes is on a first-come, first-served basis. Please be sure to arrive early for the Classes you wish to attend. All the Class Notes are on the Full Conference DVD-ROM that Full Conference attendees receive with their registration.

Classes

Learn how to use today's and tomorrow's digital technologies to advance your personal knowledge and professional value. Classes deliver unique learning opportunities, available only at SIGGRAPH 2008, in three levels of difficulty (beginning, intermediate, and advanced)

How to Attend SIGGRAPH 2008

Monday, 8:30 - 10:15 am
Level: Beginning

Theme
Professional Development & Education

The SIGGRAPH conference is an exciting event, but it is often an intimidating experience for first-time attendees. There are so many new terms, new concepts, and new products to try to understand. This leaves new attendees baffled and frustrated about how to spend their time. This class is designed to ease newcomers into the SIGGRAPH conference experience by presenting the fundamental concepts and vocabulary at a level that can be readily understood. Far from being made up of dry facts, this course also portrays the fun and excitement that led most of us here in the first place. After this class, attendees will be well-prepared to understand, appreciate, enjoy, network, and learn from the rest of the SIGGRAPH experience.

Prerequisites
None

Instructor
Mike Bailey
Oregon State University

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

Projectors for Graphics

Monday, 8:30 am - 12:15 pm
Level: Beginning

Theme
SIGGRAPH Core

Modern digital projectors are a central part of large-format displays, non-intrusive augmented reality systems, and computational illumination for 3D image-based modeling. High-speed and high-frame-rate projectors also support intriguing applications in optical communication. With a pocket-size form factor, projectors will be widely used for mobile applications. This class surveys this rapidly evolving landscape and the growing interest in experimenting with projectors. A novel class of applications is emerging, involving illumination and capture of complex 3D shapes as well as dynamic interaction via projection on movable surfaces. The class provides a detailed survey of the several approaches for combining real-time computer graphics and computer-vision methods for single and multi-projector systems. Topics include immersive rendering, projective geometry, reflectance-field capture, and spatial-augmented reality. The class also includes practical insights, implementation details, and case studies for a variety of applications in research, art and industry.

Prerequisites
No programming or specific mathematical background is required. General knowledge of basic computer graphics techniques and 3D tools is helpful but not necessary.

Instructors
Ramesh Raskar
Mitsubishi Electric Research Laboratories

Oliver Bimber
Bauhaus-Universität Weimar

High-Dynamic-Range Imaging for Artists

Monday, 8:30 am - 12:15 pm
Level: Intermediate

Theme
SIGGRAPH Core

An introduction to and overview of the practical applications and uses of high-dynamic-range imaging (HDRI) from a production point of view. Topics include: What is HDRI, and why do we need it? How do you create, manipulate, troubleshoot, and use HDRI within the photography, motion picture, and broadcast industries? Current examples of how HDRI is used in the motion picture and broadcast industries will be shown and summarized to help attendees understand overall HDRI workflows and pipelines, including pre-production, production, and post-production techniques.

Prerequisites
Familiarity with basic techniques in digital photography and/or with basic computer graphics modeling and rendering. Prior knowledge of HDRI techniques and terms, basic compositing knowledge, and familiarity with specific image-editing and 3D modeling and rendering packages are also helpful, but not required.

Instructors
Kirt Witte
Savannah College of Art and Design

Christian Bloch
Eden FX

Hilmar Koch
Industrial Light & Magic

Zap Andersson
mental images GmbH

Gary M. Davis
Autodesk, Inc.

Massive Model Visualization

Monday, 8:30 am - 12:15 pm
Level: Intermediate

Theme
Complexity and Accessibility

The norm in the computing industry is that user demand exceeds capacity, despite Moore's law. This has been the case for real-time, interactive visualization; user datasets routinely exceed computing and graphics capacities. In recent years, computer graphics researchers have been developing a wide range of techniques to allow real-time, interactive visualization of massive datasets. This course takes a system-level view of the issues and approaches to successful implementation and includes separate sections that address rendering, level of detail, parallel programming, disk-access optimization, and data marshaling.

Prerequisites
General knowledge of computer graphics and rendering techniques.

Instructors
David Kasik
The Boeing Company

Dinesh Manocha
University of North Carolina at Chapel Hill

Steven Parker
Abe Stephens
University of Utah

Enrico Gobbetti
Fabio Marton
Center for Advanced Studies, Research and Development in Sardinia

Sungeui Yoon
Korea Advanced Institute of Science and Technology

Advances in Real-Time Rendering in 3D Graphics and Games: Part 1

Monday, 8:30 am - 12:15 pm
Level: Intermediate/Advanced

Advances in Real-Time Rendering in 3D Graphics and Games: Part 2

Monday, 3:45 - 5:30 pm
Level: Intermediate/Advanced

Theme
SIGGRAPH Core

Advances in real-time graphics research and the increasing power of mainstream GPUs have 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 increasingly sophisticated algorithms that enable groundbreaking 3D rendering, push visual boundaries and expand the 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 that will be found in the games of tomorrow. The course features examples recently shipped games by Crytek, Rare, and Bungie and upcoming titles from Blizzard Entertainment and MediaMolecule, as well as graphics research from AMD's Game Computing Applications Group.

Prerequisites
Working knowledge of a modern real-time graphics APIs like OpenGL or Direct3D, a solid basic understanding of commonly used graphics algorithms, and familiarity with the concepts of programmable shading and shading languages.

Instructors
Natalya Tatarchuk
Christopher Oat
AMD GPG (O-CTO)

Alex Evans
MediaMolecule

Hao Chen
Bungie Studio

Michael Boulton
Rare/MGS

Dominic Filion
Blizzard Entertainment

Martin Mittring
Crytek GmbH

Sorting in Space: Multidimensional, Spatial, and Metric Data Structures for Computer Graphics Applications

Monday, 3:45 - 5:30 pm
Level: Beginning

Theme
Complexity and Accessibility

Representation of spatial data is an important issue in game programming, computer graphics, visualization, solid modeling, computer vision, and geographic-information systems (GIS). Recent interest in this field focuses on hierarchical data structures such as quadtrees, octrees, and pyramids, which are based on image hierarchies, and methods that make use of bounding boxes, which are based on object hierarchies. The key advantage of these approaches is that they provide a way to index into space. In fact, they are little more than multidimensional sorts. They are compact. Depending on the nature of the spatial data, they save space and time. And they facilitate operations such as search.

This class describes hierarchical representations of points, lines, collections of small rectangles, regions, surfaces, and volumes. For region data, the class emphasizes the dimension-reduction property of the region quadtree and octree. It also demonstrates how to use them for both raster and vector data. In the case of nonregion data, it shows how these data structures can be used to compute nearest objects in an incremental fashion so that the number of objects need not be known in advance. The VASCO JAVA applet is presented to illustrate these methods.

Prerequisites
Familiarity with computer terminology and some programming experience.

Instructor
Hanan Samet
University of Maryland

High-Dynamic-Range Imaging & Image-Based Lighting

Tuesday, 8:30 am - 12:15 pm
Level: Intermediate

Theme
SIGGRAPH Core

This class outlines recent advances in high-dynamic-range imaging (HDRI), from capture to image-based lighting to display. In a hands-on approach, the class demonstrates how HDR images and video are captured, the file formats available to store them, and the algorithms required to prepare them for display on low-dynamic-range displays. The trade-offs at each step are assessed so attendees can make informed choices about data-capture techniques, file formats, and tone-reproduction operators. The class also presents the latest developments in image-based lighting.

Prerequisites
None. This course is intended for students, researchers, and industrial developers in digital photography, computer graphics rendering, real-time photoreal graphics, game design and visual-effects production (especially rendering and compositing).

Instructors
Greg Ward
Dolby Canada

Erik Reinhard
University of Bristol and University of Central Florida

Paul Debevec
Institute for Creative Technologies and University of Southern California

Get the Job You Want in Computer Graphics

Tuesday, 8:30 am - 12:15 pm
Level: Beginning

Theme
Professional Development and Education

This class explains how to write a résumé, showcase your talent in a demo reel, and arrange job interviews. It includes examples of real-life résumés and demo reels; reviews the requirements for technical jobs such as software engineers, shader writers, and technical directors; and provides tips on interviewing and negotiating.

Prerequisites
None

Instructors
Pamela Kleibrink Thompson
Ideas to Go

Stan Szymanski
Sony Pictures Imageworks

Fran Zandonella
Fran Zandonella Consulting

Flow Simulations Using Particles: Bridging Computer Graphics and CFD

Tuesday, 8:30 am - 12:15 pm
Level: Intermediate

Theme
SIGGRAPH Core

This course reviews recent advances in flow simulations using particles with a focus on developing a bridge for using computer graphics algorithms and hardware to accelerate flow simulations of relevance to the CFD community. It describes advances in particle methods in a comparative, case-study-driven framework and addresses, for example, visual realism in liquid simulations in relation to the accuracy of enforcing incompressibility constraints in smooth particle hydrodynamics and vortex methods It also summarizes the advantages and drawbacks of using remeshing in particle simulations and presents techniques for effective handling of fluids interacting with solids and free surfaces.

Prerequisites
Basic knowledge of particle methods and fluids.

Instructors
Petros Koumoutsakos
ETH Zürich

Georges-Henri Cotttet
Université Grenoble

Line Drawing From 3D Models

Tuesday, 8:30 am - 12:15 pm
Level: Intermediate

Theme
SIGGRAPH Core

Non-photorealistic rendering techniques, including line drawings, can be remarkably efficient at conveying shape and meaning with a minimum of visual distraction. This course describes techniques for automated rendering of 3D models using a number of sparse-line drawing styles, for both artistic and illustrative purposes. It mathematically defines lines such as silhouettes, contours, creases, suggestive contours and highlights, and apparent ridges and valleys. Next, it describes algorithms for finding lines efficiently, including object- and image-space methods, and discusses methods for stylization and level-of-detail control. Finally, it provides a brief introduction to concepts of visual perception, including the information content of line drawings and the effects of abstraction and detail on attention.

Prerequisites
None

Instructors
Szymon Rusinkiewicz
Adam Finkelstein
Doug DeCarlo
Forrester Cole
Princeton University

Introduction to Computer Graphics: The Big Picture

Tuesday, 10:30 am - 12:15 pm
Level: Beginning

Theme
Professional Development and Education

To get the most out of your time at SIGGRAPH, it helps to understand the concepts and speak the language. This class covers the essentials from 2D to 3D, demonstrates the core ideas with live demos using today's tools, and explains how to use modern software to create images, movies, and even procedural animation. The class provides a quick, dense infusion of graphics knowledge designed to make the rest of your week not just comprehensible, but exciting and stimulating.

Prerequisites
None

Instructor
Andrew Glassner
Coyote Wind Studios

Computational Photography: Advanced Topics

Tuesday, 1:45 - 5:30 pm
Level: Intermediate

Theme
SIGGRAPH Core

Computational photography combines computing, digital sensors, actuators, and lights to escape the limitations of traditional cameras. This powerful technology offers many new opportunities, including unbounded dynamic range, variable focus, resolution, and depth of field; hints about shape, reflectance, and lighting; and new interactive visuals that are partly snapshots and partly videos. This class briefly reviews fundamentals and provides a guide to advanced topics that will affect image capture and synthesis in computer graphics. Computational capture methods include sophisticated sensors, light sources, and on-board processing. The class summarizes the benefits of higher-dimensional representation of light fields and reflectance fields, clarifies concepts such as ray-transfer matrix, and explains wavefront coding and non-linear optics. It also includes applications of sensors for depth, thermal, and millimeter waves, and it explains image manipulation techniques using gradient-domain operations, graph cuts and bilateral filters.

Prerequisites
None

Instructors
Ramesh Raskar
Massachusetts Institute of Technology

Jack Tumblin
Northwestern University

Paul Debevec
USC Institute for Creative Technologies

Visual Thinking Via Shape Grammars

Tuesday, 3:45 - 5:30 pm
REPEATED
Wednesday, 10:30 am - 12:15 pm
Level: Beginning

Theme
Professional Development and Education

The theory of shape grammars defines a formalism that addresses the ambiguity that is mostly ruled out by quantitative and symbolic computations in creative processes. The theory was first launched by Stiny and Gips in 1972 and has evolved into a groundbreaking, pragmatic philosophy of shape and design. This course includes a two-hour lecture that introduces the fundamentals of the theory and an optional one-day workshop where attendees can apply the theory in a hands-on session.

The lecture focuses on 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 generative designs produced with shape grammars. The workshop consists of one exercise in which participants explore spatial relations among a number of shapes and produce a series of designs built by hand from prescribed material such as wooden blocks or paper.

The workshop (limited to 10-12 participants) is at 1 pm Wednesday in The Studio. Attendees may sign up for the workshop immediately following the class.

Prerequisites
No prerequisite other than enthusiasm for shapes and keenness in looking and seeing.

Instructors
Mine Özkar
Middle East Technical University

Sotirios Kotsopoulos
Massachusetts Institute of Technology

Don't be a WIMP: A 60-Second Introduction to Augmented and Virtual Reality

Wednesday, 8:30 - 10:15 am
Level: Beginning

Theme
SIGGRAPH Core

Virtual and augmented reality have been around for a long time, but for most people they are movie fantasies. Very few people outside a few research labs have worked with or experienced these systems. On the other hand, interactive 3D graphics is ubiquitous, mostly in the form of games. More and more people are working in animation and games, creating models and programs for interactive 3D applications on standard monitors.

The goal of this class is to demonstrate that the leap to actual immersive or augmented environments is not as big as you might think. It explains how high-powered 3D graphics cards, mainstream applications of stereoscopic displays in 3D TV and movies, and webcams that achieve TV-quality images have significantly lowered the barriers to entry. And how, in combination with those hardware advances, freely available software based on open standards like X3D provides all the tools you need to access the elusive world of virtual and augmented reality applications. Following a summary of the basic principles of stereo displays, tracking systems and post-WIMP interaction metaphors, the main part of the course is a practical introduction to creating and running your own interactive and immersive applications.

Prerequisites
Basic knowledge of computer graphics. Understanding of what polygons, lights, and cameras are. Helpful but not required: graphics programming or 3D animation experience. This class is intended for attendees who are interested in interactive 3D graphics and might want to move beyond the WIMP (Window, Icon, Menu, Pointer) environment.

Instructors
Johannes Behr
Fraunhofer Institut für Graphische Datenverarbeitung

Dirk Reiners
University of Louisiana at Lafayette

OpenGL: What's Coming Down the Graphics Pipeline

Wednesday, 8:30 am - 12:15 pm
Level: Beginning

Theme
SIGGRAPH Core

OpenGL is the programming interface for cross-platform graphics applications in a wide range of systems, from supercomputers to mobile phones, and just like graphics hardware, it evolves with new graphics technology. This class presents an introduction to OpenGL, espouses best practices for performance and compatibility with future versions of the API, and provides a glimpse of OpenGL's future directions.

Topics include: the graphics pipeline from vertex specification to enabling texture maps, the use of shaders with programmable hardware, managing geometric transformations, lighting and illumination, increasing realism with texture mapping, efficient implementation, and how to extend those techniques using shaders.

The class includes program examples that are immediately usable in attendees' own applications.

Prerequisites
This class is appropriate for programmers who have at least an introductory knowledge of the techniques of computer graphics (for example, z-buffering, Gouraud shading, etc.) and are able to read basic programs written in C.

Instructors
Dave Shreiner
ARM

Ed Angel
University of New Mexico

Bill Licea-Kane
AMD Corporation

Evan Hart
NVIDIA Corporation

Motion Planning and Autonomy for Virtual Humans

Wednesday, 8:30 am - 12:15 pm
Level: Intermediate

Theme
SIGGRAPH Core

Motion Planning for Virtual Humans (VHs) goes far beyond the traditional A*-based path-planning techniques that are commonly seen in videogames. Providing VHs motion autonomy requires seamless integration of computer-animation and motion-planning techniques, while taking into account the resulting motion quality and performance requirements. This class presents an overview of different classes of algorithms for the motion-planning problem and considers important basic questions: What is a configuration space, a probabilistic roadmap, or a random tree? It then explains how these concepts (developed in robotics) can be used for animation (providing VHs spatial intelligence and motion autonomy that mimic real human behaviors). Three key application areas are emphasized: grasping and manipulating virtual objects, VH locomotion, and crowd navigation in virtual environments. The class concludes with thoughts on a digressive question: Can the use of motion planning in computer animation benefit robotics in return?

Prerequisites
Basic knowledge of computer animation for virtual humans.

Instructors
Julien Pettre
INRIA

Marcelo Kallmann
University of California, Merced

Ming C. Lin
University of North Carolina at Chapel Hill

Michael Gleicher
University of Wisconsin-Madison

Claudia Esteves
Universidad de Guanajuato

Jean-Paul Laumond
CNRS

James Kuffner
Carnegie Mellon University

Tile-Based Methods for Interactive Applications

Wednesday, 8:30 am - 12:15 pm
Level: Intermediate

Theme
SIGGRAPH Core

Many interactive applications could benefit from techniques that rely on tile-based methods, but the state of the art is scattered over several publications, and survey works are not available. This class provides a detailed overview of tile-based methods in computer graphics. It covers theoretical aspects, practical aspects (tiling algorithms), and applications (modeling, sampling, and rendering).

Prerequisites
Basic working knowledge of mathematics, computer science, and computer graphics (for example, texturing, graphics hardware, sampling, rendering, etc.).

Instructors
Ares Lagae
Katholieke Universiteit Leuven

Chi-Wing Fu
The Hong Kong University of Science and Technology

Victor Ostromoukhov
Université de Montréal

Craig S. Kaplan
University of Waterloo

Johannes Kopf
Universität Konstanz

Visual Thinking Via Shape Grammars

Wednesday, 10:30 am - 12:15 pm
REPEATED
Tuesday, 3:45 - 5:30 pm
Level: Beginning

Theme
Professional Development and Education

For description, see page 15.

Computation & Journalism

Wednesday, 1:45 - 5:30 pm
Level: Beginning

Theme
Impact on Society

Fundamentally, journalism is the process of collecting news information and disseminating that information with a layer of contextualization and understanding provided by journalists in the form of a news story. Recent advances in computational technology are rapidly affecting how news is gathered, reported, and distributed, and how stories are authored and told. New technologies for aggregating, visualizing, summarizing, consuming, and collaborating on news are becoming increasingly popular. They are challenging the traditional practices of journalism and directly affecting the future of news production and consumption. Computation and journalism share a deep interest in information and the value it provides to society, and they are deeply involved in the future of storytelling in various contexts, especially current events.

This class summarizes how these new technologies affect journalism, both at the core of the journalism discipline and in its practice and business. Topics include: the technologies that have empowered citizen journalism and related citizen media production and authoring; mobile and sensing technologies that allow journalism to become ubiquitous and pervasive; the changes in photo, video, and broadcast journalism; and how web, online, and science journalism are changing the basic processes of reporting. Instructors focus especially on areas of special interest to the SIGGRAPH community: photography and video, large-scale information visualization, and social networking.

Prerequisites
None

Instructors
Irfan Essa
Georgia Institute of Technology

Brad Stenger
WIRED NextFest

Jeffrey Heer
University of California, Berkeley

Paul Ferguson
CNN

Beyond Programmable Shading: Fundamentals

Thursday, 8:30 am - 12:15 pm
Level: Advanced

Theme
SIGGRAPH Core

This first class in a series gives an introduction to parallel programming architectures and environments for interactive graphics. There are strong indications that the future of interactive graphics involves a programming model more flexible than today's OpenGL/Direct3D pipelines. As such, graphics developers need to have a basic understanding of how to combine emerging parallel programming techniques with the traditional interactive rendering pipeline. This class gives an introduction to several parallel graphics architectures and programming environments, and introduces the new types of graphics algorithms that will be possible.

Prerequisites
Experience with a modern graphics API (OpenGL or Direct3D), including basic experience with shaders, textures, and frame buffers, and/or familiarity with parallel-programming languages. Some knowledge of parallel programming on CPUs or GPUs is useful but not required, because an overview will be provided in the course.

Instructors
Aaron Lefohn
Intel Corporation

Mike Houston
AMD Corporation

Chas Boyd
Microsoft Corporation

Kayvon Fatahalian
Stanford University

Tom Forsyth
Intel Corporation

David Luebke
NVIDIA Corporation

John Owens
University of California, Davis

CGAL - The Computational Geometry Algorithms Library

Thursday, 8:30 am - 12:15 pm
Level: Intermediate

Theme
SIGGRAPH Core

The CGAL Open Source project provides easy access to efficient and reliable geometric algorithms in the form of a C++ library, which offers geometric data structures and algorithms that are efficient, robust, easy to use, and easy to integrate in existing software. The use of de facto standard libraries like CGAL increases productivity, because it allows software developers to focus on the application layer. This course is targeted for software developers who need to know how to select and use the appropriate algorithms and data structures provided by CGAL in current or upcoming projects.

The CGAL project was founded in 1996 by the Max-Planck-Institut für Informatik, Universiteit Utrech, INRIA, Freie Universität Berlin, Tel Aviv University, and ETH Zürich. In 2003, CGAL became an open-source project. It provides annual releases and 10,000 downloads per year, which are used in the fields GIS,CAD, image processing, and graphics.

Prerequisites
Knowledge of C++ and C++ templates. Familiarity with algorithms and data structures in the field of computational geometry is helpful but not necessary.

Instructors
Andreas Fabri
GeometryFactory

Pierre Alliez
INRIA

Efi Fogel
Tel Aviv University

Advanced Material Appearance Modeling

Thursday, 8:30 am - 12:15 pm
Level: Advanced

Theme
SIGGRAPH Core

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 class begins with a brief review of basic reflectance models and the use of texture maps. It describes common themes in advanced material models (combining the effects of layers, groups of particles, and/or fibers); surveys the detailed models needed for materials such as (but not limited to) skin (including pigmentation, pores, subsurface scattering), plants (including internal structure), and automotive paints (including color flop and sparkle); and summarizes modeling of complex appearance due to aging and weathering processes. The class includes a general taxonomy of effects, as well as methods to simulate and capture these effects.

Prerequisites
Knowledge of basic rendering and reflectance functions.

Instructors
Holly Rushmeier
Julie Dorsey
Yale University

François Sillion
Institut National de Recherche en Informatique et Automatique

Real Time Physics

Thursday, 8:30 am - 12:15 pm
Level: Intermediate

Theme
SIGGRAPH Core

Physical simulations have become an important component of computer games. In next-generation games, players expect to see fully dynamic and destructible worlds, and this requires fast and stable simulation methods. In this class, lecturers who have made significant contributions in simulation methods present a wide spectrum of state-of-the-art methods for real-time simulation of rigid and deformable solids, and smoke and liquid simulation. In addition to the underlying physical equations, they present practical simulation methods and algorithms that will help physical-simulation developers and game developers apply these techniques properly.

Prerequisites
Basic knowledge of calculus, physics, and C or C++ programming.

Instructors
Matthias Müller-Fischer
NVIDIA Corporation

Doug James
Cornell University

Jos Stam
Autodesk, Inc.

Nils Thuerey
ETH Zürich

Beyond Programmable Shading: In Action

Thursday, 1:45 - 5:30 pm
Level: Intermediate

Theme
SIGGRAPH Core

This class, the second in a series, explores case studies of combining traditional rendering API usage with advanced parallel computation from game developers, researchers, and graphics hardware vendors. There are strong indications that the future of interactive graphics programming is a more flexible model than today's OpenGL/Direct3D pipelines. Graphics developers will need to have a basic understanding of how to combine emerging parallel programming techniques and more flexible graphics processors with the traditional interactive rendering pipeline. Each case study in the class includes a live demo and discusses the mix of parallel programming constructs used, details of the graphics algorithm, and how the rendering pipeline and computation interact to achieve the technical goals.

Prerequisites
Experience with a modern graphics API (OpenGL or Direct3D), including basic experience with shaders, textures, and frame buffers and/or background in parallel programming languages. Some background in parallel programming on CPUs or GPUs is useful but not required, as an overview will be provided in the course. Attendees are strongly encouraged to attend the first SIGGRAPH 2008 class in this series: Beyond Programmable Shading: Fundamentals.

Instructors
Aaron Lefohn
Intel Corporation

Mike Houston
AMD Corporation

David Luebke
NVIDIA Corporation

Jon Olick
Id Software

Fabio Pellacini
Dartmouth University

Principles of Appearance Acquisition and Representation

Thursday, 1:45 - 5:30 pm
Level: Intermediate

Theme
SIGGRAPH Core

Algorithms for scene understanding and realistic image synthesis require accurate models of the way real-world materials scatter light. This class describes recent work in both the graphics and vision communities to measure the spatially and directionally varying reflectance and subsurface scattering of complex materials, and to develop efficient representations and analysis tools for these datasets. It describes the design of acquisition devices and capture strategies for BRDFs and BSSRDFs, efficient factored representations, and a case study of capturing the appearance of human faces.

Prerequisites
Basic familiarity with the computer graphics pipeline and some knowledge of linear algebra and calculus.

Instructors
Tim Weyrich
Princeton University

Jason Lawrence
University of Virginia

Hendrik P. A. Lensch
Max-Planck-Institut für Informatik

Szymon Rusinkiewicz
Princeton University

Todd Zickler
Harvard University

Know Your Rights: A Legal Primer for Software Developers, Artists, and Content Creators

Thursday, 1:45 - 5:30 pm
Level: Beginning

Theme
Professional Development and Education

What's the difference between a copyright and a trademark, between trade secrets and patents? What do these terms really mean? Having trouble keeping up with the various open-source and content licensing schemes? Want to distribute your creative work, but don't know how to prevent unauthorized use? Concerned about lawsuits based on your web site or user-created content? This class introduces the basic legal concepts you need to understand in order to license, distribute, and protect your content, and avoid making expensive mistakes that can ruin your business. In the question-and-answer period following the session, the presenters discuss attendees' legal questions.

Prerequisites
None

Instructors
Gil Irizarry
Conoa, Inc.

Gregory P. Silberman
Kaye Scholer LLP

Neer Gupta
The Walt Disney Company

The Art of Grant Writing

Friday, 8:30 - 10:15 am
Level: Beginning

Theme
Professional Development and Education

This class covers general proposal writing for academic projects in two broad categories: research and education. It reviews the project concept, the search for an appropriate funding program, and development of a proposal based on a program announcement. Attendees develop a solid understanding of the structure of a competitive proposal, learn the different ways a proposal may be reviewed, and discuss the essential factors that determine whether or not a project gets funded.

Prerequisites
None

Instructors
Steve Cunningham

Mike McGrath

Lawrence J. Rosenblum
Naval Research Laboratory (NRL)

Psychophysics 101: How to Run Perception Experiments in Computer Graphics

Friday, 8:30 - 10:15 am
Level: Intermediate

Theme
SIGGRAPH Core

Psychophysical methods from experimental psychology can be used to quantify the relationships between the properties of images and what people perceive. The results of psychophysical experiments can be used to create predictive models of human perception that can guide development of effective and efficient graphics algorithms and useful graphical interfaces.

Prerequisites
A basic understanding of issues in computer graphics and electronic imaging. Familiarity with freshman-level college math is helpful. No specific knowledge of perception psychology or statistical methods is required.

Instructor
James A. Ferwerda
Rochester Institute of Technology

Realistic Hair Simulation – Animation and Rendering

Friday, 8:30 am - 12:15 pm
Level: Intermediate

Theme
SIGGRAPH Core

This class is for special-effects developers and technical directors who are looking for innovation as well as proven methodologies in hair simulation. It presents the state of the art in hair simulation and working solutions that they can readily implement in their production pipelines. The class is also a boot camp for aspiring computer graphics researchers interested in physically based modeling. It covers two crucial tasks in hair simulation: animation and rendering. For hair animation, it reviews recent successful models for simulating the dynamics of individual hair strands, then presents viable solutions for complex hair-hair and hair-body interactions. For rendering, it addresses issues related to shading models, multiple scattering, and volumetric shadows. The class concludes with a demonstration of how hair-simulation techniques are developed and applied in feature films to produce outstanding visual effects.

Prerequisites
Familiarity with the fundamentals of computer graphics, physical simulation, and physically based rendering is strongly recommended but not mandatory. Some knowledge of numerical linear algebra, differential equations, numerical methods, rigid-body dynamics, collision detection and response and physics-based illumination models is also recommended.

Instructors
Florence Bertails
INRIA Rhône-Alpes

Sunil Hadap
Adobe Systems Incorporated

Marie-Paule Cani
Institut National Polytechnique de Grenoble

Ming Lin
University of North Carolina at Chapel Hill

Kelly Ward
Walt Disney Animation Studios

Steve Marschner
Cornell University

Tae-Yong Kim
Rhythm & Hues Studios

Zoran Kačić-Alesić
Industrial Light & Magic

A Gentle Introduction to Bilateral Filtering and its Applications

Friday, 8:30 am - 12:15 pm
Level: Intermediate

Theme
SIGGRAPH Core

The bilateral filter is a nonlinear process that smooths an image while preserving its edges. Although this description may sound scary to most of us, this filter is nothing other than a basic weighted average. It is a simple tool that has become ubiquitous in image processing and has shown remarkable abilities to filter images, videos, and even 3D meshes. This course presents the bilateral filter's most successful applications, describes its various implementations, and comprehensively summarizes the related theoretical background.

Prerequisites
Some digital image basics (pixels, gray levels, noise) and some modest programming experience. If you can compute a weighted average, then you are ready to take this course. Don't worry if you are not familiar with integrals or Gaussian functions.

Instructors
Sylvain Paris
Adobe Systems Incorporated

Jack Tumblin
Northwestern University

Frédo Durand
Massachusetts Institute of Technology, Computer Science and Artificial Intelligence Laboratory

Practical Global Illumination With Irradiance Caching

Friday, 8:30 am - 12:15 pm
Level: Intermediate

Theme
SIGGRAPH Core

Since its invention, irradiance caching has been successfully used to compute global illumination in the Radiance lighting-simulation system. Its widespread use had to wait until global illumination won recognition in production rendering. Since then, it has been at the core of most global illumination-enabled rendering software. Still, although elegant and powerful, the algorithm often fails to produce artifact-free images.

The first and main objective of this class is to teach the use of irradiance caching for global illumination computation and expose, on a problem-and-solution basis, all the tricks for successful and robust implementation. It emphasizes integration in production environments and discusses the particularities used at PDI/DreamWorks and Pixar. The second objective is to acquaint attendees with recent research related to irradiance caching, such as a fast GPU implementation, rendering of flicker-free animations, and caching on glossy surfaces.

Prerequisites
A basic understanding of rendering (ray tracing in particular). Familiarity with global illumination concepts is useful.

Instructors
Jaroslav Křivánek
CTU Prague

Pascal Gautron
Thomson Corporate Research

Greg Ward
Anyhere Software

Henrik Wann Jensen
University of California, San Diego

Per Christensen
Pixar Animation Studios

Eric Tabellion
PDI/DreamWorks

Advanced Global Illumination Using Photon Mapping

Friday, 1:45 - 5:30 pm
Level: Advanced

Theme
SIGGRAPH Core

Photon mapping provides a practical way of efficiently simulating global illumination, including inter-reflections, caustics, color bleeding, participating media, and subsurface scattering in scenes with complicated geometry and advanced material models.

This class provides the insight necessary to efficiently implement and use photon mapping to simulate global illumination in complex scenes. It briefly reviews the fundamentals of photon mapping, including efficient techniques and data structures for managing large numbers of rays and photons, and it describes how to integrate the information from the photon maps in shading algorithms to render global illumination.

Based on requests from past attendees of this course, a larger portion of the presentation will be dedicated to advanced techniques for photon mapping and more recent developments, including efficient methods for using photon mapping in scene with participating media and subsurface scattering.

Prerequisites
A good understanding of lighting and shading, linear algebra, and the basics of the ray tracing algorithm.

Instructors
Wojciech Jarosz
Henrik Wann Jensen
University of California, San Diego

Transportation Visualization

Friday, 3:45 - 5:30 pm
Level: Beginning

Theme
Impact on Society

This class highlights how transportation planners, engineers, and members of the Transportation Research Board's Committee on Visualization in Transportation are using computer graphics techniques and interactive visual displays in their system planning, project design, construction, and public-involvement activities. Practical examples include depiction of how three-dimensional models of alternate round-about treatments in roadway designs are currently being used in conjunction with microsimulation models of driver-vehicle interactions to evaluate alternative crossing solutions for visually impaired pedestrians at roundabouts and channelized turn lanes.

All three class presenters are members of the Transportation Research Board's Committee on Visualization in Transportation.

Prerequisites
Basic appreciation and knowledge of computer graphics and visualization.

Instructors
Theresa-Marie Rhyne
North Carolina State University

Michael Manore
Consultant - AEC Visualization

Ronald Hughes
North Carolina State University

Full Conference Access registration allows attendees access to all SIGGRAPH 2008 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.

Theme
SIGGRAPH Core

Technical Papers

Special Event

■●▲

Fast-Forward Technical Papers Preview

Monday, 11 August, 6 - 8 pm

Snapshot overviews of the Technical Paper sessions, in which authors give short summaries of their work. It's a fast, fun, and provocative preview of the latest and most significant findings in computer graphics and interactive techniques.

The SIGGRAPH Papers program is the premier international forum for disseminating new scholarly work in computer graphics. This year the Technical Papers Committee accepted 90 papers, a new record. These papers span the core 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.

Image Collections & Video

Tuesday, 8:30 - 10:15 am

Session Chair/Discussant
Aseem Agarwala
University of Washington

Factoring Repeated Content Within and Among Images
Using repeated instancing of texture patterns to create a condensed factorization of one or more images. The representation is randomly accessible and offers a new mode of progressivity.

Huamin Wang
Georgia Institute of Technology

Yonatan Wexler
Eyal Ofek
Microsoft

Hugues Hoppe
Microsoft Research

Finding Paths Through the World's Photos
This approach takes large photo collections and analyzes the distribution of reconstructed camera viewpoints to derive optimal paths and controls for fluid 3D scene browsing.

Noah Snavely
Rahul Garg
Steven Seitz
University of Washington

Richard Szeliski
Microsoft Research

Improved Seam Carving for Video Retargeting
Extending seam carving to work on video with a forward-looking energy criterion that considerably reduces spatial and temporal artifacts.

Michael Rubinstein
Mitsubishi Electric Research Laboratories

Ariel Shamir
Interdisciplinary Center Herzliya

Shai Avidan
Adobe Systems Incorporated

Unwrap Mosaics: A New Representation for Video Editing
By automatically unwrapping texture maps from real-world video, this method enables 3D edits without a 3D model.

Alex Rav-Acha
Weizmann Institute of Science

Pushmeet Kohli
Andrew Fitzgibbon
Carsten Rother
Microsoft Research

Parallelism

Tuesday, 10:30 am - 12:15 pm

Session Chair/Discussant
Marc Olano
University of Maryland

Larrabee: A Many-Core x86 Architecture for Visual Computing
The Larrabee hardware and software architecture uses multiple CPU cores with wide vector processors, coherent caches, and texture units for standard graphics rendering and throughput-computing applications.

Larry Seiler
Doug Carmean
Eric Sprangle
Tom Forsyth
Intel Corporation

Michael Abrash
RAD Game Tools

Pradeep Dubey
Stephen Junkins
Adam Lake
Intel Corporation

Jeremy Sugerman
Stanford University

Robert Cavin
Roger Espasa
Ed Grochowski
Toni Juan
Intel Corporation

Pat Hanrahan
Stanford University

BSGP: Bulk-Synchronous GPU Programming
A new programming language for general-purpose computation on the GPU.

Qiming Hou
Tsinghua University

Kun Zhou
Baining Guo
Microsoft Research Asia

Parallel Poisson Disk Sampling
A poisson disk-sampling algorithm that is parallel, runs fast on a GPU, exhibits blue-noise spectrum, works in arbitrary dimensions, requires no pre-computed dataset, and allows adaptive sampling.

Li-Yi Wei
Microsoft Research

Streaming Multigrid for Gradient-Domain Operations on Large Images
A new tool to solve the large linear systems arising from gradient-domain image processing, to enable stitching and tone-mapping of gigapixel images.

Michael Kazhdan
Johns Hopkins University

Hugues Hoppe
Microsoft Research

Noisy Collisions

Tuesday, 10:30 am - 12:15 pm

Session Chair/Discussant
Miguel Otaduy
URJC Madrid

Spline Joints for Multibody Dynamics
A novel class of joints that can model general scleronomic constraints for minimal coordinate-based multibody dynamics.

Sung-Hee Lee
Demetri Terzopoulos
University of California, Los Angeles

Robust Treatment of Simultaneous Collisions
An algorithm for robust treatment of simultaneous collisions. This method follows from the observation that an inelastic collision can be treated as a projection in configuration space.

Eitan Grinspun
David Harmon
Etienne Vouga
Columbia University

Rasmus Tamstorf
Walt Disney Animation Studios

Fast Modal Sounds With Scalable Frequency-Domain Synthesis
A fast Fourier space algorithm for modal sound synthesis that allows significant acceleration compared to time-domain approaches and integration into a combined pipeline with recorded and modal sounds.

Nicolas Bonneel
George Drettakis
Nicolas Tsingos
REVES/INRIA Sophia-Antipolis

Doug James
Cornell University

Isabelle Viaud-Delmon
CNRS-UPMC UMR 7593

Backward Steps in Rigid-Body Simulation
An LCP-based method for integrating rigid-body dynamics backward in time, with special attention to issues of frictional contact and non-unique solutions.

Christopher Twigg
Carnegie Mellon University

Doug James
Cornell University

Characters

Tuesday, 3:45 - 5:30 pm

Session Chair/Discussant
Karen Liu
Georgia Institute of Technology

Clone Attack! Perception of Crowd Variety
In simulating large crowds, it is inevitable that the models and motions of many characters are cloned. The perceptual impact of this trade-off is considered in this paper.

Rachel McDonnell
Micheal Larkin
Simon Dobbyn
Steven Collins
Carol O'Sullivan
Trinity College Dublin

Real-Time Motion Retargeting to Highly Varied User-Created Morphologies
A system that animates characters of wildly different skeleton morphologies, where the morphologies are unknown at the time the animation is authored.

Chris Hecker
Bernd Raabe
Ryan W. Enslow
John DeWeese
Maxis/Electronic Arts

Jordan Maynard
Trion World Network

Kees van Prooijen
Total Immersion Software

Animating Oscillatory Motion With Overlap: Wiggly Splines
Wiggly splines provide a powerful technique for animating oscillatory motion. The splines generalize traditional piecewise cubics by adding a tunable resonance.

Michael Kass
John Anderson
Pixar Animation Studios

Example-Based Dynamic Skinning in Real Time
An approach to enriching skeleton-driven animations with physically based secondary deformation in real time.

Xiaohan Shi
Zhejiang University

Kun Zhou
Microsoft Research Asia

Yiying Tong
Michigan State University

Mathieu Desbrun
California Institute of Technology

Baining Guo
Microsoft Research Asia

Hair and Realistic Rendering

Tuesday, 3:45 - 5:30 pm

Session Chair/Discussant
Bruce Walter
Cornell University

Hair Photobooth: Geometric and Photometric Acquisition of Real Hairstyles
This method accurately captures the shape and appearance of a person's hairstyle. The results closely match the real hairstyles and can be used for animation.

Sylvain Paris
Adobe Systems Incorporated

Will Chang
Matthias Zwicker
Wojciech Jarosz
University of California, San Diego

Frédo Durand
Massachusetts Institute of Technology

Wojciech Matusik
Adobe Systems Incorporated

Oleg Kozhushnyan
Massachusetts Institute of Technology

Efficient Multiple Scattering in Hair Using Spherical Harmonics
A physically based rendering method that computes multiple scattering solutions in complex hair, including directional effects, and is much faster than previous accurate methods.

Jonathan T. Moon
Bruce Walter
Stephen Marschner
Cornell University

Dual Scattering Approximation for Fast Multiple Scattering in Hair
This method achieves physically based results with interactive frame rates.

Arno Zinke
Universität Bonn

Cem Yuksel
Texas A&M University

Andreas Weber
Universität Bonn

John Keyser
Texas A&M University

Multi-Dimensional Adaptive Sampling and Reconstruction for Ray Tracing
A multi-dimensional adaptive sampling technique for efficient distribution of ray tracing effects such as motion blur and depth of field.

Toshiya Hachisuka
Wojciech Jarosz
University of California, San Diego

Richard Peter Weistroffer
Kevin Dale
Greg Humphreys
University of Virginia

Matthias Zwicker
Henrik Wann Jensen
University of California, San Diego

Real-Time Rendering

Wednesday, 8:30 - 10:15 am

Session Chair/Discussant
Sumanta Pattanaik
University of Central Florida

Real-Time, All-Frequency Shadows in Dynamic Scenes
A soft-shadow algorithm that enables constant-time filtering. Its high performance and quality facilitate rendering of all-frequency shadows in dynamic scenes under environment-map illumination.

Thomas Annen
Zhao Dong
Max-Planck-Institut für Informatik

Tom Mertens
Philippe Bekaert
Universiteit Hasselt

Hans-Peter Seidel
Max-Planck-Institut für Informatik

Jan Kautz
University College London

Interactive Relighting of Dynamic Refractive Objects
A new technique for interactive relighting of dynamic refractive objects with complex material properties such as spatially varying refractive index and anisotropic scattering.

Xin Sun
Zhejiang University

Kun Zhou
Microsoft Research Asia

Eric Stollnitz
Microsoft Research

Jiaoying Shi
Zhejiang University

Baining Guo
Microsoft Research Asia

Real-Time Smoke Rendering Using Compensated Ray Marching
A real-time algorithm for rendering smoke under dynamic low-frequency environment lighting.

Kun Zhou
Zhong Ren
Stephen Lin
Microsoft Research Asia

Hujun Bao
Zhejiang University

Baining Guo
Heung-Yeung Shum
Microsoft Research Asia

A Meshless Hierarchical Representation for Light Transport
This hierarchical function basis for light transport is decoupled from the geometric surface representation, allowing algorithms such as PRT to work on complex surfaces hierarchically.

Jaakko Lehtinen
Massachusetts Institute of Technology, Helsinki University of Technology

Matthias Zwicker
University of California, San Diego

Emmanuel Turquin
Université Joseph Fourier Grenoble

Janne Kontkanen
PDI/DreamWorks

Frédo Durand
Massachusetts Institute of Technology, Computer Science and Artificial Intelligence Laboratory

François Sillion
INRIA, Université Joseph Fourier Grenoble

Timo Aila
NVIDIA Research

Faces & Reflectance

Wednesday, 10:30 am - 12:15 pm

Session Chair/Discussant
Jason Lawrence
University of Virginia

Data-Driven Enhancement of Facial Attractiveness
A data-driven approach to enhancing the attractiveness of human faces in frontal photographs while maintaining close similarity to the original

Tommer Leyvand
Daniel Cohen-Or
Tel Aviv University

Gideon Dror
Academic College of Tel Aviv Yaffo

Dani Lischinski
The Hebrew University

Face Swapping: Automatically Replacing Faces in Photographs
A system for fully automatic face replacement in images. This approach requires no 3D model and generates realistic results across different skin tones, lighting conditions, and viewpoints.

Dmitri Bitouk
Neeraj Kumar
Samreen Dhillon
Peter Belhumeur
Shree Nayar
Columbia University

AppProp: All-Pairs Appearance-Space Edit Propagation
A method for editing the appearance of images and measured materials, in which rough edits are refined by an appearance-space optimization solved with an approximation algorithm derived from matrix sampling.

Xiaobo An
Fabio Pellacini
Dartmouth College

Modeling Anisotropic Surface Reflectance With Example-Based Microfacet Synthesis
An efficient method for capturing and modeling spatially varying anisotropic BRDFs.

Jiaping Wang
Microsoft Research Asia

Shuang Zhao
Shanghai Jiaotong University

Xin Tong
John Snyder
Baining Guo
Microsoft Research Asia

Shape Analysis

Wednesday, 1:45 - 3:30 pm

Session Chair/Discussant
Eitan Grinspun
Columbia University

Upright Orientation of Man-Made Objects
This work addresses the problem of computing the upright orientation of 3D standing artificial objects from model geometry alone and provides a highly generalizable solution.

Hongbo Fu
The University of British Columbia

Daniel Cohen-Or
Tel Aviv University

Gideon Dror
The Academic College of Tel Aviv Yaffo

Alla Sheffer
The University of British Columbia

Discovering Structural Regularity in 3D Geometry
A computational framework to discover regular or repeated geometric structures in 3D shapes. By analyzing pairwise similarity transformations in suitable transformation space, the method reveals hidden underlying lattice structures.

Mark Pauly
ETH Zürich

Niloy J. Mitra
Indian Institute of Technology, Delhi

Johannes Wallner
Technische Universität Graz

Helmut Pottmann
Technische Universität Wien

Leonidas Guibas
Stanford University

Skeleton Extraction by Mesh Contraction
A novel and simple skeleton-extraction framework based on Laplacian mesh contraction and connectivity surgery. It is noise- and pose-insensitive, topology preserving, and fully automatic.

Oscar Kin-Chung Au
Chiew-Lan Tai
Hong Kong University of Science and Technology

HungKuo Chu
National Cheng Kung University

Daniel Cohen-Or
Tel Aviv University

Tong-Yee Lee
National Cheng Kung University

Computing Geometry-Aware Handle and Tunnel Loops in 3D Models
An algorithm that computes loops around handles and tunnels of a 3D model. The loops computed by the algorithm are used for feature recognition and topology simplification.

Tamal K. Dey
Kuiyu Li
The Ohio State University

Jian Sun
Stanford University

David Cohen-Steiner
INRIA, Sophia Antipolis

Jiggly Fluids

Wednesday, 3:45 - 6 pm

Session Chair/Discussant
Adam Bargteil
Carnegie Mellon University

Two-Way Coupling of Fluids to Rigid and Deformable Solids and Shells
A novel method for fully implicit solid-fluid coupling that works for smoke, water, and multiphase fluids, as well as rigid and deformable solids and shells.

Avi Robinson-Mosher
Tamar Shinar
Jon Gretarsson
Jonathan Su
Ron Fedkiw
Stanford University

Fast Viscoelastic Behavior With Thin Features
Simulation of viscoelastic materials using a high resolution surface mesh that is embedded in a frequently re-meshed finite-element simulation.

Christopher J. Wojtan
Greg Turk
Georgia Institute of Technology

Bubbles Alive
A hybrid method for simulating bubbly water, in which the sub-grid visual details can be improved by incorporating a novel bubble model using a SPH-into-Eulerian solver.

Jeong-Mo Hong
Ho-Young Lee
Jong-Chul Yoon
Chang-Hun Kim
Korea University

Porous Flow in Particle-Based Fluid Simulations
A unified particle method for simulation of liquids and liquid-absorbent materials such as cloth and sponges.

Toon Lenaerts
Katholieke Universiteit Leuven

Bart Adams
Stanford University, Katholieke Universiteit Leuven

Phil Dutreacute
Katholieke Universiteit Leuven

Wavelet Turbulence for Fluid Simulation
A novel wavelet method for simulation of fluids at high spatial resolution. The algorithm is a novel wavelet method for simulation of fluids at high spatial resolution. It allows high-resolution detail to be added as a post-processing step.

Theodore Kim
Cornell University

Nils Thuerey
ETH Zürich

Doug James
Cornell University

Markus Gross
ETH Zürich

Texture

Wednesday, 3:45 - 5:30 pm

Session Chair/Discussant
Yizhou Yu
University of Illinois at Urbana-Champaign

Multiscale Texture Synthesis
An example-based method for synthesizing textures with spatial features across a large or even infinite range of scales, with both CPU and GPU implementations.

Charles Han
Eric Risser
Ravi Ramamoorthi
Eitan Grinspun
Columbia University

Inverse Texture Synthesis
A method for computing a small texture compaction from a large globally variant texture. Applications of this technique range from fast reconstruction to resynthesis and GPU rendering.

Li-Yi Wei
Microsoft Research

Jianwei Han
Microsoft Research Asia & Zhejiang University

Kun Zhou
Microsoft Research Asia

Hujun Bao
Zhejiang University

Baining Guo
Heung-Yeung Shum
Microsoft Research Asia

Lapped Solid Textures: Filling a Model With Anisotropic Textures
A method for creating large-scale solid objects with spatially varying anisotropy by extending 2D lapped textures to 3D solids using a tetrahedral mesh model.

Kenshi Takayama
Makoto Okabe
Takashi Ijiri
The University of Tokyo

Takeo Igarashi
The University of Tokyo, JST/SORST

Anisotropic Noise
A technique to interactively render noise textures with anisotropic filtering. This approach is faster than procedural noise evaluation, and it provides superior image quality.

Alex Goldberg
Matthias Zwicker
University of California, San Diego

Frédo Durand
Massachusetts Institute of Technology, Computer Science and Artificial Intelligence Laboratory

Computational Photography & Display

Thursday, 8:30 - 10:15 am

Session Chair/Discussant
Wojciech Matusik
Adobe Systems Incorporated

Programmable-Aperture Photography: Multiplexed Light-Field Acquisition
A system that includes a novel device called programmable aperture and two associated post-processing algorithms to obtain high-quality light fields.

Chia-Kai Liang
Tai-Hsu Lin
Bing-Yi Wong
Chi Liu
Homer Chen
National Taiwan University

Glare-Aware Photography: 4D Ray Sampling for Reducing Glare Effects of Camera Lenses
This paper shows that glare manifests as an outlier in ray space, and it presents the first "single-shot" approach to classify and reduce it via 4D sampling without light-field reconstruction.

Ramesh Raskar
Amit Agrawal
Cyrus Wilson
Mitsubishi Electric Research Laboratories

Ashok Veeraraghavan
University of Maryland

Light-Field Transfer: Global Illumination Between Real and Synthetic Objects
A method based on projected and acquired light fields that enables interaction between real and synthetic objects, including multiple bounces of global illumination between them.

Oliver Cossair
Shree Nayar
Ravi Ramamoorthi
Columbia University

Towards Passive 6D Reflectance Field Displays
A method for embedding 4D and 6D data into 2D films and employing lenslet arrays so that an observer experiences encoded objects as if they are lit by real-world incident illumination.

Martin Fuchs
Max-Planck-Institut für Informatik

Ramesh Raskar
Mitsubishi Electric Research Laboratories

Hans-Peter Seidel
Hendrik P. A. Lensch
Max-Planck-Institut für Informatik

Perception & Hallucination

Thursday, 10:30 am - 12:15 pm

Session Chair/Discussant
Karol Myszkowski
Max-Planck-Institut für Informatik

A Perceptually Validated Model for Surface-Depth Hallucination
A shape-from-shading approach that takes diffuse-lit/flash-lit image pairs and produces a plausible textured height field that can be viewed from any angle under any lighting.

Mashhuda Glencross
The University of Manchester

Gregory Ward
Dolby Canada

Caroline Jay
Jun Liu
Francho Melendez
Roger Hubbold
The University of Manchester

Perception of Complex Aggregates
A psycho-physical investigation of the appearance of aggregates and how the findings can be used to reduce geometric complexity in scenes.

Ganesh Ramanarayanan
Kavita Bala
Cornell University

James Ferwerda
Rochester Institute of Technology

A Perception-Based Color Space for Illumination-Invariant Image Processing
A perception-inspired color space for illumination-invariant image editing.

Hamilton Chong
Steven Gortler
Todd Zickler
Harvard University

Self-Animating Images: Illusory Motion Using Repeated Asymmetric Patterns
A computational method to generate self-animating images from a still image with illusion motion based on a human-motion perception study.

Ming-Te Chi
Tong-Yee Lee
National Cheng-Kung University

Yingge Qu
Tien-Tsin Wong
The Chinese University of Hong Kong

Hair, Rods & Cloth

Thursday, 10:30 am - 12:15 pm

Session Chair/Discussant
Mark Carlson
DreamWorks Animation SKG

Discrete Elastic Rods
A discrete geometric model of thin flexible rods, validated with buckling, stability, knot-tying, and coupled mode experiments.

Miklós Bergou
Columbia University

Max Wardetzky
Freie Universität Berlin

Stephen Robinson
Columbia University

Basile Audoly
Université Paris

Eitan Grinspun
Columbia University

A Mass Spring Model for Hair Simulation
Simulation of many individual interacting hairs using a novel altitude-spring model for twist, a stiction model for hair/hair interactions, and a new, fully linear implicit spring discretization.

Andrew Selle
Michael Lentine
Ronald Fedkiw
Stanford University

Simulating Knitted Cloth at the Yarn Level
A computational model of yarn-level knitted cloth that enables practical simulation of complex knitted garments with costs comparable to rendering and results qualitatively similar to laboratory measurements.

Jonathan M. Kaldo
Doug James
Steve Marschner
Cornell University

Animating Developable Surfaces Using Nonconforming Elements
A new simulator capable of handling exactly developable surfaces that only bend but do not stretch or compress in any direction.

Robert English
Robert Bridson
The University of British Columbia

Tone & Color

Thursday, 1:45 - 3:30 pm

Session Chair/Discussant
Ramesh Raskar
Massachusetts Institute of Technology, Media Lab

Edge-Preserving Decompositions for Multi-Scale Tone and Detail Manipulation
A new way to construct edge-preserving multi-scale image decompositions. The paper demonstrates their effectiveness for HDR tone mapping, detail enhancement, and other applications.

Zeev Farbman
The Hebrew University

Raanan Fattal
University of California, Berkeley

Dani Lischinski
The Hebrew University

Richard Szeliski
Microsoft Research

Display-Adaptive Tone Mapping
A tone-mapping operator that can minimize contrast distortions for a particular display. Their visibility is validated by a model of the human visual system.

Rafal Mantiuk
Max-Planck-Institut für Informatik, Sharp Laboratories of America

Scott Daly
Louis Kerofsky
Sharp Laboratories of America

Dynamic-Range-Independent Image Quality Assessment
A quality assessment metric that handles image pairs with arbitrarily different dynamic ranges. The metric detects distortions in image structure and evaluates their visibility on any display device.

Tunc O. Aydin
Rafal Mantiuk
Karol Myszkowski
Hans-Peter Seidel
Max-Planck-Institut für Informatik

Light-Mixture Estimation for Spatially Varying White Balance
A white-balance technique for the two-light scenario, which encompasses many practical configurations such as indoor-outdoor mixed lighting and flash photography.

Eugene Hsu
Massachusetts Institute of Technology, Computer Science and Artificial Intelligence Laboratory

Tom Mertens
Universiteit Hasselt

Sylvain Paris
Shai Avidan
Adobe Systems Incorporated

Frédo Durand
Massachusetts Institute of Technology, Computer Science and Artificial Intelligence Laboratory

Deblurring & Dehazing

Thursday, 3:45 - 5:30 pm

Session Chair/Discussant
Hendrik Lensch
Max-Planck-Institut für Informatik

Motion-Invariant Photography
For predominantly 1D motions such as moving the camera in a particular way during the exposure, blur becomes independent of speed, and this method easily removes the effects of subject blur.

Anat Levin
Peter Sand
Taeg Sang Cho
Frédo Durand
William Freeman
Massachusetts Institute of Technology, Computer Science and Artificial Intelligence Laboratory

Single-Image Dehazing
A new method for removing haze given a single input image by decorrelating the shading and transmission functions. This paper demonstrates its usefulness for novel view synthesis and refocusing.

Raanan Fattal
Hebrew University

High-Quality Motion Deblurring From a Single Image
A new single-image deconvolution algorithm that unifies image restoration and blur-kernel estimation to recover high-quality unblurred images and suppress unpleasing ringing artifacts.

Qi Shan
Jiaya Jia
The Chinese University of Hong Kong

Aseem Agarwala
Adobe Systems Incorporated

Progressive Inter-Scale and Intra-Scale Non-Blind Image Deconvolution
A progressive inter-scale and intra-scale non-blind image deconvolution approach that can preserve the image edges and reduce the ringing artifacts, especially for large image blurs.

Lu Yuan
The Hong Kong University of Science and Technology

Jian Sun
Microsoft Research Asia

Long Quan
The Hong Kong University of Science and Technology

Heung-Yeung Shum
Microsoft Research Asia

Folding & Unfolding Surfaces

Thursday, 3:45 - 6 pm

Session Chair/Discussant
Bruno Levy
INRIA

Curved Folding
A computational framework for design and digital reconstruction of surfaces that can be produced by curved folding, a kind of origami that allows folding along smooth curves.

Martin Kilian
Simon Flöry
Technische Universität Wien, Evolute

Zhonggui Chen
Technische Universität Wien, Zhejiang University

Niloy J. Mitra
Indian Institute of Technology, Delhi

Alla Sheffer
The University of British Columbia

Helmut Pottmann
Technische Universität Wien

Freeform Surfaces From Single Curved Panels
Computation with and investigation of the properties of developable strip models, a new semi-discrete surface representation tailored for applications in architecture.

Helmut Pottmann
Technische Universität Wien

Alexander Schiftne
Technische Universität Wien, Evolute

Pengbo Bo
Technische Universität Wien, University of Hong Kong

Heinz Schmiedhofer
Technische Universität Wien

Wenping Wang
University of Hong Kong

Niccolo Baldassini
RFR Paris

Johannes Wallner
Technische Universität Graz

Conformal Equivalence of Triangle Meshes
A method for low-distortion parameterization of triangle meshes based on a new theory of discrete conformal equivalence.

Boris Springborn
Technische Universität Berlin

Peter Schröder
California Institute of Technology

Ulrich Pinkall
Technische Universität Berlin

Green Coordinates
Green coordinates lead to space deformations with a shape-preserving property, and they possess closed-form formulas.

Yaron Lipman
David Levin
Daniel Cohen-Or
Tel Aviv University

Watertight Trimmed NURBS
This paper addresses the long-standing problem of the unavoidable gaps that arise when expressing the intersection of two NURBS surfaces using conventional trimmed-NURBS representation.

Thomas W. Sederberg
G. Thomas Finnigan
Brigham Young University

Xin Li
University of Science and Technology of China

Hongwei Lin
Zhejiang University

Heather Ipson
Brigham Young University

Humans

Friday, 8:30 - 10:15 am

Session Chair/Discussant
Adrien Treuille
University of Washington

Group-Motion Editing
An intuitive group-motion editing method that allows users to deform and stitch group motions while maintaining as much as possible the neighborhood formations and moving trajectories.

Jehee Lee
School of CSE, Seoul National University

Taesoo Kwon
Kang Hoon Lee
Seoul National University

Shigeo Takahashi
University of Tokyo

Continuation Methods for Adapting Simulated Skills
Continuation methods are used to generalize physics-based walking control to significantly different tasks, such as climbing a large step, or pushing a heavy object.

KangKang Yin
Stelian Coros
Philippe Beaudoin
Michiel van de Panne
The University of British Columbia

Interactive Simulation of Stylized Human Locomotion
Simulating stylized human motions requires customized balance policies. This paper presents an interactive character controller that automatically computes balance policies needed to simulate a desired motion style.

Marco da Silva
Yeuhi Abe
Jovan Popovič
Massachusetts Institute of Technology

Musculotendon Simulation for Hand Animation
A general technique for efficient biomechanical simulation of tendons and muscles under the skin. The paper also shows how this can be integrated with traditional keyframe animation and skinning.

Shinjiro Sueda
Andrew Kaufman
Dinesh K. Pai
The University of British Columbia

Shape Acquisition

Friday, 8:30 - 10:15 am

Session Chair/Discussant
Srinivasa Narasimhan
Carnegie Mellon University

A System for High-Volume Acquisition and Matching of Fresco Fragments: Reassembling Theran Wall Paintings
A system for capturing images, geometry, and normals of thousands of fresco fragments, suitable for use by nonexperts. An incremental search on 3D edge profiles suggests matches.

Benedict Brown
Corey Toler-Franklin
Princeton University

Diego Nehab
Microsoft Research

Michael Burns
Princeton University

Christos Doumas
National University of Athens, Akrotiri Excavations

Andreas Vlachopoulos
Akrotiri Excavations

David Dobkin
Szymon Rusinkiewicz
Tim Weyrich
Princeton University

4-Points Congruent Sets for Robust Pairwise Surface Registration
Using coplanar 4-points congruent sets, this method develops a fast and robust algorithm for aligning noisy data that is corrupted with outliers, starting in arbitrary initial poses.

Dror Aiger
Ben Gurion University

Niloy J. Mitra
Indian Institute of Technology, Delhi

Daniel Cohen-Or
Tel Aviv University

3D Modeling by Ortho-Image Generation From Image Sequences
Ortho images are automatically generated from image sequences and can be used in the orthographic views of any 3D modeling package to guide the manual modeling process.

Thorsten Thormaehlen
Hans-Peter Seidel
Max-Planck-Institut für Informatik

Fluorescent Immersion Range Scanning
By immersing objects in a fluorescent liquid, this method acquires laser scans regardless of the surface properties. Dark, translucent, and transparent objects can now easily be captured.

Matthias B. Hullin
Martin Fuchs
Ivo Ihrke
Hans-Peter Seidel
Hendrik P. A. Lensch
Max-Planck-Institut für Informatik

NPR & Deformation

Friday, 10:15 am - 12:15 pm

Session Chair/Discussant
Olga Sorkine
Technische Universität Berlin

Where Do People Draw Lines?
A study of human line drawings allows characterization of drawn lines by their mathematical surface and image properties, and a direct comparison with existing CG methods.

Forrester Cole
Aleksey Golovinskiy
Alex Limpaecher
Heather Stoddart Barros
Adam Finkelstein
Thomas Funkhouser
Szymon Rusinkiewicz
Princeton University

Structure-Aware Halftoning
An optimization-based halftoning technique that preserves the structure and tone similarities between the original and the halftone images.

Wai-Man Pang
Yingge Qu
Tien-Tsin Wong
The Chinese University of Hong Kong

Daniel Cohen-Or
Tel Aviv University

Pheng-Ann Heng
The Chinese University of Hong Kong

3D Unsharp Masking for Scene-Coherent Enhancement
A coherent, holistic approach for enhancing depiction of surfaces, shadows, and highlights to make renderings used in diagnostics, simulations, navigation, and film creation easier to interpret.

Tobias Ritschel
Kaleigh Smith
Matthias Ihrke
Thorsten Grosch
Karol Myszkowski
Hans-Peter Seidel
Max-Planck-Institut für Informatik

Real-Time Data-Driven Deformation Using Kernel-Canonical Correlation Analysis
A method for learning a surface deformation style from examples and generating novel deformations in real time according to the movements of a set of control points.

Wei-Wen Feng
Byung-Uck Kim
Yizhou Yu
University of Illinois at Urbana-Champaign

Painting & Sketching

Friday, 1:45 - 3:30 pm

Session Chair/Discussant
Matthias Zwicker
University of California, San Diego

Diffusion Curves: A Vector Representation for Smooth-Shaded Images
This "diffusion curve" primitive for creation of soft gradients and blur in vector graphics, along with an image analysis method, is used to automatically extract diffusion curves from photographs.

Alexandrina Orzan
ARTIS - INRIA Grenoble University

Adrien Bousseau
ARTIS - INRIA Grenoble University, Adobe Systems Incorporated

Holger Winnemoeller
Adobe Systems Incorporated

Pascal Barla
IPARLA - INRIA

Joëlle Thollot
ARTIS - INRIA Grenoble University

David Salesin
Adobe Systems Incorporated, University of Washington

Real-Time Gradient-Domain Painting
An application that allows artists to perform gradient-domain manipulations with real-time feedback in a familiar brush-based way.

James McCann
Nancy Pollard
Carnegie Mellon University

Feedback Control of Cumuliform Cloud Formation Based on Computational Fluid Dynamics
A method for controlling simulation of the cumuliform cloud formation that controls the simulation parameters in order to generate realistic clouds that form the specified shape.

Yoshinori Dobashi
Katsutoshi Kusumoto
Hokkaido University

Tomoyuki Nishita
The University of Tokyo

Tsuyoshi Yamamoto
Hokkaido University

Shading-Based Surface Editing
A system for free-form surface editing that allows a user to change the appearance of a three-dimensional shape directly by modifying its rendered, shaded image

Yotam Gingold
Denis Zorin
New York University

Performance Capture

Friday, 1:45 - 3:30 pm

Session Chair/Discussant
Jehee Lee
Seoul National University

Data-Driven Modeling for Skin and Muscle Deformation
A data-driven model that reconstructs skin and muscle animation from skeletal motion capture.

Sang Il Park
Sejong University

Jessica Hodgins
Carnegie Mellon University

Articulated Mesh Animation From Multi-View Silhouettes
Non-rigid deformation of an articulated template mesh makes it possible to capture motion of both the skeleton and the shape of a human performer.

Daniel Vlasic
Ilya Baran
Massachusetts Institute of Technology

Wojciech Matusik
Adobe Systems Incorporated

Jovan Popovič
Massachusetts Institute of Technology

Performance Capture From Sparse Multi-View Video
A new approach to video-based performance capture that produces spatio-temporally coherent high-quality geometry, lifelike motion data, and (optionally) surface texture of recorded actors.

Edilson de Aguiar
Carsten Stoll
Max-Planck-Institut für Informatik

Christian Theobalt
Stanford University

Naveed Ahmed
Hans-Peter Seidel
Max-Planck-Institut für Informatik

Sebastian Thrun
Stanford University

Markerless Garment Capture
A new method for capturing garments worn by an actor. Unlike previous methods, this approach works for off-the-shelf clothing and does not require specially manufactured garments.

Derek Bradley
Tiberiu Popa
Alla Sheffer
Wolfgang Heidrich
The University of British Columbia

Tamy Boubekeur
Technische Universität Berlin

Procedural Modeling & Design

Friday, 3:45 - 5:30 pm

Session Chair/Discussant
Claudio Silva
University of Utah

Automatic Generation of Tourist Maps
An automated system for designing tourist maps that selects and highlights the information that is most important to tourists using a combination of multiperspective rendering and cartographic generalization.

Floraine Grabler
Maneesh Agrawala
University of California, Berkeley

Robert Sumner
Mark Pauly
ETH Zürich

Automated Generation of Interactive 3D Exploded-View Diagrams
A system for automatically generating interactive exploded-view diagrams of 3D models. The views provide both direct and high-level interactive tools for exploring complex objects.

Wilmot Li
University of Washington

Maneesh Agrawala
University of California, Berkeley

Brian Curless
University of Washington

David Salesin
University of Washington, Adobe Systems

Interactive Visual Editing of Grammars for Procedural Architecture
A real-time visual editing paradigm for shape grammars that allows creation of rule bases from scratch without text editing. The method provides direct and persistent local control over models.

Markus Lipp
Technische Universität Wien

Peter Wonka
Arizona State University

Michael Wimmer
Technische Universität Wien

Interactive Procedural Street Modeling
This paper addresses the problem of interactively modeling large street networks. The street networks can be used to create large virtual urban environments.

Guoning Chen
Gregory Esch
Oregon State University

Peter Wonka
Arizona State University

Pascal Mueller
ETH Zürich

Eugene Zhang
Oregon State University

Panels

Full Conference Access registration allows attendees access to all SIGGRAPH 2008 Panels. Seating is on a first-come, first-served basis. Please be sure to arrive early for the Panel sessions you wish to attend.

Studio Views of Student Demo Reels

Tuesday, 12 August, 1:45 - 3:30 pm

Theme
Professional Development and Education

A distinguished group of industry professionals from various computer animation and visual effects facilities reviews (and Illustrates by example) what they (and their studios) look for when reviewing demo reels and art portfolios of recent graduates. The session addresses demo reels (what to include and what not to include, structure and length, format and design, audio, credits and contact informations) and issues related to the job search and application process.

Moderator
Arthur Durinski
Otis College of Art and Design

As the World Turns: Debating & Examining Online Digital Earth Technologies

Tuesday, 12 Augtust, 3:45 - 5:30 pm

Theme
Impact on Society

New geo-visualization tools are changing how people use interactive mapping programs. It is now possible for general users to build their own mash-up visualizations from information available on the web and geo-referenced via digital earth technologies. This panel highlights how these technologies will continue to affect society. Panelists demonstrate their digital earth systems and debate how mapping and connectedness will evolve.

Panelists
Theresa-Marie Rhyne
North Carolina State University

Dean Johnson
Western Michigan University

Don Brutzman
Naval Postgraduate School

Randy Kim
NASA

Michael Jones
Google Inc.

Franz Leberl
Microsoft Virtual Earth

Teaching Computer Animation for Results

Wednesday, 13 August, 8:30 am - 10:15 pm

Theme
Professional Development and Education

Success in animation depends on getting the priorities right: knowing what to emphasize and what to put on the back burner. The biggest dilemma we face is "what" to teach in computer animation as opposed to "how" to teach. This is exacerbated by the fact that students prefer to learn the latest 3D animation software tools, because they believe this will compensate for any lack of creative skills. But in reality, the computer amplifies students' limited skills.

This session shares examples of successful education programs at four levels: foundation (Griffith University), undergraduate (Ringling School of Art and Design), graduate (California Institute of the Arts), and industry (Electronic Arts).

Panelists
Craig Caldwell
Griffith University

Karen Sullivan
Ringling School of Art and Design

Kevin Geiger
California Institute of the Arts

Jack Lew
Electronic Arts

35 Years of Computer Graphics: The Game Show!

Wednesday, 13 August, 3:45 - 5:30 pm

Theme
SIGGRAPH Core

In this Jeopardy-style game show, each "question" is a classic CG video clip from the SIGGRAPH Video Review archives. Examples of scientific visualization, broadcast, and experimental early work are especially highlighted. Categories include: The (Very) Early Years, Vertically Challenged, Weird Science, Ready, Wlling, Abel, and more.

Moderator
Terrence Masson
Northeastern University

Games Evolving on an Order of Magnitude

Thursday, 14 August, 8:30 - 10:15 am

Theme
Complexity and Accessibility

During initial development of Playstation games, development teams averaged 15 artists, designers, and programmers with three to four technical engineers. For PS2, average project requirements increased to 55 artists, designers, and programmers with a technology team of 20 engineers. Now, for next-generation platforms, developers are seeing asset and team growth of an order of magnitude, but not necessarily the same growth in budgets or timelines.

The greatest challenge now for game developers is to create economies of scale and pipeline efficiencies to accommodate project teams that are currently averaging 100-120 artists, designers, and programmers with 30 technical directors, programmers, and engineers. How do these companies address the complexity of programming and increased demands for quality and quantity of art assets to achieve near-life visuals?

Moderator
Michel Kripalani
Autodesk, Inc.

Panelists
Lyle Hall
THQ Inc.

Martin Walker
Artificial Mind & Movement

Steve Theodore
Bungie, LLC

Steve Sullivan
Lucas Arts

Jeff Lander
Electronic Arts

Roundtables

Full Conference Access registration allows attendees access to all SIGGRAPH 2008 Roundtables. Seating is on a first-come, first-served basis. Please be sure to arrive early for the Roundtable sessions you wish to attend.

Educators Opening Plenary and Café

Monday, 11 August, 10:30 am - 12:15 pm

Theme
Professional Development and Education

The Educators Opening Plenary and Café is the kick-off session for the SIGGRAPH 2008 Teach/Learn sphere. This presentation features an overview of SIGGRAPH 2008 conference sessions, activities, and resources that might be of special interest to educators and their students.

Accompanied by complimentary coffee, tea, and tidbits, several Teach/Learn moderators offer mini-previews of their upcoming sessions. This is an excellent opportunity for educators to plan their conference schedules and ask questions that may help them decide which sessions they should not miss.

The session also provides an opportunity for educators to offer their views about what is most useful at the SIGGRAPH conference and from the ACM SIGGRAPH Education program in general, and what they would like to see that isn't currently offered. These views will be carefully considered by both the conference and the organization for future implementation. At the end of the plenary session, educators who want to play a role in future conferences, and in the ACM SIGGRAPH Education program in general, can learn about volunteering opportunities.

Moderator
Rick Barry
Pratt Institute
Chair, ACM SIGGRAPH Education Committee

Common Needs: Building and Retaining the Talent

Tuesday, 12 August, 3:45 - 5:30 pm

Theme
Professional Development and Education

When entertainment became a driving force in the SIGGRAPH community, employers were in the driver's seat. Working on a "cool show" meant more than money to many people. Over the last 10 years large production houses have been challenged by commodity hardware and costs have been holding salaries steady. Meanwhile, interactive entertainment has become a significant industry, with more people working there than in visual effects and feature animation. Cheaper talent from abroad is also playing key roles in how companies compensate and retain the top talent. The larger facilities started in-house training departments to help their artists keep pace with their rapidly evolving tools. The animation houses encourage artistic freedom by supporting employees who want to make short films on ther own time. On the other hand, games and interactive companies emphasized their stability, benefits, and stock options to attract and retain talent. This roundtable examines these trends. How can they work with facilities and studios to create environments in which both groups are loyal to each other? How can companies treat employees well and stay in business?

Moderator
Evan Hirsch
Microsoft Corporation

Roundtable on Lighting for Feature Animation

Thursday, 14 August, 1:45 - 3:30 pm

Theme
Professional Development and Education

Some of the industry's top lighting creatives and technical artists, who are developing fully CG-animated features, explore issues related to workflow, practical technology applications, resource issues, staffing, art-direction challenges, and other topics in the lighting, rendering, and compositing aspects of production.

This roundtable discussion will be followed by a question-and-answer period.

Moderator
Mark Edwards
DreamWorks Animation

Case Studies in the Ethics of 3D Site Capture

Thursday, 14 August, 3:45 - 5:30 pm

Theme
Global Responsibility

Spatial capture remains an active topic in the SIGGRAPH literature, and many capture techniques have been applied in the field of cultural heritage in recent years. In many cases, the data produced at cultural heritage sites by computer graphics researchers represent a high-quality facsimile of the heritage objects under study. This fact has prompted copyright discussions among graphics researchers, archaeologists, and governments. Governments have enacted laws to protect their cultural heritage from computer graphics "theft" and duplication. In extreme cases, researchers have even been barred from entering countries with their capture equipment. This session surveys notable case studies of graphics for cultural heritage and summarizes the issues at stake for computer graphics researchers who want to work in this field

Moderator
Kevin Cain
INSIGHT

Roundtable on Educational Resources

Thursday, 14 August, 3:45 - 5:30 pm

Theme
Professional Development and Education

Have you created a new way of teaching, an outstanding course, or an innovative teaching gem for a particular problem? Are you desperately seeking such curricula and materials? Meet other educators at this roundtable organized by the ACM SIGGRAPH Education Committee, learn about their approaches, and share your personal classroom experience with self-made or third-party curricular and instructional resources.

The committee presents its resource projects and opens the floor for lively discussion. Topics include: the peer-reviewed CGEMS (Computer-Graphics Educational Materials Source) and the community-based cgSource, designed to improve educators' resources' and peer recognition. Also in this session: CGEMS jurors honor the best materials in 2008.

Moderators
Frank Hanisch
Peter Weishar
Co-Chairs of Curricular and Instructional Resources, ACM SIGGRAPH Education Committee

Exhibitor List

3D Consortium
3dMD/3Q
3DTotal.com
3DVIA, Dassault Systèmes
3Dconnexion, a Logitech Company
3Ware - AMCC Storage
A K Peters, Ltd.
Aberdeen LLC
Academic Superstore LP
Academy of Art University
Activision
Addison-Wesley Professional
Aguru Images, Inc.
AJA Video Systems Inc.
AMAX Engineering Corp.
AMD
American Paper Optics, Inc.
Andersson Technologies LLC
Animation Magazine Inc.
ANIMATIONMENTOR.COM
Animazoo UK Ltd.
Apace Systems Corporation
Art Institutes, The
ASC-American Cinematographer
Aspera, Inc.
Astrodesign Inc.
Asylum Visual Effects
ATTO Technology, Inc.
Auto.des.sys, Inc.
Autodesk, Inc.
Avatar Reality, Inc.
Axceleon Inc.
Ballistic Media Pty. Ltd.
Barco
Baton Rouge Digital Industries Consortium
Bell Computer
BiTMICRO Networks, Inc.
Blue Sky Studios, Inc.
BlueArc Corporation
BOXX Technologies, Inc.
Bunkspeed, Inc.
CAP DIGITAL PARIS REGION
CEA - LIST
cebas Computer GmbH
CGAL – The Computational Geometry Algorithms Library
Center for Computation & Technology at Louisiana State University
Chambre de Commerce et d'industrie de Paris/Paris Chamber of Commerce and Industry
Chaos Group
Cogswell Polytechnical College
Collins College
Contour Design, Inc.
COP Communications – Computer Graphics World/POST
Cosmic Blobs – Dassault Systemes S.A.
Course Technology PTR, a part of Cengage Learning
Craft Animations and Entertainment AB
Creaform 3D
Create Magazine
Creative Handbook
Cycling '74
DataDirect Networks Inc.
DAZ Productions, Inc.
deviantART Inc.
DigiPen Institute of Technology
Digimax Inc.
Digital Anarchy
Digital Domain Productions, Inc.
Digital Media Arts College
Digital-Tutors
Dimension 3D Printing
Donya Labs
e-on software, inc.
EEFX.COM - Chroma Key Screens & Supplies
eyeon Software, Inc.
EON Reality, Inc.
Electrosonic Systems Inc.
Elsevier B.V.
EyeTech Digital Systems, Inc.
Faceware Society LLC
Frantic Films Corporation
Fraunhofer HHI
Freedom of Teach
Future Publishing Limited
GenArts, Inc.
Gnomon, Inc.
GOBELINS, L'ecole de l'image
Google
Graduate School of Culture Technology
HD3D SAS
Hewlett Packard Company
Hongik University – SunnyGraphy Inc.
HPC Systems, Inc.
IBM Corporation
IdN Magazine
IEEE Computer Society
Image Metrics
ImageMovers Digital
Imagi Services, USA
Imagine Animation Magazine
Immersion Corporation
Immersive Media Corp.
INRIA Rennes-Bretagne Atlantique
IntegrityWare, Inc.
Intel Corporation
Intelligraphics Inc.
InterSense
International Academy of Design & Technology
iPi Soft
Isilon Systems, Inc.
iZ3D LLC
JourneyEd.com
Kolor
LAIKA
Lenovo
Lightcraft Technology, LLC
Lightspeed Design, Inc.
LightWork Design Ltd.
Lucasfilm Ltd.
Lynda.com, Inc.
Marvic Media, Inc.
MAXON Computer Inc.
Measurand, Inc.
Mikros Image
Motion Analysis Corporation
Motion Theory
NaturalMotion Ltd.
NaturalPoint Inc.
New York University - CADA
NewTek, Inc.
Nexon Publishing/Humanature
Nexstar
Next Limit Technologies
NextEngine Inc.
NorPix Inc.
Noren Products Inc.
NVIDIA Corporation
Objet Geometries Ltd.
Ohio Univeristy
Okino Computer Graphics, Inc.
Omation
Omneon, Inc.
Organic Motion, Inc.
PAVONINE KOREA, INC.
Panoscan Inc.
Pantomat
Penton Publishing – millimeter/Digital Content Producer
PipelineFx, LLC
Pixar Animation Studios
Pixellexis Systems & Technologies Inc.
Pixologic, Inc.
PNY Technologies, Inc.
Point Grey Research Inc.
Polhemus, Inc.
Purdue University, Department of Computer Graphics Technology
R/GA Media Group Limited
RapidMind Inc.
RayScale, LLC
Red Eye Studio
RedEye ARC
Renderosity
ReverseEngineering.com
Rhythm & Hues Studios
Ringling School of Art and Design
Robert McNeel & Associates
Rochester Institute of Technology, Center for Imag
Savannah College of Art and Design
Scalable Display Technologies
School of Film, TV and Multimedia Korean National University
Sensics Inc.
Shapeways
Smith Micro Software, Inc.
Softimage
Solid Modeling Solutions
Sony Electronics Inc.
Sony Pictures Imageworks Inc.
SpeedSix Software Limited
SpheronVR AG
Springer
Stash Media Inc.
Studica, Inc.
T-Splines, Inc.
[TC]2
TEAC Amercia, Inc.
TechViz
Texas Memory Systems
The Bakery
The Cleveland Institute of Art
The Pixel Farm
The University of the Arts
The3DShop.com
THQ Inc.
Tippett Studio
Tobii Technology AB
Toon Boom Animation, Inc.
Trinity Animation Inc.
Triple Squid Software Design
Trolltech
TurboSquid, Inc.
Uberware
United States Mint
University of Central FL – Florida Interactive Ent
Vancouver Film School
Verari Systems, Inc.
Vicon
VisTrails Inc.
Wacom Technology Corp.
Walt Disney Animation Studios
Walt Disney Internet Group
Web3D Consortium
Weil Graphics
Wiley Publishing
Wolfram Research, Inc.
WorldViz
Xerox Corporation
Xsens
Z Corporation
Zygote Media Group, Inc.

Exhibitor Tech Talks & Sessions

Comprehensive summaries of the latest technologies in computer graphics and interactive techniques. SIGGRAPH 2008 exhibitors demonstrate software, hardware, and systems; answer questions; and host one-on-one conversations about how their applications improve professional and technical performance.

Exhibitor Tech Talks

iPi Soft

iPi Desktop Motion Capture: Mocap for the Masses

Tuesday, 12 August, 9:45 - 11:30 am
Hall G, Room 1

iPi Soft presents demonstrations of iPi Desktop Motion Capture (aka Shoot3D), an entry-level motion capture technology that works with just one digital camera. Topics include the motion capture process, clean-up, and the animation export process.Demos include how to create a home-made machinima using iPi Mocap and your typical favorite computer game. A web camera or inexpensive digital camera can be used for shooting input video.

Michael Nikonov
mini@shoot3d.biz

Autodesk, Inc.

Autodesk® FBX®: An Introduction

Tuesday, 12 August, 1 - 2:30 pm
Hall G, Room 1

This technical overview of FBX delves into the thrilling new features in today's FBX. See how FBX can greatly simplify your workflow with its versatility and ease of use, and understand how, with the new customization features and new openness of FBX, integrating and maintaining FBX within your applications can be done so easily and efficiently. This session is intended for developers, technical directors, managers, and enthusiasts in the fields of content-creation tools, game engines and any other applications that rely on the most widely used 3D format in the industry, FBX.

Luc Vo Van
Luc.vovan@autodesk.com

Intel Corporation

Why 3D Application Development is Driving Graphics-Industry Convergence

Tuesday, 12 August, 3:30 - 5:30 pm
Hall G, Room 1

The 3D graphics industry has been maturing in several key high-performance areas including the CAx industry, the entertainment industry, and the exploding video and PC games industry. Intel and partners show how sharing an open-3D format and 3D tools is driving convergence between these developers to build tools and applications that can be repurposed by other industries that need content.

Rita Turkowski
Rita.B.Turkowski@intel.com

Craft Animations

SpeedAnimation™: A Production for Extremely Fast Animation That Also Increases the Quality of the Animation!

Wednesday, 13 August, 9:45 - 11:30 am
Hall G, Room 1

The first step to dramatically increase productions speed is to abandon the laborious manual key-framing approach and build an entirely new animation system. To increase the quality of animation, the system must be based on procedural animation. And the author should be able to interact with the animation while it is being generated. The result is a system in which the animator "drives" the animation using something as simple as a regular game controller (such as a joystick or gamepad), and the system "records" the animation, generating key frames automatically. Thirdly, the system needs to be modular, combining separate elements together in a single animations instead of recording everything separately. The Craft Animations primary tool suite, Craft Director Tools, covers wheel- and track-based vehicles, aerial vehicles, camera-control tools, and help utilities.

Luigi Tramontana
Luigi.tramontana@craftanimations.com

Exhibitor Tech Talks

Vancouver Film School

Telling the Whole Story: A VFS Animation Case Study

Wednesday, 13 August, 1 - 2:30 pm
Hall G, Room 1

Join Greg Berridge, senior instructor in Vancouver Film School's Digital Character Animation program, for a character-animation case study. He reviews production of "The Switch," a CG animated film by VFS student Zack Mathew that has now been seen by more than 1.4 million viewers on YouTube. See how this massively popular animation was created, starting with concept and development, and moving through character design, modeling, texturing, rigging, animations, and effect animation. VFS alumni and industry professionals also discuss animation and visual effects, potential career paths for animators, and opportunities in Vancouver's animation industry.

Greg Berridge
gregb@vfs.com

Web3D Consortium

X3D: The Real-Time Solution for the Web

Wednesday, 13 August, 3:30 - 5:30 pm
Hall G, Room 1

The Web3D Consortium celebrates its 10th anniversary with its best-ever Web3D Tech Talk, which showcases Web3D technologies such as X3D and VRML that make web graphics easy and fun to deploy. X3D innovators demonstrate their latest real-world 3D applications and content, and show how you can use X3D for your 3D graphic needs. Use of X3D is growing, with content and applications in various sectors and across all hardware platforms. Join a large, innovative community of content and application developers who see this standard as the future for deployment of real-time 3D graphics applications.

Anita Havele
anita.havele@web3d.org

RapidMind, Inc.

Parallel Programming for Multi- and Many-Core Processors With RapidMind

Thursday, 14 August, 9:45 - 11:30 am
Hall G, Room 1

This presentation demonstrates how developers can express computations using the RapidMind API without changing their C++ compilers, IDEs, debuggers, and build systems. Stefanus Du Toit, Chief Architect at RapidMind, provides a complete introduction to RapidMind and helps attendees understand how RapidMind works and can be used, and what performance benefits can be gained by it. C++ experience is recommended but not required for this presentation.

Stefanus Dutoit
stefanus.dutoit@rapidmind.com

AMD Corporation

GPU-Accelerated Video Encoding: State of the Art

Thursday, 14 August, 1 - 2:30 pm
Hall G, Room 1

By leveraging the highly parallel nature of the GPU to address the compute-intensive nature of video compression, substantial gains can be realized in the the productivity of video-centric workflows. Learn about AMD's advances in accelerating video encoding in workflows, such as non-linear editing, client approvals preparation, streaming transcode, etc.

Alexis Mather
Alexis.mather@amd.com

Exhibitor Tech Talks

Hewlett-Packard

Revolutionizing Color Management: What You Dream is What You Get

Tuesday, 12 August 1-2:30 pm
Hall G, Room 2

Learn how to make costly color checks, redesigns, and multiple proofs a thing of the past. HP and DreamWorks Animation show how to tap the newest breakthrough in color-critical display technology to get true color fidelity the first time and every time. Engineers of the new HP DreamColor display demonstrate this highly affordable display technology that enables a range of more than one billion colors in a 30-bit LCD display with blacker blacks, programmable white point, pre-sets for major industry specifications, and customizations for target color gamuts.

Larry Mahoney
Larry.mahoney@hp.com

Lenovo

The Importance of Color in Mobile Workstations

Wednesday, 13 August, 10:30 - 11:15 am
Hall G, Room 2

With the vast increases in mobile graphics, CPU, memory, and storage capabilities, truly effective mobile workstations are becoming reality for an increasing number of traditional desk-bound workstation users. Like the importance of having all components of a high-performance F1 race car operating in harmony, all components of today's mobile workstations must be matched in a complete and balanced tool. While mobile displays boast ever-increasing resolutions, the quality of the display'sf color capabilities, brightness, and (most important) correctness is just as important to the overall effectiveness as the other workstation components. This Tech Talk focuses on the quality of mobile displays and how companies like Lenovo are working with customers, suppliers, and technical development teams to deliver innovative capabilities to the digital content-creation community.

Wes Williams
WW Segment Manager, ThinkPad Mobile Workstations

Image Metrics

Getting Real With Emily: Achieving Photo-Real Facial Animation With Image Metrics' Technology

Wednesday 13, August 1- 2:30 pm
Hall G, Room 2

You have not seen photo-real facial animation until you've seen Emily, a lifelike CG character born from the collaboration between Image Metrics and the University of Southern California.

For years, Image Metrics' easy-to-use technology has helped studios create superior facial animation on some of the biggest films and games, including "Mummy 3" and the Grand Theft Auto series. That same technology has been combined with USC's 3D scanning solution to create a character so lifelike you will think she's real.

Including a great line-up of guest speakers, such as Paul Debevec from USC's Institute for Creative Technologies, this session provides a behind-the-scenes look at how Image Metrics' markerless and makeup-free technology is taking facial animation in games and film to the next level.

Sarah Whitmore
Sarah.whitmore@image-metrics.com

Creaform

Handyscan 3D : Real-Time, True Color Reconstruction of Textured 3D Models

Wednesday, 13 August, 3:30 - 5:30 pm
Hall G, Room 2

Marco St-Pierre
mstpierre@creaform3d.com

RapidMind, Inc.

A Unified Programming Model for Multi-Core CPUs and Many-Core Accelerators

Thursday, 14 August, 9:45 - 11:30 am
Hall G, Room 2

Join Michael McCool as he explores the benefits of the SPMD stream-parallel processing model and demonstrates how developers can express computations using the RapidMind Multi-Core Development Platform API in their C++ compilers, IDEs, debuggers, and build systems. McCool explores how RapidMind's embedded interface approach also makes it possible to use the modularity of C++ to structure computations and eliminate the runtime expense of this modularity. In addition to specific algorithmic examples, he also demonstrates how to use the platform to turn interpreters into compilers, enabling rapid development of domain-specific languages.

Mark Sangster
mark.sangster@rapidmind.com

Exhibitor Tech Sessions

NVIDIA Corporation

Next-Generation Hardware Rendering of Displaced Subdivision Surfaces

Wednesday, 13 August, 9 - 10 am
Room 405

An overview of the next-generation tessellation pipeline and its motivation. The focus is on one of the primary applications: rendering of displaced subdivision surfaces, which dramatically increases the realism of animated characters. The talk also shows how to adapt production pipelines to create compelling content that takes advantage of this innovative rendering model.

Ignacio Castaño

NVIDIA Corporation

Real-Time Rendering of Realistic Hair

Wednesday, 13 August, 10:15 - 10:45 am
Room 405

Until recently, simulating and rendering realistic hair with tens of thousands of strands was prohibitively expensive for real-time use. This session reviews how to render realistic hair with high geometric complexity in real time on the GPU. Topics incude efficient creation and rendering of large amounts of geometry for hair (essential for creating realistic hair, especially when the hair is moving), shading, self-shadowing, level of detail, and important performance optimizations. The talk also shows how next-generation hardware tessellation can make creating and rendering hair much more intuitive and efficient.

Sarah Tariq

NVIDIA Corporation

Adaptive Terrain Tessellation on the GPU

Wednesday, 13 August, 10:45 - 11:15 am
Room 405

Next-generation GPUs implement highly-programmable tessellation entirely on the GPU. This talk explains how tessellation can be applied to terrain rendering with displacement mapping. This tessellation scheme is adaptive, with the polygon LOD varying as a function of terrain roughness and with view-dependent silhouette detection.

Iain Cantlay

NVIDIA Corporation

Getting Physical: Solutions and Case Studies for Creating Scalable PhysX Content

Wednesday, 13 August, 11:30 am - 12:30 pm
Room 405

Using physical simulation in applications takes their level of immersion to new heights. NVIDIA's PhysX enables developers to add an unprecedented number of physical objects into scenes while maintaining high performance. This talk reviews the latest PhysX features and tools, and presents real case studies that highlight common challenges and solutions.

Monier Maher

NVIDIA Corporation

A New Generation of Performance Analysis and Shader Authoring Tools

Wednesday, 13 August, 2 - 3 pm
Room 405

This talk covers the latest releases of NVIDIA's popular PerfKit and FX Composer software products, as well as the brand-new NVIDIA Shader Debugger. Learn how to extract maximum GPU performance using PerfHUD 6.0 (for real-time debugging and profiling, with manyf powerful new features), GLExpert (for OpenGL debugging), and PerfSDK (an API for accessing GPU performance counters). See how FX Composer 2.5 and the Shader Debugger can make shader authoring, profiling, and debugging easy for programmers, artists, and technical directors. Discover new features such as a source-level shader debugging for CG and HLSL10 shaders, Direct3D 10 support (including geometry shaders, stream out, and texture arrays), visual models and styles, particle systems, a revamped user interface, and much more.

Jeffrey Kiel
Christopher Maughan

NVIDIA Corporation

CUDA: The Democratization of Parallel Computing

Wednesday, 13 August, 3:45 - 4:45 pm
Room 405

Massively parallel computing, once the domain of supercomputers, is now widely accessible in the form of millions of CUDA-enabled GPUs. These GPUs are fully programmable, support tens of thousands of concurrent threads, and have accelerated computations in a variety of disciplines by up to two orders of magnitude. This talk provides an overview of the newest GPU architecture, the CUDA programming model, and the latest development tools.

Paulius Micikevicius

NVIDIA Corporation

Interactive Ray Tracing With CUDA

Wednesday, 13 August, 5 - 6 pm
Room 405

Ray tracing has long been associated with high-quality graphics, but it has not been suitable for interactive use. With CUDA and an NVIDIA GPU, it is now possible to ray trace reflections from curved surfaces, refractions, and accurate shadows. By combining these effects with rasterization to efficiently compute viewing ray intersections, accurate inter-reflections and other effects can be achieved at high resolutions and frame rates.

David Luebke
Steven Parker

Inquiries about co-locating events with the annual SIGGRAPH conference should be directed to:

Scott Lang
Bergen County Academies
scott@siggraph.org

Co-Located Workshops & Events

Presented in cooperation with ACM SIGGRAPH, these small symposia are related to important aspects of computer graphics and interactive techniques. For registration information: www.siggraph.org/s2008/attendees/registration/

www.procams2008.org

5th International Workshop on Projector-Camera Systems

Sunday, 10 August
Marina Del Rey Hotel

The PROCAMS workshop series is an annual gathering place for researchers and practitioners who use, build, and design projector-camera systems for a wide variety of applications and purposes. The workshop includes papers, posters, and demos on all topics relating to projector-camera systems.

www.sci.utah.edu/rto8

IEEE/EG Symposium on Interactive Ray Tracing

Saturday, 9 August & Sunday, 10 August
Los Angeles Convention Center

RT08, the third in a successful series of symposia, provides a dedicated forum for presentation and discussion of the latest developments in interactive and real-time ray tracing research.

www.web3d.org/conferences/web3d2008

Web 3D 2008 Symposium

Saturday, 9 August & Sunday, 10 August
Los Angeles Convention Center

Web3D 2008 is the 13th international symposium on a wide range of topics covering 3D hypermedia on the web. Attendees share and explore methods of using, enhancing, or creating new 3D web and multimedia technologies, such as (but not limited to) X3D, VRML, COLLADA, Croquet, MPEG4, MPEG7, Java3D, and Canvas3D. The symposium also explores recent trends such as interactive 3D graphics and applications on mobile devices.

www.edt2008.org

EDT-IPT 2008 Emerging Display Technologies and Immersive Projection Technologies

Saturday, 9 August & Sunday, 10 August
Los Angeles Convention Center

EDT IPT 2008 is the fourth in a series of EDT workshops dedicated to new and innovative display technologies and the 11th in a series of IPT workshops dedicated to immersive projection. This two-day workshop provides an opportunity to expand approaches to using contemporary display devices in virtual reality systems and applications.

www.apgv.org

Symposium on Applied Perception in Graphics and Visualization

Saturday, 9 August & Sunday, 10 August
Los Angeles Marriott Downtown

Since 2004, this symposium has brought together researchers from the fields of perception, graphics, and visualization to facilitate a wider exchange of ideas on how to use insights from perception to advance the design of methods for visual, auditory, and haptic representation, and to use computer graphics to enable perceptual research that would otherwise not be possible.

sandbox.siggraph.org/about.html

Sandbox: An ACM SIGGRAPH Videogame Symposium

Saturday, 9 August & Sunday, 10 August
Los Angeles Convention Center

The third annual Sandbox symposium includes keynotes, panels, papers, and a videogames session that previews unreleased titles from major game companies and independent developers. Video games are a singular technological medium, comparable in cultural impact to the telephone, television, or the internet. Sandbox explores such questions as: What are the creative, technological, and commercial challenges facing this medium today and in the future? How do we relate engaging stories and worlds that leverage advances in technology?

http://www.zib.de/vg08/pbg-vg.html

IEEE/EG Symposium on Point-Based and Volume Graphics

Sunday, 10 August & Monday, 11 August
Los Angeles Convention Center

The 5th IEEE/EG Symposium on Point-Based Graphics (PBG'08) and the 7th IEEE/EG International Symposium on Volume Graphics (VG'08) brings together researchers from both the academic and industry who are working, or wish to work, on point-based graphics or volume graphics.

General Information

Airport Bus Service

FlyAway provides direct, non-stop, 24-hour bus transportation to and from Los Angeles International Airport and Union Station, downtown. The cost is $4 one way or $8 round-trip. Call 866.435.9529 for more information.

Bookstore

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 2008 speakers and award winners. To suggest books, CDs, or DVDs that should be available in the bookstore, contact:

Breakpoint Books

800.968.9622
+1.353.383.4656
+1.352.383.4403 fax
dave@breakpointbooks.com
www.breakpointbooks.com

Childcare

IMPORTANT NOTICE

Child Care will not be provided at SIGGRAPH 2008. Contact your hotel concierge for suggestions.

Internet Access

Free wireless access will be available for SIGGRAPH 2008 throughout the Los Angeles Convention Center. SIGGRAPH 2008 will not be providing public workstations for Internet access, however, there will be limited internet access in the Los Angeles Business Center.

Los Angeles Convention Center

Accessibility

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

+1.312.644.6610

Business Center

The Los Angeles Convention Center Business Center offers computer time rental, fax, services, photocopying, office supplies, phone cards, and US stamps.

Food Services

Several restaurants, concessions, and food carts are available throughout the convention center for the convenience of SIGGRAPH 2008 attendees.

Parking

SIGGRAPH 2008 attendees can park at the Los Angeles Convention Center parking lot for $12 per day. There are no in/out privileges.

Shuttle Service

SIGGRAPH 2008 provides complimentary shuttle service between most conference hotels and the Los Angeles Convention Center.

IMPORTANT NOTICE

The SIGGRAPH 2008 Shuttle Service is available only to attendees who register at official conference hotels through the SIGGRAPH 2008 hotel reservation system. Those attendees will receive a wristband upon check-in that allows them to board the shuttle buses. Attendees who are not registered at official conference hotels will be allowed to purchase wristbands at the SIGGRAPH Store. Attendees without wristbands will not be allowed to use the shuttle service. All badged attendees will be able to ride the shuttle buses to Dodgers Stadium for the reception. Wristbands will not be required.

Special Policies

Lost badges cannot be replaced. If you lose your badge, you must purchase a new registration.

Technical materials included with your registration must be picked up at the SIGGRAPH 2008 Merchandise Pickup Center. Lost merchandise vouchers will not be replaced.

Passes: To be admitted to the Reception, you must have a ticket (your badge does not provide access). Computer Animation Festival access comes with a Full Conference badge, or a Festival Pass.

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.

No cameras or recording devices are permitted at SIGGRAPH 2008. Abuse of this policy will result in the loss of the individual's registration credentials.

SIGGRAPH 2008 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 2008 or ACM SIGGRAPH.

Travel & Housing

Visit the SIGGRAPH 2008 web site to access the easy to use online hotel reservation system, which includes complete information on housing policies, procedures and rates:

www.siggraph.org/s2008

Or contact:

SIGGRAPH 2008 Travel Desk

110 West Hubbard
Chicago, Illinois 60610 USA
800.631.5557 (Continental US and Canada)
+1.312.527.7300
+1.312.329.9513 fax
siggraph2008@ttgonline.com

SIGGRAPH 2008 has negotiated discount rates for hotels in Los Angeles. These discounts are available to SIGGRAPH 2008 attendees only. Please make your hotel reservation by 11 July 2008. Reservations made after 11 July will be based on availability only and rates may increase.

Conference Registration Categories

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

Included With Your Registration

- ■ Classes
- ■ Geek Bar
- ■ Informal Forums
- ■ Panels
- ■ Reception
- ■ Roundtables
- ■ Talks
- ■ Technical Papers
- ■ Full Conference DVD-ROM
- ■ ● Art & Design Galleries
  - *Design & Computation*
  - *Slow Art*
- ■ ● Featured Speakers
- ■ ● FJORG!
- ■ ● International Resources
- ■ ● Posters
- ■ ● The Studio
- ■ ▲ Computer Animation Festival
- ■ ● ▲ Birds of a Feather
- ■ ● ▲ Exhibition
- ■ ● ▲ Exhibitor Tech Talks
- ■ ● ▲ Job Fair
- ■ ● ▲ Special Events

Technical Materials

The printed ACM Transactions on Graphics (Conference Proceedings Special Issue), which contains the Technical Papers and the ACM SIGGRAPH awards, and the printed Electronic Art & Animation Catalog, the permanent record of images from the Art & Design Galleries and the Computer Animation Festival, are NOT included with any registration category. They are available for purchase at SIGGRAPH 2008.

■

Full Conference DVD-ROM

This digital publication contains the electronic version of the Technical Papers, including images and supplemental material; all of the class and tutorial notes, including supplemental materials (movies, source code, HTML presentations); the permanent record of the Classes, New Tech Demos, Panels, Posters, Special Sessions; and the permanent record of the Art & Design Galleries and The Computer Animation Festival. The DVD is included with all Full Conference registrations, and it is available for purchase at SIGGRAPH 2008. The content of the printed version of the ACM Transactions on Graphics (Conference Proceedings Special Issue) and the Electronic Art & Animation Catalog is included on the Full Conference DVD-ROM.

Basic Conference registration does not include any technical materials. The Full Conference DVD-ROM, the ACM Transactions on Graphics (Conference Proceedings Special Issue), and the Electronic Art & Animation Catalog are available for purchase at the conference.

NOTE:
Full Conference registrants must pick up the Full Conference DVD-ROM included with registration at the SIGGRAPH 2008 Merchandise Pickup Center.

Conference Select

With the new conference structure and themes, this registration category is no longer appropriate. It does not exist for SIGGRAPH 2008.

If art is your main focus, and you have registered for Conference Select in the past, you should consider the Basic Access registration. If you attended the Animation Theater or Electronic Theater in the past, you can add the week-long Computer Animation Festival to your Basic Access registration at a discounted price, or you can add the festival to a Basic Access One-Day registration.

If technical sessions are your main focus, and you have registered for Conference Select in the past, select the Full Conference One-Day Access. You can add the week-long Computer Animation Festival to your Full Conference One-Day Access at a discounted price, or you can add the festival to a Basic Acess One-Day registration.

The printed ACM Transactions on Graphics (Conference Proceedings Special Issue) and the printed Electronic Art and Animation Catalog are not included in your registration and may be purchased separately.

Member rates refer to ACM SIGGRAPH membership.

Conference Registration Categories

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

Registration Fees & Information

■ Full Conference Access

	ON OR BEFORE 4 JULY	ON OR BEFORE 30 JULY	AT SIGGRAPH 2008
ACM SIGGRAPH Member	$800	$975	$1,075
Non-Member	$850	$1,025	$1,125
Student Member	$345	$400	$450

Includes admission to ALL conference programs and events, including the Exhibition, Computer Animation Festival, and Reception. *Also includes the Full Conference DVD-ROM.*

■ Full Conference Access One-Day

	ON OR BEFORE 4 JULY	ON OR BEFORE 30 JULY	AT SIGGRAPH 2008
ACM SIGGRAPH Member	$275	$275	$375
Non-Member	$325	$325	$425
Student Member	$150	$155	$200

Includes admission to ALL conference programs and events for one day of SIGGRAPH 2008, and the Exhibition (Tuesday - Thursday). *A Computer Animation Festival Full Festival Pass ($100) can be added to this registration at the time of registration.*

● Basic Access

	ON OR BEFORE 4 JULY	ON OR BEFORE 30 JULY	AT SIGGRAPH 2008
ACM SIGGRAPH Member	$75	$100	$125
Non-Member	$100	$125	$150

Includes admission to the Art & Design Galleries, Birds of a Feather, Exhibitor Tech Talks, Fast-Forward Technical Papers Session, Featured Speakers, FJORG!, International Resources, Job Fair, New Tech Demos, Posters, The Studio, Special Events, and the Exhibition. *Does not include Reception ticket, Full Conference DVD-ROM, or Computer Animation Festival. These items can be purchased separately. A Computer Animation Festival Full Festival Pass ($175) can be added to this registration at the time of registration.*

● Basic Access One-Day

	PURCHASED BEFORE OR AT SIGGRAPH 2008
	$45

One-day admission to the Art & Design Galleries, Birds of a Feather, Exhibitor Tech Talks, Fast-Forward Technical Papers Session, Featured Speakers, FJORG!, International Resources, Job Fair, New Tech Demos, Posters, The Studio, and the Exhibition (Tuesday - Thursday). *Does not include Reception ticket, Full Conference DVD-ROM, or Computer Animation Festival. These items can be purchased separately. A Computer Animation Festival Full Festival Pass ($175) can be added to this registration at the time of registration.*

▲ Computer Animation Festival

	FULL FESTIVAL PASS	ONE-DAY PASS
ACM SIGGRAPH Member	$175	$50
Non-Member	$200	$50

For SIGGRAPH 2008, the festival has adopted a new format. Each day of the conference, it presents competition screenings, showcase screenings, and panel discussions with filmmakers, instructors, and artists involved in the creative process. The traditional Animation Theaters will not be available for SIGGRAPH 2008.

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.

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