



The People Behind the Pixels

# SIGGRAPH2010

## Los Angeles

VVoh!N[D]3r

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Updated 22 June

# Advance Program

The 37th International Conference and Exhibition on Computer Graphics and Interactive Techniques

Conference 25-29 July 2010 Exhibition 27-29 July 2010

Los Angeles Convention Center Los Angeles, California USA

FOR COMPLETE DETAILS:

[www.siggraph.org/s2010](http://www.siggraph.org/s2010)

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# Conference at a Glance Schedule subject to change.

	Sunday, 25 July	Monday, 26 July	Tuesday, 27 July	Wednesday, 28 July	Thursday, 29 July
Registration/ Merchandise Pickup Center	9 am-6 pm	8:30 am-6 pm	8:30 am-6 pm	8:30 am-6 pm	8:30 am-3:30 pm
SIGGRAPH Store	9 am-6 pm	8:30 am-6 pm	8:30 am-6 pm	8:30 am-6 pm	8:30 am-3:30 pm
■ ● ▲ ACM SIGGRAPH Award Presentations		11 am-1 pm			
■ ● ACM SIGGRAPH Award Talks		2-3:30 pm			
■ ● ▲ ACM Student Research Competition Final Presentation				2-3:30 pm	
■ ● Art Gallery	noon-5:30 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-1 pm
■ Art Papers			9-10:30 am 3:45-5:15 pm		
■ ● ▲ Birds of a Feather	Throughout the week				
■ Courses	2-5:15 pm	9 am-5:15 pm	9 am-5:15 pm	9 am-5:15 pm	9 am-5:15 pm
■ ● Emerging Technologies	noon-5:30 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-1 pm
■ ● ▲ 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
■ Game Papers				9 am-12:15 pm	2-3:30 pm
■ Geek Bar	noon-5:30 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-1 pm
■ ● International Center	9 am-6 pm	9 am-6 pm	9 am-6 pm	9 am-6 pm	9 am-3:30 pm
■ ● ▲ Job Fair			9:30 am-6 pm	9:30 am-6 pm	9:30 am-3:30 pm
■ ● ▲ Keynote Speakers Don Marinelli (ACM SIGGRAPH Awards Presentations)		11 am-12:45 pm			
Jim Morris			11 am-12:30 pm		
■ Panels	3:45-5:15 pm	2-5:15 pm		9 am-12:15 pm	9-10:30 am
■ ● Posters	noon-5:30 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-5:30 pm
■ ● Poster Sessions			12:15-1:15 pm	12:15-1:15 pm	
■ Reception				8-10 pm	
■ ● Research Challenge				2-3:30 pm	
■ ● ▲ SIGGRAPH Dailies!			6-7:30 pm	6-7:30 pm	
■ Talks	2-5:15 pm	9 am-5:15 pm	9 am-5:15 pm	2-3:30 pm	9 am-5:15 pm
■ Technical Papers		9 am-5:15 pm	9 am-5:15 pm	9 am-5:15 pm	9 am-5:15 pm
■ ● ▲ Technical Papers Fast Forward	6-8 pm				
■ ● The Sandbox	noon-6 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-1 pm
■ ● The Studio	noon-5:30 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-1 pm
■ ▲ Computer Animation Festival					
Electronic Theater		6-8 pm	6-8 pm	6-8 pm	
Festival Screenings	2-3:30 pm	3:45-5:15 pm 2-3:30 pm	10:45 am-12:15 pm	2-3:30 pm	
Festival Talks & Production Sessions		2-5:15 pm	9 am-12:15 pm	9-10:30 am 3:45-5:15 pm	9 am-12:15 pm 2-3:30 pm
Live Real-Time Demo		4:30-5:15 pm	4:30-5:15 pm	4:30-5:15 pm	
Animation Clinic		3:45-5:15 pm	2-3:30 pm	2-3:30 pm	

# The TOP 10 Reasons to Attend SIGGRAPH 2010

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.



## 1. Value

Learn all the latest techniques, tips, and technologies in one location at a very reasonable price. SIGGRAPH 2010's exclusive educational programs offer the best return on investment for your organization's training budget.

## 2. Hands-On Knowledge

Consolidate new knowledge and skills by working directly with the experts in the field. In SIGGRAPH 2010's workshops and studios, you'll develop the professional assets you need for another year of creative and business success.

## 3. Time Optimization

Explore the full spectrum of computer graphics and interactive techniques in one intense, rewarding week. At SIGGRAPH 2010, you'll gain knowledge, contacts, and skills that could take over a year to acquire elsewhere.

## 4. Customization

Design the conference experience that delivers the best value for you and your organization. SIGGRAPH 2010 offers a very diverse range of sessions, experiences, and collaboration opportunities.

## 5. Industry Visionaries

Meet and exchange ideas with the superstars who created this dynamic field and the young visionaries who are building its future. They'll all be in Los Angeles for SIGGRAPH 2010.

## 6. Connections

Join your friends and colleagues from around the world, and make invaluable new connections with the people behind the pixels. SIGGRAPH 2010 is the annual world headquarters of computer graphics and interactive techniques.

## 7. Essential Resources

Discover all the resources you need to support your creativity, improve your efficiency, and grow your business. The SIGGRAPH 2010 Exhibition features hardware, software, and services from the leading companies behind the pixels.

## 8. World-Class Animation and Visual Effects

Immerse yourself in this year's best work in animated storytelling, scientific visualization, advertising, games, and feature films. The Computer Animation Festival presents five days of screenings, talks, panels, and live demos.

## 9. Los Angeles

Soak up the creativity, advanced technology, and business innovation that have made Los Angeles the world capital of digital media.

## 10. Inspiration

Leave Los Angeles with new skills, creativity, and energy, ready to rejuvenate your career and inspire your organization's next phase of leadership in computer graphics and interactive techniques.

Image Credits:

Live Space Gathering © 2010 Microsoft, Xin Sun

Luminos © 2010 Hasso Plattner Institute

Brink © 2010 Image courtesy of Blur Studio, Inc.

## Conference Overview

# SIGGRAPH 2010, Los Angeles:



The best place in the world to experience the explosive evolution of computer graphics and interactive techniques. See, meet, and interact with the “People Behind the Pixels” who are creating the next wave of international excellence in research, animation, art, software, visualization, hardware, games, visual effects, and education. Gain amazing insights, enrich your skill set, and expand your worldwide contacts.

### Conference Registration Categories:

- Full Conference Access
- Basic Conference Pass
- ▲ Computer Animation Festival

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

### ■ ● ▲ ACM Student Research Competition

#siggraph #awards

Twenty-five student posters are selected for judging at SIGGRAPH 2010. The panel of distinguished judges selects five semi-finalists. And the semi-final poster authors present their work to the judges.

### ■ ● Art Gallery

#siggraph #artgallery

#### TouchPoint: Haptic Exchange Between Digits

Travel far beyond the visual and interact with polysensory artworks that integrate haptic connections with digital environments. See how the world's most creative digital artists are expanding the definition of art in new media.

### ■ ● ▲ Birds of a Feather (BOF)

#siggraph #bof

Informal presentations, discussions, and demonstrations, designed by and for people who share interests, goals, technologies, environments, or backgrounds.

To schedule a Birds of a Feather session before the conference, complete the online submission form.

### ■ Courses

#siggraph #courses

Learn new skills, improve your qualifications, and gain inside knowledge that advances your career. Courses taught by industry experts cover a full range of topics, from the basic foundations of computer graphics and interactive techniques to highly technical summaries of the latest research breakthroughs.

### ■ ● Emerging Technologies

#siggraph #etech

Explore this year's most adventurous technologies. Interact with the innovators as they demonstrate advanced displays, robotics, input devices, haptic systems, and the technologies of tomorrow.

### ■ ● ▲ Exhibition

#siggraph #exhibits

All the products and services you need for another year of creative achievement. Try the latest systems, talk with the people who developed them, and get all the information you need to make budget and purchase decisions. The SIGGRAPH 2010 Exhibition is your best opportunity to explore this year's new software, hardware, and services offered by vendors from throughout the world.

### ■ ● ▲ Exhibitor Tech Talks

#siggraph #techtalks

Exhibiting companies present in-depth information on their latest developments. Join question-and-answer exchanges and one-on-one conversations after each presentation by SIGGRAPH 2010 exhibitors.

### ■ Geek Bar

Real-time human networking. Streaming content from the SIGGRAPH 2010 session rooms. Wireless access. Comfy chairs.

### ■ ● ▲ International Resources

#siggraph #international

Learn how the industry is evolving worldwide and collaborate with attendees from five continents. The International Center offers bilingual tours of SIGGRAPH 2010 programs, informal translation services, and space for meetings, talks and demonstrations.

# Conference Overview

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



■ **Reception**  
WESTIN BONAVENTURE BALLROOM  
WEDNESDAY, 28 JULY, 8-10 PM

Mingle with the movers and synergize with the shakers as the international computer graphics community gathers for its biggest social event of the year. Bring your business cards. SIGGRAPH 2010 provides food, beverages, and a legendary LA location: The Westin Bonaventure Hotel, which has starred in many feature films: “Buck Rogers in the 25th Century”, “This is Spinal Tap”, “In the Line of Fire”, “Nick of Time”, “True Lies”, “Midnight Madness”, “Hard to Kill”, and “Chuck”. In “Escape From LA” and “Epicenter”, it was destroyed by visual effects.

## ■ ● ▲ Job Fair

#siggraph #jobfair

Actively looking for a new job? Networking to see what opportunities are available? Interested in meeting with some great companies? The Job Fair is where SIGGRAPH 2010 attendees connect with employers before the conference, during the conference via the Job Fair, and after the conference via the CreativeHeads.net job board and candidate profiling system.

## ■ Panels

#siggraph #panels

Expand your perspective as expert panelists share experiences, opinions, speculation, disagreement, and controversy with each other and the audience.

## ■ Papers

Explore the latest, most advanced research results in computer graphics and interactive techniques. These prestigious juried programs are the premier international forums in their respective fields.

### Technical Papers

#siggraph #technicalpapers

Watch the next wave emerge, as the world’s leading researchers present the discoveries and insights that will create the next generation of digital entertainment, science, and industry.

### Art Papers

#siggraph #artpapers

Hear academic artists explain the digital tradition in art history and future trends in art and technology.

### Game Papers

#siggraph #gamepapers

Monitor current and future issues in game development and player experience.

## ■ ● Posters

#siggraph #posters

Observe graphic displays of incremental, preliminary, partial, and innovative insights that will shape the future of computer graphics and interactive techniques. Then join poster presenters to explore and critique their work in scheduled sessions.

## ■ Research Challenge

#siggraph #researchchallenge

Individuals and teams developed innovative solutions to a challenge problem, demonstrating their creativity, design, and execution skills. Selected finalists present their work to a panel of distinguished judges in a public session, where final awards are announced.

## ■ ● The Sandbox

#siggraph #sandbox

Test drive current game-development technologies, explore game design, and play the games that are defining the next generation of digital interactivity.

## ■ ● ▲ SIGGRAPH Dailies! **NEW!**

#siggraph #dailies

Watch the producers behind the pixels present images and short animations of extraordinary power and beauty, and tell their real-life production stories.

## ■ ● The Studio

#siggraph #studio

Collaborate in a hands-on learning lab, where students, professionals, artists, scientists, engineers, and the latest technologies create surprising artworks and systems.

## ■ Talks

#siggraph #talks

Discover recent achievements in all areas of computer graphics and interactive techniques: art, design, animation, visual effects, interactivity, research, engineering, and more.

## ■ ● ▲ Technical Papers Fast Forward

#siggraph #technicalpapers

The world’s leading experts in computer graphics and interactive techniques preview the technical papers in provocative, sometimes hilarious summaries of the field’s evolution.

# Conference Overview



## Keynote Speakers

#siggraph #keynotes



MONDAY, 26 JULY, 11 AM-12:45 PM

### Don Marinelli

Executive Producer  
Carnegie Mellon Entertainment Technology Center

For almost 30 years, Don Marinelli has served various roles at Carnegie Mellon, including co-creator of the Master of Arts Management Program, co-creator of the Master of Fine Arts in Acting degree program with the Moscow Art Theatre School in Russia, and co-founder of the Master of Entertainment Technology Degree Program. The Entertainment Technology Center brings artists and technologists together to produce installations that entertain, inform, inspire, or otherwise affect an audience, guest, player, or participant. His book, *The Comet and the Tornado*, published this year, recounts the six years he and Pausch shared an office and created the center that has become recognized internationally as Carnegie Mellon's "Dream Fulfillment Factory".



TUESDAY, 27 JULY, 11 AM-12:30 PM

### Jim Morris

General Manager and Executive Vice President of Production  
Pixar Animation Studios

At Pixar since 2005, Morris has worked as a producer and production executive in the motion picture industry for more than 23 years. As part of Pixar's executive team, he has served as production executive on many of Pixar's most successful films including "Ratatouille", "Up", and the upcoming "Toy Story 3". In 2009, he produced Disney•Pixar's highly acclaimed, "WALL•E", which won the Oscar for Best Animated Feature and garnered him the Producer of the Year Award in Animated Theatrical Motion Pictures from the Producer's Guild of America. He is currently producing Disney's much anticipated "John Carter of Mars", which is scheduled for release in 2012.



## ACM SIGGRAPH Award Presentations

MONDAY, 26 JULY, 11 AM-12:45 PM

#siggraph #awards



## ACM SIGGRAPH Award Talks

MONDAY, 26 JULY, 2-3:30 PM

#siggraph #awards

### The Computer Graphics Achievement Award

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

### The Significant New Researcher Award

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

### The Distinguished Artist Award for Lifetime Achievement in Digital Art

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

### ACM SIGGRAPH Outstanding Service Award

This award, presented during even-numbered years, recognizes outstanding service to ACM SIGGRAPH by a volunteer.

# Computer Animation Festival

- Full Conference Access
- Basic Conference Pass
- ▲ Computer Animation Festival
- #siggraph #caf



Immerse yourself in the world's most innovative and stimulating computer-generated animation and visual effects. Celebrate with the people behind the pixels as they present a full spectrum of genres and styles, ranging from narrative character animation to scientific visualization, commercials for mainstream TV, and cinematic digital effects. In addition to the prestigious Electronic Theater and a series of thematic screenings, the five-day Computer Animation Festival features:

**NEW!**

### Animation Clinic

Eavesdrop on experienced animators as they offer creative, production, technical, and career advice.

### Talks and Production Sessions

Learn how world-class creative and production talent created the computer animation and visual effects in some of the festival's most provocative works.

### Live Real-Time Demos

Experience video games and real-time simulations that push the boundaries of what users and viewers have come to expect. No post-production, just great interactive graphics demonstrated in real time. Selected projects will be available to try in The Sandbox.

Image Credits:

The Lost Thing © 2010 Andrew Ruhemann, Shawn Tan, Passion Pictures Australia

Loom © 2010 Jan Bitzer, Ilija Brunck, Csaba Letay, Polynoid

"2012" - The Last Fluid Simulation © 2010 Columbia Pictures

# Conference Schedule



## Registration

SUNDAY, 25 JULY	9 AM-6 PM
MONDAY, 26 JULY	8:30 AM-6 PM
TUESDAY, 27 JULY	8:30 AM-6 PM
WEDNESDAY, 28 JULY	8:30 AM-6 PM
THURSDAY, 29 JULY	8:30 AM-3:30 PM



## Art Gallery, Emerging Technologies, Geek Bar Posters, The Sandbox, The Studio

SUNDAY, 25 JULY	NOON-5:30 PM
MONDAY, 26 JULY	9 AM-5:30 PM
TUESDAY, 27 JULY	9 AM-5:30 PM
WEDNESDAY, 28 JULY	9 AM-5:30 PM
THURSDAY, 29 JULY	9 AM-1 PM

## Conference Schedule *Subject to change.*

### Sunday, 25 July

#### 9 AM-6 PM

**International Center**

#### 2-3:30 PM

**BOF:** LA SIGGRAPH Meet & Greet

**Computer Animation Festival –**  
Festival Screenings

**Course:** Image Statistics:  
From Data Collection to  
Applications in Graphics

**Talks:** Avatar in Depth

#### 2-5:15 PM

**Course:** Perceptually Motivated Graphics,  
Visualization, and 3D Displays

**Course:** Physically Based Shading  
Models in Film and Game Production

**Course:**  
Processing for Visual Artists and Designers

**Course:** Spectral Mesh Processing

#### 3:45-4:45 PM

**BOF:**  
ACM SIGGRAPH Digital Arts Community

#### 3:45-5:15 PM

**Course:** Build Your Own 3D Display

#### Panel:

Future Directions in Graphics Research

**Talks:** Elemental Training 101

#### 6-8 PM

**Technical Papers Fast Forward**

### Monday, 26 July

#### 9-10:30 AM

**Talks:** All About Avatar

**Talks:** Rendering Intangibles

**Technical Papers:**  
Computational Photography

**Technical Papers:** Editing Motion

**Technical Papers:**  
Lighting & Material Design

**Course:** Biomedical Applications:  
What You Need to Know

#### 9 AM-12:15 PM

**Course:** Stylized Rendering in Games

#### 9 AM-6 PM

**International Center**

#### 10-11:30 AM

**BOF:** FJORG! Reunion

#### 10:45 AM-12:15 PM

**Talks:** Detailed Surfaces

**Talks:** Tissue & Medical Analysis

#### 11 AM-12:45 PM

**ACM SIGGRAPH Award Presentations**

#### Keynote Speaker:

Don Marinelli, Executive Producer,  
Carnegie Mellon Entertainment  
Technology Center

#### 11 AM-1 PM

**BOF:** Animux: Free Software for  
Animators



# Conference Schedule

## 2-3:30 PM

### ACM SIGGRAPH Award Talks

**BOF:** Blender Foundation: Community Meeting

**Panel:** From Data to Diagnosis: The Intersection of Biomedical Applications and Computer Graphics

**Talks:** Volumes and Precipitation

**Talks:** Split Second Screen Space

**Technical Papers:** Elastic Models

## 2-5:15 PM

**Computer Animation Festival –** Talks & Production Sessions

**Course:** Recent Advances in Real-Time Collision and Proximity Computations for Games and Simulations

## 3:45-5:15 PM

**Computer Animation Festival –** Animation Clinic

**Computer Animation Festival –** Festival Screenings

**Panel:** CS 292: The Lost Lectures – Computer Graphics People and Pixels in the Past 30 Years

**Talks:** Biomedical

**Technical Papers:** Architectural Patterns

**Technical Papers:** Faces & Capture

## 4-6 PM

**BOF:** Blender Foundation: Durian Open Movie Presentation

## 4:30-5:15 PM

**Computer Animation Festival –** Live Real-Time Demos

## 6-8 PM

**Computer Animation Festival –** Electronic Theater

## 8:30-11 PM

**BOF:** Taipei ACM SIGGRAPH Reunion

## 9 PM-2 AM

**ACM SIGGRAPH Chapters Party**

## Tuesday, 27 July

### 8-10 AM

**BOF:** Women in Animation

### 9-10:30 AM

**Art Papers:** Design and Computation: Process, Product, Play

**Course:** Filtered Importance Sampling for Production Rendering

**Talks:** Simulation in Production

**Technical Papers:** Fluids I

**Technical Papers:** Stylized Rendering & Illusions

**Technical Papers:** Rendering Hair & Scattering

## 9 AM-12:15 PM

**Computer Animation Festival –** Talks & Production Sessions

**Course:** Color Enhancement and Rendering in Film and Game Production

## 9 AM-6 PM

**International Center**

## 9:30 AM-6 PM

**Exhibition**

**Exhibitor Tech Talks**

**Job Fair**

## 10:45 AM-12:15 PM

**Computer Animation Festival –** Festival Screenings

**Technical Papers:** Expressive Rendering & Illustrations

**Technical Papers:** Fabrication

## 11 AM-12:30 PM

**Keynote Speaker:**

Jim Morris, General Manager and Executive Vice President of Production, Pixar Animation Studios

## 12:15-1:15 PM

**Poster Sessions**

## 12:30-2 PM

**BOF:** ACM SIGGRAPH Carto

## 1-2:30 PM

**BOF:** Simulating Humans and Animals

## 1-3 PM

**BOF:** COLLADA

## 2-3:30 PM

**BOF:** X3D Medical Working Group

**Computer Animation Festival –** Animation Clinic

**Computer Animation Festival –** Festival Screenings

**Talks:** Blowing \$h!t Up

**Talks:** Visualization for Art & Design

**Technical Papers:** GPU Rendering

**Technical Papers:** Physics-Based Sound & Bubbles

**Technical Papers:** Planning & Terrain

## 2-5:15 PM

**Course:** An Introduction to 3D Spatial Interaction With Videogame Motion Controllers

## 2:30-4 PM

**BOF:** Animation Mentor Demo Reel Reviews

## 3:30-5 PM

**BOF:** X3D and HTML5

## 3:45-5:15 PM

**Art Papers:** Information Aesthetics

**Talks:** Pipelines and Asset Management

**Technical Papers:** Displays and Eyes

## 3:45-5:30 PM

**Technical Papers:** Geometry Algorithms & Sampling

## 4-6 PM

**BOF:** 3D & Multimedia Across Platforms and Devices Using JOGL

**BOF:** OpenGL

## 4-6:30 PM

**BOF:** ACCAD/OSU Alumni Gathering

## 4:30-5:15 PM

**Computer Animation Festival –** Animation Clinic

## 4:30-6 PM

**BOF:** RIT Alumni Reception at SIGGRAPH 2010

## 5:30-6 PM

**BOF:** Encontro dos Brasileiros

## 6-7:30 PM

**SIGGRAPH Dailies!**

## 6-8 PM

**Computer Animation Festival –** Electronic Theater

# Conference Schedule

## Wednesday, 28 July

### 9-10:30 AM

**Computer Animation Festival –**  
Talks & Production Sessions

**Game Papers:**  
Biometrics and Physical Controllers

**Panel:** 20XX.EDU: Grand Challenges in Education (Part 1)

**Technical Papers:**  
Boundaries, Edges & Gradients

**Technical Papers:** Collisions and Contact

### 9 AM-12:15 PM

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

**Course:** Fundamentals of Visual Analytics

**Course:** Volumetric Methods in Visual Effects

### 9 AM-5 PM

**Exhibitor Session:** NVIDIA Corporation

### 9 AM-6 PM

**International Center**

### 9:30 AM-6 PM

**Exhibition**

**Exhibitor Tech Talks**

**Job Fair**

### 10-11 AM

**BOF:** OpenSceneGraph BOF

### 10:30 AM-NOON

**BOF:** Web3D CAD Working Group

### 10:45 AM-12:15 PM

**Game Papers:** The Player Experience

**Panel:** 20XX.EDU: Grand Challenges in Education (Part 2)

**Technical Papers:** Textures

**Technical Papers:** Video

### NOON-2 PM

**BOF:** Systems Administration Standards in Studios

### 12:15-1:15 PM

**Poster Sessions**

### 12:30-2 PM

**BOF:** Girl Scout Games for Life Parents and Troop Leaders Meeting

### 1-2 PM

**BOF:** Field3D: An Open-Source Library for Storing Voxel Data

### 1-3 PM

**BOF:** Motion Graphics BOF

### 2-3 PM

**BOF:** Molecular Graphics

### 2-3:30 PM

**BOF:** Computer Graphics for Simulation

**Computer Animation Festival –**  
Animation Clinic

**Computer Animation Festival –**  
Festival Screenings

Research Challenge

**Talks:** APIs for Rendering

**Technical Papers:**  
Perception, Presence & Animation

**Technical Papers:**  
Urban Reconstruction & Explanation

### 2-5 PM

**BOF:** The Future of 3D Printing

### 2-5:15 PM

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

**Course:** Applications of Visual Analytics

### 2:30-4 PM

**BOF:** Friends of the Art Institutes

### 3:30-4:30 PM

**BOF:** 3D Printing for Art and Visualization

### 3:45-5:15 PM

**Computer Animation Festival –**  
Talks & Production Sessions

**Course:** Gazing at Games: Using Eye Tracking to Control Virtual Characters

**Technical Papers:** Appearance Capture & Image Processing

**Technical Papers:** Understanding Shape

### 4-6 PM

**BOF:** California Educators

### 4:30-5:15 PM

**Computer Animation Festival –**  
Live Real-Time Demo

### 4:30-6 PM

**BOF:** GPU Ray Tracing

### 5:15-7:15 PM

**BOF:** OpenGL

### 6-7:30 PM

**BOF:** Purdue University Reunion

**SIGGRAPH Dailies!**

### 6-8 PM

**Computer Animation Festival –**  
Electronic Theater

### 6-9 PM

**BOF:**  
Blacks in Animation & VFX & Gaming

### 8-10 PM

**Reception:** Westin Bonaventure Ballroom

# Conference Schedule

## Thursday, 29 July

### 9-10:30 AM

**BOF:** Undergraduate Research Alliance

**Panel:** Large Steps Toward Open Source

**Talks:** Motion & Emotion

**Talks:** Fun in Flatland

**Technical Papers:** 3D Modeling

**Technical Papers:** Cloth Animation

### 9 AM-12:15 PM

**Computer Animation Festival –**

Talks & Production Sessions

**Course:** Advanced Techniques in Real-Time Hair Rendering and Simulation

**Course:** Beyond Programmable Shading I

### 9 AM-3:30 PM

**International Center**

### 9:30 AM-3:30 PM

**Exhibition**

**Exhibitor Tech Talks**

**Job Fair**

### 10:45 AM-12:15 PM

**Talks:** Games & Real Time

**Talks:** Interaction Omelette

**Technical Papers:** Fluids II

**Technical Papers:** Meshing

**Technical Papers:** Perceptual Rendering Methods

### 1-3 PM

**BOF:** Mobile API

### 1:30-2:30 PM

**BOF:** Web3D Consortium Member Update Meeting

### 2-2:30 PM

**BOF:** Processing; The Solution to Introducing Freshmen in a Fine Arts Foundation Program to Digital Concepts

### 2-3:30 PM

**ACM Student Research Competition Final Presentation**

**Computer Animation Festival –**

Talks & Production Sessions

**Game Papers:** Game Design

**Technical Papers:** Human Modeling

**Technical Papers:** Surface Fields

### 2-5:15 PM

**Course:** Beyond Programmable Shading II

**Course:** Global Illumination Across Industries

### 3-5 PM

**BOF:** Agile in Production

### 3-6 PM

**BOF:** Web3D Korea Chapter New Proposals Discussion Meeting

### 3:45-5:15 PM

**Talks:** Fur, Feathers and Trees

**Talks:** Touchy-Feely

**Technical Papers:** Biped Control

**Technical Papers:** Image Enhancement

### 4-6 PM

**BOF:** WebGL

## Co-Located Events

**Symposium on Applied Perception in Graphics and Visualization (APGV)**

23-24 JULY

**Web3D 2010 Conference**

24-25 JULY

These symposia are being presented in cooperation with SIGGRAPH 2010 and are related to important aspects of computer graphics and interactive techniques.

For complete information on these symposia locations and schedules, visit: [www.siggraph.org/s2010/for\\_attendees/co\\_located\\_events](http://www.siggraph.org/s2010/for_attendees/co_located_events)

# Art Papers

■ Full Conference Access

#siggraph #artpapers



Art Papers present excellent ideas in accessible ways. They inform artistic disciplines, set standards, and stimulate future trends. In addition to the core topics of the digital arts and interactive techniques, Art Papers explore the theme of SIGGRAPH 2010's juried art gallery, *TouchPoint: The Haptic Exchange Between Digits*. The papers are published in a special issue of *Leonardo, The Journal of the International Society of the Arts, Sciences and Technology*. The issue also includes visual documentation of the works exhibited in *TouchPoint: The Haptic Exchange Between Digits*. Publication of this special issue coincides with SIGGRAPH 2010.

## Design and Computation: Process, Product, Play

TUESDAY, 27 JULY, 2-3:30 PM

### SESSION CHAIR

Joanna Berzowska  
Concordia University

### The Immediacy of the Artist's Mark in Shape Computation

This paper describes a computational system in the form of a curvilinear, parametric shape grammar. Based on an analysis of her traditionally hand-drawn sketchbook entries, the artist-author presents a first-person account of developing a grammar to synthesize drawings in the design language of her evolving style.

Jacquelyn Martino  
IBM Watson Research Center

### Learning From Weaving for Digital Fabrication in Architecture

Using the weaver's perceptual experience to understand the structural mechanism of weaving, generate rules for performing both structural and aesthetic features of the woven surface in architectural design, and develop a novel, faster, and cheaper assembly system in brick and wooden construction.

Rizal Muslimin  
Massachusetts Institute of Technology

### Glowing Pathfinder Bugs: A Natural Haptic 3D Interface for Interacting Intuitively With Virtual Environments

This paper describes and analyzes *Glowing Pathfinder Bugs*, a digital-art installation that uses sand as the only interface component. As users interact and communicate with virtual creatures, a simple form of animal husbandry evolves – a sense of controlling and caring for the bugs.

Anthony Rowe  
Oslo School of Architecture and Design

Liam Birtles  
Arts University College Bournemouth

### Information Aesthetics

TUESDAY, 27 JULY, 3:45-5:15 PM

### SESSION CHAIR

Victoria Szabo  
Duke University

### Data Portraits

Data portraits evoke their subjects by depicting accumulated data rather than facial appearance. They are artworks that not only portray their subjects, but also raise questions about privacy, subjectivity, and control in our increasingly mediated and recorded world.

Judith Donath  
Vivatropolis

Alex Dragulescu  
Massachusetts Institute of Technology

Aaron Zinman  
MIT Media Lab  
Fernanda Viégas  
Rebecca Xiong  
Yannick Assogba  
IBM

### Visual Anecdote

This paper introduces the visual anecdote, a rhetoric-design strategy found in many examples of data visualization. It argues that the narratives connected to visualizations constitute a central epistemological element that is usually ignored in information-visualization discourse.

Dietmar Offenhuber  
MIT Senseable City Lab

### Touching Space: Using Motion Capture and Stereo Projection to Create a "Virtual Haptics" of Dance

This project presents a vision of interactive dance performance that "touches" space with the intentionality and agency of kinematics, and suggests the possibility of new kinds of human-computer interfaces that emphasize touch as embodied, nuanced agency rather than as task-based gestures such as pointing or clicking.

Kim Vincs  
John McCormick  
Deakin University

# Courses

Full Conference Access registration allows attendees access to all SIGGRAPH 2010 Courses. Seating is on a first-come, first-served basis. Please be sure to arrive early for the Course you wish to attend.

■ Full Conference Access

#siggraph #courses



Learn from the experts in the field and gain inside knowledge that is critical to career advancement. Courses deliver unique learning opportunities, available only at SIGGRAPH 2010, in three levels of difficulty (introductory, intermediate, and advanced).

## Image Statistics: From Data Collection to Applications in Graphics

SUNDAY, 25 JULY, 2-3:30 PM

### Introductory

This course outlines collection, analysis, and practical use of image statistics, and explains several direct applications.

Erik Reinhard  
Tania Pouli  
University of Bristol

Douglas Cunningham  
Brandenburgische Technische Universität

## Spectral Mesh Processing

SUNDAY, 25 JULY, 2-5:15 PM

### Advanced

This course presents methods of generalizing the signal-processing mathematical toolbox to the context of 3D mesh models and demonstrates applications.

Bruno Levy  
INRIA

Richard Zhang  
Simon Fraser University

## Processing for Visual Artists and Designers

SUNDAY, 25 JULY, 2-5:15 PM

### Introductory

How to use the free Processing language to create expressive and beautiful images, animations, and interactive graphics.

Andrew Glassner  
Coyote Wind Studios

## Physically Based Shading Models in Film and Game Production

SUNDAY, 25 JULY, 2-5:15 PM

### Intermediate

This course begins with a short explanation of the physics of light-matter interaction and how it is expressed in simple shading models. Then several speakers discuss specific examples of how shading models have been used in recent film and game production, how they enhance realism, their integration with image-based lighting, and their material robustness under changing lighting conditions.

Yoshiharu Gotanda  
tri-Ace Inc.

Naty Hoffman  
Activision

Adam Martinez  
Sony Pictures Imageworks

Ben Snow  
Industrial Light & Magic

## Perceptually Motivated Graphics, Visualization, and 3D Displays

SUNDAY, 25 JULY, 2-5:15 PM

### Introductory

An exploration of current research on the role of perception in computer graphics, virtual environments, visualization, and 3D displays. Examples of up-to-the-minute research show how perceptual research can benefit the computer graphics community.

Ann McNamara  
Texas A&M University

Katerina Mania  
Technical University of Crete

Christopher Healey  
North Carolina State University

Marty Banks  
University of California, Berkeley

## Build Your Own 3D Display

SUNDAY, 25 JULY, 3:45-5:15 PM

### Introductory

Using concrete examples, this course reviews the mathematics, software, and practical details necessary to build several homemade 3D displays using inexpensive off-the-shelf parts. Topics include: LCD shutter glasses, dual-layer LCDs, and lenticular-based auto-multiscopic displays.

Matthew Hirsch  
MIT Media Lab

Douglas Lanman  
Brown University

## Biomedical Applications: What You Need to Know

MONDAY, 26 JULY, 9-10:30 AM

### Intermediate

This introduction to computer graphics research in the biomedical domain covers: how and what kinds of models are created from images, what kinds of measurements can be done both from the images themselves and from intermediate models, and common issues that arise when dealing with imaging data.

Cindy Grimm  
Washington University in St. Louis

Rolf Müller  
Virginia Polytechnic Institute and State University

Stephen D. Larson  
Neuroinformatics

# Courses

## ■ Full Conference Access

### Stylized Rendering in Games

MONDAY, 26 JULY, 9 AM-12:15 PM

#### Intermediate

Games like Prince of Persia and Battlefield Heroes deliver artistic visions beyond standard photo-realistic 3D. In this course, game developers review the challenges of creating distinctive visual styles for interactive environments and explain some of their own solutions. Topics include the art pipeline, rendering algorithms, and integrating visuals with game play.

Morgan McGuire  
Williams College

Henrik Halén  
Electronic Arts

Jean-Francois St-Amour  
Ubisoft Entertainment

Deano Calver  
Splash Damage

Aaron Thibault  
Brian Martel  
Gearbox Software

Chandana Ekanayake  
Uber Entertainment

### Recent Advances in Real-Time Collision and Proximity Computations for Games and Simulations

MONDAY, 26 JULY, 2-5:15 PM

#### Intermediate

Recent academic and industrial developments on collision and proximity computations for interactive games and simulations.

Sung-eui Yoon  
Korea Advanced Institute of Science and Technology

Dinesh Manocha  
University of North Carolina, Chapel Hill

Erwin Coumans  
Sony Computer Entertainment US R&D

Young J. Kim  
Ewha Womans University

Richard Tonge  
NVIDIA Corporation

### Importance Sampling for Production Rendering

TUESDAY, 27 JULY, 9-10:30 AM

#### Intermediate

Importance sampling provides a production-proven method for integrating diffuse and glossy surface reflections with arbitrary image-based environment or area lighting constructs. This course explains the theoretical foundations and describes how various visual effects studios integrated the method into their pipeline.

Mark Colbert  
ImageMovers Digital

Simon Premoze  
Industrial Light & Magic

Guillaume Francois  
Moving Picture Company

### Color Enhancement and Rendering in Film and Game Production

TUESDAY, 27 JULY, 9 AM-12:15 PM

#### Intermediate

In addition to its common computer graphics meaning, the term “rendering” also refers to transformation of scene-referred colors (light entering the camera) to display-referred colors (light exiting the display device). This course explains the theory behind this transformation and how it is used in film and game production.

Haarm-Pieter Duiker  
Duiker Research

Dominic Glynn  
Pixar Animation Studios

Joseph Goldstone  
Lilliputian Pictures LLC

Yoshiharu Gotanda  
tri-Ace Inc.

Naty Hoffman  
Activision

Joshua Pines  
Technicolor

Jeremy Selan  
Sony Pictures Imageworks

Stefan Sonnenfeld  
Company 3

### An Introduction to 3D Spatial Interaction With Videogame Motion Controllers

TUESDAY, 27 JULY, 2-5:15 PM

#### Introductory

With the proliferation of commercial videogame motion controllers, 3D spatial interfaces have the ability to revolutionize the way people play games. This course is an in-depth discussion of how to design and develop 3D spatial interfaces with these devices.

Joseph LaViola  
University of Central Florida

Richard Marks  
Sony Computer Entertainment America

### Volumetric Methods in Visual Effects

WEDNESDAY, 28 JULY, 9 AM-12:15 PM

#### Intermediate

A concise overview of the technology behind volumetric effects in movie production. The course explains the basics of a production-usable volumetrics pipeline, then focuses on problems that are unique and crucial to production needs: motion blur, shading languages, occlusions, artist workflow, and lighting methodology.

Nafees Bin Zafar  
Digital Domain

Magnus Wrenninge  
Sony Pictures Imageworks

Jerry Tessendorf  
Rhythm & Hues Studios

Andrew Clinton  
Side Effects Software Inc.

Devon Penny  
PDI/DreamWorks

Jeff Clifford  
Double Negative Visual Effects

Gavin Graham  
Double Negative

Janne Kontkanen  
PDI/DreamWorks

# Courses

## ■ Full Conference Access

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

WEDNESDAY, 28 JULY, 9 AM-12:15 PM

#### Intermediate

This course covers a series of topics on the best innovations and practical techniques in state-of-the-art rendering for several award-winning games. It also shows how advanced rendering research will be applied to the next generation of games.

Natalya Tatarchuk  
Hao Chen  
Bungie LLC

Alex Vlachos  
Valve

Andrew Lauritzen  
Marco Salvi  
Intel Corporation

John Paul Ownby  
Avalanche Software

Chris Hall  
Disney Interactive

Rob Hall  
Disney Interactive Avalanche Studio

Per Einarsson  
EA DICE

Robert Kihl  
DICE

Sam Martin  
Geometrics

John Hable  
Naughty Dog

Anton Kaplayan  
Crytek

Jay McKee  
Advanced Micro Devices, Inc.

### Fundamentals of Visual Analytics

WEDNESDAY, 28 JULY, 9 AM-12:15 PM

#### Introductory

This introduction to the fundamentals of visual analytics describes the core components and reviews the grand challenges.

David Ebert  
Purdue University

Ross Maciejewski  
Purdue University

Steffen Koch  
Universität Stuttgart

Jim Thomas  
Pacific Northwest National Laboratory

Daniel Keim  
Universität Konstanz

Barbara Gans Tversky  
Stanford University

### Applications of Visual Analytics

WEDNESDAY, 28 JULY, 2-5:15 PM

#### Intermediate

This course provides insight into novel visual analytics applications and demonstrates the breadth of visual analytics applications, including: scientific visualization, techniques for analyzing financial data, systems for healthcare monitoring and management, patent-application exploration, and many others.

Ross Maciejewski  
David Ebert  
Purdue University

Steffen Koch  
Universität Stuttgart

Daniel Keim  
Universität Konstanz

Jim Thomas  
Pacific Northwest National Laboratory

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

WEDNESDAY, 28 JULY, 2-5:15 PM

#### Intermediate

Continuation of the Wednesday morning course on the best innovations and practical techniques in state-of-the-art rendering for several award-winning games. The course also shows how advanced rendering research will be applied to the next generation of games.

Natalya Tatarchuk  
Hao Chen  
Bungie LLC

Alex Vlachos  
Valve

Andrew Lauritzen  
Marco Salvi  
Intel Corporation

John Paul Ownby  
Avalanche Software

Chris Hall  
Disney Interactive

Rob Hall  
Disney Interactive Avalanche Studio

Per Einarsson  
EA DICE

Robert Kihl  
DICE

Sam Martin  
Geometrics

John Hable  
Naughty Dog

Anton Kaplayan  
Crytek

Jay McKee  
Advanced Micro Devices, Inc.

# Courses

## ■ Full Conference Access

### Gazing at Games: Using Eye Tracking to Control Virtual Characters

WEDNESDAY, 28 JULY, 3:45-5:15 PM

#### Intermediate

Alternative input modalities, such as gaze control, have recently emerged as a means of interacting with computer games. This course explains how eye tracking can be used to create richer interaction and attention-aware behavior algorithms for characters in virtual environments.

Veronica Sundstedt  
Trinity College Dublin

### Advanced Techniques in Real-Time Hair Rendering and Simulation

THURSDAY, 29 JULY, 9 AM-12:15 PM

#### Intermediate

A complete summary of rendering and simulating hair in real time, from basic data structures and handling to advanced techniques for high-quality, high-performance rendering and real-time simulation.

Cem Yuksel  
Cyber Radiance LLC and Texas A&M University

Sarah Tariq  
NVIDIA Corporation

### Beyond Programmable Shading I

THURSDAY, 29 JULY, 9 AM-12:15 PM

#### Intermediate

This course summarizes how to use emerging parallel programming techniques and architectures to create advanced interactive graphics algorithms that extend and integrate with the traditional OpenGL/DirectX rendering pipeline.

Aaron Lefohn  
Intel Corporation

Michael Houston  
Advanced Micro Devices, Inc.

Johan Andersson  
DICE

Tim Foley  
Stanford University, Intel Corporation

Kayvon Fatahalian  
Stanford University

David Luebke  
NVIDIA Corporation

Chas. Boyd  
Microsoft Corporation

### Global Illumination Across Industries

THURSDAY, 29 JULY, 2-5:15 PM

#### Intermediate

This course compares the techniques for global-illumination computation in various industries and analyzes why specific solutions are selected for different problems.

Jaroslav Krivanek  
Cornell University

David Larsson  
Illuminate Labs

Anton Kaplayan  
Crytek GmbH

Michael Bunnell  
Fantasy Lab, Inc.

Per Christensen  
Pixar Animation Studios

Marcos Fajardo  
Independent Consultant

### Beyond Programmable Shading II

THURSDAY, 29 JULY, 2-5:15 PM

#### Advanced

Continuation of the Thursday morning course on how to use emerging parallel programming techniques and architectures to create advanced interactive graphics algorithms that extend and integrate with the traditional OpenGL/DirectX rendering pipeline.

Aaron Lefohn  
Intel Corporation

Michael Houston  
Advanced Micro Devices, Inc.

Kayvon Fatahalian  
Stanford University

Jonathan Ragan-Kelley  
Massachusetts Institute of Technology

Luca Fascione  
Weta Digital Ltd.

Jacopo Pantaleoni  
NVIDIA Corporation

Andrew Lauritzen  
Intel Corporation

Kurt Akeley  
Microsoft Research Silicon Valley



# Game Papers

■ Full Conference Access

■ #siggraph #gamepapers



Game Papers present original work from creative and technical communities that design and develop commercial and non-commercial video games, and from academic research communities that study video games, game play, human-computer interaction, learning, and related technologies. Game Papers explore key issues in video games, inform and substantively advance our current state of knowledge and understanding, and foster new areas for investigation that will drive the next generation of player experience.

## Biometrics and Physical Controllers

WEDNESDAY, 28 JULY, 9-10:30 AM

### SESSION CHAIR

Chris Swain  
University of Southern California  
School of Cinema

### Designing Effective Exergames: What the Numbers Can Tell Us

A sedentary lifestyle is linked to many diseases, including diabetes and heart disease, as well as ailments such as obesity, a major contributor to early death in most industrialized countries. This paper surveys a number of exergame studies and identifies elements that make exergames effective.

Anthony Whitehead  
Hannah Johnston  
Carleton University

Jo Welch  
Nicole Nixon  
Dalhousie University

### Jogging Over a Distance: The Influence of Design in Parallel Exertion Games

Jogging over a Distance allowed two joggers (one in Europe, one in Australia) to run together, using spatialized sound delivered over headphones. If one person ran faster, the audio for the other person appeared to come from the front, and when the runner slowed, the audio appeared to come from the back.

Florian Mueller  
Distance Lab

Frank Vetere  
Martin R. Gibbs  
The University of Melbourne

Stefan Agamanolis  
Distance Lab

Jennifer Sheridan  
Knowledge Lab

### NeuroRehab + The "Fun" Factor

A game installation investigates how the "fun" factor can be integrated into neuro-rehabilitation.

Taeko Fukamoto  
Parsons The New School for Design

### Vibraudio Pose: An Investigation of Non-Visual Feedback Roles for Body-Controlled Video Games

This paper describes a user study of the optimum use of vibration and audio feedback in video games where players use their entire bodies as input devices.

Emiko Charbonneau  
Charles E. Hughes  
Joseph J. Laviola, Jr.  
University of Central Florida

# Game Papers

## ■ Full Conference Access

### The Player Experience

WEDNESDAY, 28 JULY,

10:45 AM-12:15 PM

#### SESSION CHAIR

Chris Swain, University of Southern California School of Cinema

#### **PADS: Enhancing Gaming Experience Using Profile-Based Adaptive Difficulty System**

This paper presents the profile-based adaptive difficulty system (PADS), which improves game experience by automatically adjusting difficulty levels throughout game play. The system uses gamer profiles and performance to improve the degree and duration of a game's entertaining experience.

Chang Yun  
Philip Trevino  
William Holtkamp  
Zhigang Deng  
University of Houston

### **Design Patterns to Guide Player Movement in 3D Games**

This paper presents five game-level design patterns to push and pull player movement through 3D environments. The patterns are: Collect, Path Target, Pursue AI, Path Movement, and Player Vulnerability. The patterns were developed based on interviews with game designers and analysis of game play, and validated via expert review and inter-rater agreement.

David Milam  
SIAT, Simon Fraser University

### **3PI Experiment: Immersion in Third-Person View**

This study evaluated the use of an immersive, third-person-view interface for digital games, using various methods of user-interface evaluation. Results show that the proposed interface caused no significant discomfort and was easy to learn, making it suitable for use in games.

Ricardo Nakamura  
Lucas Lago  
Alexandre Carneiro  
Anderson Cunha  
Fabio Ortega  
João Bernardes, Jr.  
Romero Tori  
Universidade de São Paulo

### Game Design

THURSDAY, 29 JULY, 2-3:30 PM

#### SESSION CHAIR

Jeannie Novak  
Kaleidospace, LLC

#### **Designing Entertaining Educational Games Using Procedural Rhetoric: A Case Study**

Results of this real-world case study demonstrate that effective and engaging learning games can be developed with minimal effort, as long as sound game-design principles are used to maximize fun and learning.

Lars Doucet  
Vinod Srinivasan  
Texas A&M University

### **Can "Gaming 2.0" Help Design "Serious Games"?**

People without professional game-design skills, such as teachers, corporate trainers, therapists, and advertising professionals, request tools that could allow them to create "serious games". Can Gaming 2.0, which allows players to easily create videogame content, create "serious games"?

Damien Djaouti  
Julian Alvarez  
Jean-Pierre Jessel  
Institut National Polytechnique de Toulouse,  
Université Paul Sabatier

### **A Narrative-Driven Design Approach for Casual Games With Children**

This paper proposes a practical, narrative-driven game-design methodology, based on informant design methods, to develop relevant and enjoyable casual games for children with children.

Henry Been-Lirn Duh  
Sharon Lynn Chu Yew Yee  
National University of Singapore

Vivian Hsueh-Hua Chen  
Nanyang Technological University

Yuanxun Gu  
National University of Singapore

### **Using Semiotic Grammars for Rapid Design of Evolving Videogame Mechanics**

Structural semiotic analysis in the form of semiotic grammars can be applied to videogame mechanics to foster game literacy and as a method for novel game creation.

Erik Vick  
Rochester Institute of Technology

Rudy McDaniel  
University of Central Florida

Stephen Jacobs  
Rochester Institute of Technology

# Panels

Full Conference Access registration allows attendees access to all SIGGRAPH 2010 Panels. Seating is on a first-come, first-served basis. Please be sure to arrive early for the Panel you wish to attend.

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#siggraph #panels



**Informative, insightful, inspirational discussions by the leading experts in computer graphics and interactive techniques, who share experiences, opinions, insights, speculation, disagreement, and controversy with each other and the audience.**

## Future Directions in Graphics Research

SUNDAY, 25 JULY, 3:45-5:15 PM

This panel presents the results of a National Science Foundation workshop on defining broader, fundamental long-term research areas for potential funding opportunities in graphics research.

### PANELISTS

Jessica Hodgins  
Carnegie Mellon University

James Foley  
Georgia Institute of Technology

Pat Hanrahan  
Stanford University

Donald P. Greenberg  
Cornell University

## From Data to Diagnosis: The Intersection of Biomedical Applications and Computer Graphics

MONDAY, 26 JULY, 2-3:30 PM

Researchers from various biomedical fields discuss current challenges in using 3D imaging data for both clinical and theoretical applications. What are the major stumbling blocks? What are researchers currently doing with this data, what would they like to do, and what's preventing them from doing it?

### PANELIST

Cindy Grimm  
Washington University in St. Louis

Dinesh K. Pai  
The University of British Columbia

Michael McCool  
Intel Corporation

Stephen D. Larson  
Neuroinformatics

Tao Ju  
Washington University in St. Louis

Rolf Müller  
Virginia Polytechnic Institute and State University

## CS 292: The Lost Lectures Computer Graphics People and Pixels in the Past 30 Years

MONDAY, 26 JULY, 3:45-5:15 PM

In 1980, the year that he started the group that became Pixar, Ed Catmull taught a course at Berkeley with Jim Blinn. Coincidentally that course inspired a student, Richard Chuang, to co-found PDI. This panel looks back at the evolution of the CG industry from that magical moment 30 years ago.

### PANELISTS

Ed Catmull  
Pixar Animation Studios

Richard Chuang  
cloudpic

## 20XX.EDU: Grand Challenges in Education (Part 1)

WEDNESDAY, 28 JULY, 9-10:30 AM

A diverse group of outstanding researchers and artists, academy and industry professionals, educators, and government officials discusses the future of education in its broadest sense, encompassing both formal and informal learning. This panel is organized by the ACM SIGGRAPH Education Committee and Leonardo/ISAST.

### PANELISTS

Marc Barr  
Middle Tennessee State University

Roger Malina  
Leonardo/ISAST

David T. Goldberg  
HASTAC/University of California

Rebecca Allen  
NOKIA Hollywood

Pamela Jennings  
National Science Foundation

Sarah Cunningham  
National Endowment for the Arts

Glenn Entis  
VanEdge Capital

# Panels

## ■ Full Conference Access

### 20XX.EDU: Grand Challenges in Education (Part 2)

WEDNESDAY, 28 JULY,  
10:30 AM-12:15 PM

This panel is a continuation of the conversation that begins in Part 1 among a diverse group of outstanding researchers and artists, academy and industry professionals, educators, and government officials to discuss the future of education in its broadest sense, encompassing both formal and informal learning.

#### PANELISTS

Marc Barr  
Middle Tennessee State University

Donna Cox  
NSCA

James Foley  
Georgia Institute of Technology

Andy van Dam  
Brown University

Victoria Vesna  
University of California, Los Angeles

Roger Malina  
Leonardo/ISAST

### Large Steps Toward Open Source

THURSDAY, 29 JULY, 9-10:30 AM

Industry veterans and open-source pioneers discuss the recent surge of open-source projects sponsored by their organizations. What are the motivations and driving forces behind this work? What are the challenges? What does it take to make open source a part of a studio's culture? Bring your questions and learn how to succeed with open source in your organization.

#### PANELISTS

Rob Bredow  
Sony Pictures Imageworks

Andy Hendrickson  
Walt Disney Animation Studios

Florian Kainz,  
Industrial Light and Magic

Bill Polson  
Pixar Animation Studios

# Talks

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■ Full Conference Access

#siggraph #talks



**SIGGRAPH 2010 Talks provide a broad spectrum of presentations on recent achievements in all areas of computer graphics and interactive techniques, including art, design, animation, visual effects, interactivity, research, and engineering.**

Talks often highlight the latest developments before publication, present ideas that are still in progress, or showcase how computer graphics and interactive techniques are actually implemented and used, in graphics production or other fields. Talks can take you behind the scenes and into the minds of SIGGRAPH 2010 creators.

## Partial List of Talks

### Avatar in Depth

SUNDAY, 25 JULY

2-3:30 PM

**SESSION CHAIR**

Mk Haley  
Carnegie Mellon University

### A Physically Based Approach to Virtual Character Deformations

Simon Clutterbuck  
James Jacobs  
Weta Digital Ltd.

### Rendering “Avatar”: Spherical Harmonics in Production

Nick McKenzie  
Martin Hill  
Jon Allitt  
Weta Digital Ltd.

### PantaRay: Directional Occlusion for Fast Cinematic Lighting of Massive Scenes

Jacopo Pantaleoni  
NVIDIA Research

Luca Fascione  
Weta Digital Ltd.

Timo Aila  
NVIDIA Research

Martin Hill  
Sebastian Sylwan  
Weta Digital Ltd.

David Luebke  
NVIDIA Corporation

### Elemental Training 101

SUNDAY, 25 JULY

3:45-5:15 PM

**SESSION CHAIR**

Dan Wexler  
NVIDIA Corporation

### Bending Fire With Plume, a CUDA-Based 3d Fluid Solver and Volume Renderer

Olivier Maury  
Dan Piponi  
Florent Andorra  
Craig Hammack  
Industrial Light & Magic

### Creating Big Fire in “How to Train Your Dragon”

Andrew Hayes  
Ron Henderson  
Brett Miller  
Stuart Tett  
Tobin Jones  
DreamWorks Animation

### Waterbending: Water Effects on “The Last Airbender”

Ian Sachs  
Industrial Light & Magic

### GPU Fluids in Production: Accelerating the Pressure Projection

Dan Bailey  
Double Negative Visual Effects

# Talks

## ■ Full Conference Access

### All About Avatar

MONDAY, 26 JULY  
9-10:30 AM

**SESSION CHAIR**  
Jim Hillin  
Gradient Effects

### Virtual Production Stage

Dejan Momcilovic  
Weta Digital Ltd.

### Character and Environment Lighting Challenges on "Avatar"

Kevin Smith  
Weta Digital Ltd.

### Volume Rendering for "Avatar"

Antoine Bouthors  
Mark Davies  
Weta Digital Ltd.

### Compositing "Avatar"

Peter Hillman  
Erik Winquist  
Weta Digital Ltd.

Matthew Welford  
The Moving Picture Company

### Rendering Intangibles

MONDAY, 26 JULY  
9-10:30 AM

**SESSION CHAIR**  
Mike Bailey  
Oregon State University

### The Filigree Effect in "Shrek Forever After": Making Art Dynamic From Sketch to 3D

Andrew Kim  
Alex Ongaro  
DreamWorks Animation

### Lighting and Rendering "Alice In Wonderland"

Adam Martinez  
Terrance Tornberg  
Sony Pictures Imageworks

### Fast Furry Ray Gathering

Ivan Neulander  
Rhythm & Hues Studios

### An Error-Estimation Framework for Photon Density Estimation

Toshiya Hachisuka  
University of California,  
San Diego

Wojciech Jarosz  
Disney Research Zürich

Henrik Jensen  
University of California,  
San Diego

### Detailed Surfaces

MONDAY, 26 JULY  
10:45 AM-12:15 PM

**SESSION CHAIR**  
George ElKoura  
Pixar Animation Studios

### An Accurate Method for Acquiring High-Resolution Skin-Displacement Maps

Sebastian Sylwan  
Gino Acevedo  
Eugene D'Eon  
Weta Digital Ltd.

### Sketch-Based 3D Shape Retrieval

Mathias Eitz  
Technische Universität Berlin

Tamy Boubekour  
École d'Ingénieurs Télécom  
ParisTech

Kristian Hildebrand  
Marc Alexa  
Technische Universität Berlin

### Meshmixer: An Interface for Rapid Mesh Composition

Ryan Schmidt  
Karan Singh  
University of Toronto

### Cyclic Twill-Woven Objects

Ergun Akleman  
Jianer Chen  
Yen-Lin Chen  
Qing Xing  
Texas A&M University

# Talks

## ■ Full Conference Access

### Tissue & Medical Analysis

MONDAY, 26 JULY  
10:45 AM-12:15 PM

#### SESSION CHAIR

Cindy Grimm  
Washington University in  
St. Louis

### Dynamic Hard-Soft Tissue Models for Orofacial Biomechanics

Ian Stavness  
John Lloyd  
The University of British  
Columbia

Yohan Payan  
TIMC-IMAG Lab, CNRS

Sidney Fels  
The University of British  
Columbia

### Distance Visualization of Ultrascale Data With Explorable Images

Kwan-Liu Ma  
University of California, Davis

### Exploration of Bat-Wing Morphology Through A Strip Method and Visualization

Jian Chen  
University of Southern  
Mississippi

Daniel K. Riskin  
Tatiana Y. Hubel  
Brown University

David Willis  
University of Massachusetts  
Lowell

Arnold Song  
Brown University

Hanyu Liu  
University of Southern  
Mississippi

Kenneth Breuer  
Sharon M. Swartz  
David H. Laidlaw  
Brown University

### Volumes and Precipitation

MONDAY, 26 JULY  
2-3:30 PM

#### SESSION CHAIR

Mark Carlson  
DreamWorks Animation SKG

### Digital Water for "Avatar"

Allen Hemberger  
Christoph Sprenger  
Diego Trazzi  
Sebastian Marino  
Weta Digital, Ltd.

### Prep and Landing - Christmas in July: The Effects Snow Process

Ian Coony  
Walt Disney Animation Studios

### I Love It When A Cloud Comes Together

Jerry Tessendorf  
Jason Iversen  
Sho Hasegawa  
Hideki Okano  
Rhythm & Hues Studios

### Single Scattering in Heterogeneous Participating Media

Cyril Delalandre  
Pascal Gautron  
Jean-Eudes Marvie  
Technicolor Research &  
Innovation Centers

Guillaume Francois  
The Moving Picture Company

### Split Second Screen Space

MONDAY, 26 JULY  
2-3:30 PM

#### SESSION CHAIR

Jerry Edsall  
Relic

### Screen Space Classification for Efficient Deferred Shading

Neil Hutchinson  
Jeremy Moore  
Balor Knight  
Matthew Ritchie  
George Parrish  
Black Rock Studio,  
The Walt Disney Company

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

Dmitry Andreev  
LucasArts

### Split-Second Motion Blur

Kenny Mitchell  
Matt Ritchie  
Greg Modern  
Black Rock Studio,  
The Walt Disney Company

### A Deferred-Shading Pipeline for Real-Time Indirect Illumination

Cyril Soler  
Olivier Hoel  
INRIA Rhone-Alpes

Frank Rochet  
EDEN GAMES

# Talks

■ Full Conference Access

## Biomedical

MONDAY, 26 JULY  
3:45-5:15 PM

### SESSION CHAIR

Cindy Grimm  
Washington University in St. Louis

## Estimating Subject-Specific Parameters for Modeling Hand Joints

Lillian Chang  
Nancy Pollard  
Carnegie Mellon University

## Multigrid Optical Flow for Medical Volume Registration

Ariel Bernal  
Ashok Thirumurthi  
Intel Corporation

## Sensorimotor Physiology: Modeling, Imaging, and Neural Control

Dinesh Pai  
The University of British Columbia

Tyler Nowicki  
Intel Corporation and  
University of Waterloo

Hans Pabst  
Intel Corporation

Michael McCool  
Intel of Canada Ltd.

## Simulation In Production

TUESDAY, 27 JULY  
9-10:30 AM

### SESSION CHAIR

David McAllister  
NVIDIA Corporation

## Talking Trash: Technologies and Techniques for Simulating the Dump in “Toy Story 3”

David Ryu  
Eric Froemling  
Pixar Animation Studios

## Seamless Fracture in a Production Pipeline

Akash Garg  
Kyle Maxwell  
DreamWorks Animation

## High-Detailed Fluid Simulations on the GPU

Mattias Lagergren  
Fredrik Limsäter  
Björn Rydahl  
Fido Film AB

## Simulating Rapunzel’s Hair in Disney’s “Tangled”

Kelly Ward  
Maryann Simmons  
Andy Milne  
Hidetaka Yosumi  
Xinmin Zhao  
Walt Disney Animation Studios

## Blowing \$h!t Up

TUESDAY, 27 JULY  
2-3:30 PM

### SESSION CHAIR

Ken Museth  
DreamWorks Animation

## “Avatar”: Bending Rigid Bodies

Brice Criswell  
Michael Lentine  
Steve Sauers  
Industrial Light & Magic

## “Transformers 2”: Breaking Buildings

Brice Criswell  
Jef Smith  
David Deuber  
Industrial Light & Magic

## Destroying LA for “2012”

Nafees Bin Zafar  
DreamWorks Animation

David Stephens  
Marten Larsson  
Ryo Sakaguchi  
Digital Domain

Michael Clive  
DreamWorks Animation

Ramprasad Sampath  
Digital Domain

Ken Museth  
DreamWorks Animation

Dennis Blakey  
Brian Gazdik  
Robby Thomas  
Digital Domain



# Talks

## ■ Full Conference Access

### Visualization for Art & Design

TUESDAY, 27 JULY  
2-3:30 PM

#### SESSION CHAIR

Stephen Burns  
University of California,  
San Diego

### Visualizing a Classic CPU in Action: The 6502

Gregory James  
Industrial Light & Magic

Barry Silverman  
Disus Inc.

Brian Silverman  
Playful Invention Co.

### The Universe of Fonts, Charted by Machine

Joern Loviscach  
Fachhochschule Bielefeld

### Synesthetic Color Scheme in “Fantasia”

DongSheng Cai  
Syouti Goto  
Teruki Shinohara  
University of Tsukuba

Noriko Nagata  
Kwansei Gakuin University

Asako Fukumoto  
Keio University

Jun Kurumisawa  
Chiba University of Commerce

Nobuyoshi Asai  
Aizu University

### SPLASH: Real or Virtual?

Mona Kim  
Todd Palmer  
Olga Subiros  
Simon Taylor  
PROGRAM COLLECTIVE

### Pipelines and Asset Management

TUESDAY, 27 JULY  
3:45-5:15 PM

#### SESSION CHAIR

Erick Miller

### “Avatar”: Modeling a Jungle, From Template to Film

Shawn Dunn  
Marco Revelant  
Weta Digital Ltd.

### Managing Thousands of Assets for the “Prince of Persia” City of Alamut

Greg Meeres-Young  
Hannes Ricklefs  
Robert Tovell  
The Moving Picture Company

### Shared Perspectives in 2D and 3D, “Day & Night”

Michael Fu  
Sandra Karpman  
Sean Feeley  
Pixar Animation Studios

### Prep and Landing: Set’m and Forget’m, A Motion Graphics Pipeline for Effects

Ian Coony  
Walt Disney Animation Studios

### Example-Based Texture Synthesis in Disney’s “Tangled”

Christian Eisenacher  
Friedrich-Alexander-Universität  
Erlangen-Nürnberg

Chuck Tappan  
Brent Burley  
Daniel Teece  
Arthur Shek  
Walt Disney Animation Studios

### APIs for Rendering

WEDNESDAY, 28 JULY  
2-3:30 PM

#### SESSION CHAIR

Shalin Shodhan  
Pixar Animation Studios

### Open Shading Language

Larry Gritz  
Clifford Stein  
Chris Kulla  
Alejandro Conty  
Sony Pictures Imageworks

### REYES Using DirectX 11

Andrei Tatarinov  
NVIDIA Corporation

### WebGLot: High-Performance Visualization in the Browser

Dan Lecocq  
Markus Hadwiger  
Alyn Rockwood  
King Abdullah University of  
Science and Technology

# Talks

## ■ Full Conference Access

### Fun In Flatland

THURSDAY, 29 JULY

9-10:30 AM

#### SESSION CHAIR

Edward Lam  
Side Effects Software Inc.

### NPR Gabor Noise for Coherent Stylization

Pierre Benard  
Grenoble Universités, CNRS,  
LJK, and INRIA Grenoble  
Rhône-Alpes

Ares Lagae  
Katholieke Universiteit Leuven

Peter Vangorp  
Sylvain Lefebvre  
George Drettakis  
INRIA

Joëlle Thollot  
Université de Grenoble

### Project Gustav: Immersive Digital Painting

William Baxter  
Nelson Chu  
Naga Govindaraju  
Microsoft Research

### Real-Time GPU-Based Video Upscaling From Local Self Examples

Gilad Freedman  
Raanan Fattal  
The Hebrew University of  
Jerusalem

### Browsing Large Image Databases

Ronald Richter  
Mathias Eitz  
Marc Alexa  
Technische Universität Berlin

### Motion & Emotion

THURSDAY, 29 JULY

9-10:30 AM

#### SESSION CHAIR

Bobby Bodenheimer  
Vanderbilt University

### On-Site Real-Time 3D Match Move for MR-Based Previsualization With Relighting

Ryosuke Ichikari  
Kaori Kikuchi  
Wataru Toishita  
Ryuhei Tenmoku  
Fumihisa Shibata  
Hideyuki Tamura  
Ritsumeikan University

### Motion Regularization for Matting Motion-Blurred Objects

HaiTing Lin  
National University of Singapore

Yu-Wing Tai  
Korea Advanced Institute of  
Science and Technology

Michael Brown  
National University of Singapore

### The Mimic Game: Real-Time Recognition and Imitation of Emotional Facial Expressions

Nicolas Stoiber  
Olivier Aubault  
Orange Labs

Renaud Seguier  
Supélec

Gaspard Breton  
Orange Labs

### Effective Animation of Sign Language With Prosodic Elements

Nicoletta Adamo-Villani  
Purdue University

Kyle Hayward  
Human Head Studios

Jason Lestina  
Ronnie Wilbur  
Purdue University

### Games & Real Time

THURSDAY, 29 JULY

10:45 AM-12:15 PM

#### SESSION CHAIR

Chris Wyman  
University of Iowa

### User-Generated Terrain in ModNation Racers

James Grieve  
Clint Hanson  
John (Liuguo) Zhang  
Lucas Granito  
Cody Snyder  
United Front Games

### Irradiance Rigs

Hong Yuan  
University of Massachusetts  
Amherst

Derek Nowrouzezahrai  
University of Toronto

Peter-Pike Sloan  
Disney Interactive Studios

### Practical Morphological Anti-Aliasing on the GPU

Venceslas Biri  
Adrien Herubel  
Université Paris-Est

Stephane Deverly  
Duran Duboi Studio

### Curvature-Dependent Reflectance Function for Rendering Translucent Materials

Hiroyuki Kubo  
Waseda University

Yoshinori Dobashi  
Hokkaido University

Shigeo Morishima  
Waseda University

# Talks

■ Full Conference Access

## Interaction Omelette

THURSDAY, 29 JULY  
10:45 AM-12:15 PM

**SESSION CHAIR**

Mashhuda Glencross  
ARM Ltd.

## Head-Mounted Photometric Performance Capture

Andrew Jones  
Graham Fyffe  
Xueming Yu  
Wan-Chun Ma  
Jay Busch  
Mark Bolas  
Paul Debevec  
University of Southern California, Institute for Creative Technologies

## Dynamic Luminance Correction for Colored Surfaces

Naoki Hashimoto  
Akio Watanabe  
The University of Electro-Communications

## A Laser-Based System for Through-the-Screen Collaboration

Ian Robinson  
Kar-Han Tan  
Ramin Samadani  
Bruce Culbertson  
John Apostolopoulos  
HP Labs

## A Spatial Workbench for Physically Based Sound

Benjamin Schroeder  
Richard Parent  
Marc Ainger  
The Ohio State University

## Fur, Feathers and Trees

THURSDAY, 29 JULY  
3:45-5:15 PM

**SESSION CHAIR**

Ann McNamara  
Texas A&M University

## Ways to Skin a “Hairless” Cat: Building a Creepy Kitty Villain at Tippett Studio

Lori Petrini  
Aharon Bourland  
Scott Liedtka  
Michael Farnsworth  
Tippett Studio

## Furtility: Dynamic Grooming for “Wolfman”

Damien Fagnou  
The Moving Picture Company

James Leaning  
The Moving Picture Company

## Feathers for Mystical Creatures: Creating Pegasus for “Clash of the Titans”

James Leaning  
Damien Fagnou  
The Moving Picture Company

## Art-Directing Disney’s Tangled Procedural Trees

Arthur Shek  
Dylan Laceywell  
Andrew Selle  
Daniel Teece  
Tom Thompson  
Walt Disney Animation Studios

## Touchy-Feely

THURSDAY, 29 JULY  
3:45-5:15 PM

**SESSION CHAIR**

Dylan Moore  
Apple, Inc.

## Content-Adaptive Parallax Barriers for Automultiscopic 3D Display

Douglas Lanman  
Brown University

Matthew Hirsch  
Yun Hee Kim  
Ramesh Raskar  
MIT Media Lab

## NiCE Formular Editor

Jakob Leitner  
Christian Rendl  
Florian Perteneder  
Adam Gokcezade  
Thomas Seifried  
Michael Haller  
Media Interaction Lab

Robert Zeleznik  
Andrew Bragdon  
Brown University

## 3D Multitouch: When Tactile Tables Meet Immersive Visualization Technologies

Jean-Baptiste de la Rivière  
Immersion SAS

## Z-touch: A Multi-Touch System That Detects Spatial Gesture Near the Tabletop

Yoshiki Takeoka  
Takashi Miyaki  
The University of Tokyo

Jun Rekimoto  
The University of Tokyo, Sony Computer Science Laboratory

# Technical Papers

Full Conference registration allows access to all SIGGRAPH 2010 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.

■ Full Conference Access

■ #siggraph #technicalpapers



**SIGGRAPH Technical Papers is the premier international forum for disseminating new scholarly work in computer graphics and interactive techniques. At the conference, paper authors provide brief overviews of their work in the Technical Papers Fast Forward event.**

Technical Papers are published as a special issue of *ACM Transactions on Graphics*. In addition to papers selected by the SIGGRAPH 2010 Technical Papers Jury, the conference presents papers that have been published in *ACM Transactions on Graphics* during the past year.

## Technical Papers Fast Forward

SUNDAY, 25 JULY, 6-8 PM

■ #siggraph #technicalpapers

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.

## Computational Photography

MONDAY, 26 JULY, 9-10:30 AM

### SESSION CHAIR

Rob Fergus  
New York University

### The Frankencamera: An Experimental Platform for Computational Photography

Andrew Adams  
Eino-Ville Talvala  
Sung Hee Park  
David E. Jacobs  
Stanford University

Boris Ajudin  
Universität Ulm

Natasha Gelfand  
Nokia Research Center Palo Alto

Jennifer Dolson  
Stanford University

Daniel Vaquero  
University of California, Santa Barbara

Jongmin Baek  
Stanford University

Marius Tico  
Nokia Research Center Palo Alto

Hendrik P. A. Lensch  
Universität Ulm

Wojciech Matusik  
Disney Research Zürich

Kari Pulli  
Nokia Research Center Palo Alto

Mark Horowitz  
Marc Levoy  
Stanford University

### Image Deblurring Using Inertial Measurement Sensors

Neel Joshi  
Sing Bing Kang  
C. Lawrence Zitnick  
Richard Szeliski  
Microsoft Corporation

### Diffusion-Coded Photography for Extended Depth of Field

Oliver Cossairt  
Changyin Zhou  
Shree Nayar  
Columbia University

### Coded Aperture Projection

Max Grosse  
Bauhaus-Universität Weimar

Gordon Wetzstein  
The University of British Columbia

Anselm Grundhöfer  
Bauhaus-Universität Weimar

Oliver Bimber  
Johannes Kepler Universität Linz

# Technical Papers

## ■ Full Conference Access

### Editing Motion

MONDAY, 26 JULY, 9-10:30 AM

#### SESSION CHAIR

Robert Sumner  
Disney Research Zürich

### Example-Based Facial Rigging

Hao Li  
ETH Zürich

Thibaut Weise  
Mark Pauly  
Ecole Polytechnique Federale de  
Lausanne

### Interactive Generation of Human Animation With Deformable Motion Models

Jianyuan Min  
Yen-Lin Chen  
Jinxiang Chai  
Texas A&M University

### Spatial Relationship Preserving Character Motion Adaptation

Edmond S.L. Ho  
Taku Komura  
University of Edinburgh

Chiew-Lan Tai  
Hong Kong University of Science and  
Technology

### Face Poser: Interactive Modeling of 3D Facial Expressions Using Facial Priors

Manfred Lau  
Carnegie Mellon University

Jinxiang Chai  
Texas A&M University

Ying-Qing Xu  
Heung-Yeung Shum  
Microsoft Research Asia

### Lighting & Material Design

MONDAY, 26 JULY, 9-10:30 AM

#### SESSION CHAIR

Peter-Pike Sloan  
Disney Interactive Studios

### envyLight: An Interface for Editing Natural Illumination

Fabio Pellacini  
Dartmouth College

### Toward Evaluating Material Design Interface Paradigms for Novice Users

William B. Kerr  
Fabio Pellacini  
Dartmouth College

### Interactive On-Surface Signal Deformation

Tobias Ritschel  
Thorsten Thormählen  
Max-Planck-Institut für Informatik

Carsten Dachsbacher  
Universität Stuttgart

Jan Kautz  
University College London

Hans-Peter Seidel  
Max-Planck-Institut für Informatik

### PantaRay: Fast Ray-Traced Occlusion Caching

Jacopo Pantaleoni  
NVIDIA Research

Luca Fascione  
Martin Hill  
Weta Digital Ltd.

Timo Aila  
NVIDIA Corporation

# Technical Papers

## ■ Full Conference Access

### Elastic Models

MONDAY, 26 JULY, 2-3:30 PM

#### SESSION CHAIR

Doug James  
Cornell University

### A Simple Geometric Model for Elastic Deformations

Isaac Chao  
California Institute of Technology

Ulrich Pinkall  
Technische Universität Berlin

Patrick Sanan  
Peter Schröder  
California Institute of Technology

### Unified Simulation of Elastic Rods, Shells, and Solids

Sebastian Martin  
Peter Kaufmann  
ETH Zürich

Mario Botsch  
Universität Bielefeld

Eitan Grinspun  
Columbia University

Markus Gross  
ETH Zürich, Disney Research Zürich

### An Efficient Multigrid Method for the Simulation of High-Resolution Elastic Solids

Yongning Zhu  
University of California, Los Angeles

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

Achi Brandt  
Weizmann Institute of Science

### A Simple Approach to Nonlinear Tensile Stiffness for Accurate Cloth Simulation

Pascal Volino  
Nadia Magnenat-Thalmann  
MIRALab, University of Geneva

François Faure  
LJK, INRIA, Université de Grenoble

### Faces & Capture

MONDAY, 26 JULY, 3:45-5:15 PM

#### SESSION CHAIR

Hanspeter Pfister  
Harvard University

### High-Quality Single-Shot Capture of Facial Geometry

Thabo Beeler  
ETH Zürich, Disney Research Zürich

Bernd Bickel  
Paul Beardsley  
Bob Sumner  
Disney Research Zürich

Markus Gross  
ETH Zürich, Disney Research Zürich

### High-Resolution Passive Facial Performance Capture

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

### Temporal Upsampling of Performance Geometry Using Photometric Alignment

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

### VideoMocap: Modeling Physically Realistic Human Motion

Xiaolin Wei  
Jinxiang Chai  
Texas A&M University

# Technical Papers

## ■ Full Conference Access

### Architectural Patterns

MONDAY, 26 JULY, 3:45-5:15 PM

#### SESSION CHAIR

John Snyder  
Microsoft Research

### Geodesic Patterns

Helmut Pottmann  
King Abdullah University of Science and  
Technology, Technische Universität Wien

Qixing Huang  
Stanford University

Alexander Schiftner  
Evolute GmbH, Technische Universität  
Wien

Martin Kilian  
Evolute GmbH, Technische Universität  
Wien

Leonidas Guibas  
Stanford University

Johannes Wallner  
Technische Universität Graz

### K-set Tilable Surfaces

Chi-Wing Fu  
Chi-Fu Lai  
Ying He  
Nanyang Technological University

Daniel Cohen-Or  
Tel Aviv University

### Paneling Architectural Freeform Surfaces

Michael Eigensatz  
ETH Zürich, Ecole Polytechnique Federale  
de Lausanne

Martin Kilian  
Alexander Schiftner  
Evolute GmbH, Technische Universität  
Wien

Niloy J. Mitra  
Indian Institute of Technology Delhi,  
King Abdullah University of Science and  
Technology

Helmut Pottmann  
King Abdullah University of Science and  
Technology, Technische Universität Wien

Mark Pauly  
Ecole Polytechnique Federale de  
Lausanne

### Triangle Surfaces With Discrete Equivalence Classes

Mayank Singh  
Scott Schaefer  
Texas A&M University

### Fluids I

TUESDAY, 27 JULY, 9-10:30 AM

#### SESSION CHAIR

Miguel Otaduy  
Universidad Rey Juan Carlos, Madrid

### Matching Fluid Simulation Elements to Surface Geometry and Topology

Tyson Brochu  
Christopher Batty  
Robert Bridson  
The University of British Columbia

### A Multiscale Approach to Mesh- Based Surface Tension Flows

Nils Thürey  
ETH Zürich

Chris Wojtan  
Georgia Institute of Technology

Markus Gross  
ETH Zürich

Greg Turk  
Georgia Institute of Technology

### Dynamic Local Remeshing for Elastoplastic Simulation

Martin Wicke  
Daniel Ritchie  
Bryan M. Klingner  
Sebastian Burke  
Jonathan R. Shewchuk  
James F. O'Brien  
University of California, Berkeley

### Physics-Inspired Topology Changes for Thin Fluid Features

Chris Wojtan  
Georgia Institute of Technology

Nils Thuerey  
Markus Gross  
ETH Zürich

Greg Turk  
Georgia Institute of Technology

# Technical Papers

## ■ Full Conference Access

### Stylized Rendering & Illusions

TUESDAY, 27 JULY, 9-10:30 AM

#### SESSION CHAIR

Maneesh Agrawala  
University of California, Berkeley

#### Modeling and Rendering of Impossible Figures

Tai-Pang Wu  
The Chinese University of Hong Kong

Chi-Wing Fu  
Nanyang Technological University

Sai-Kit Yeung  
The Hong Kong University of Science and Technology

Jiaya Jia  
The Chinese University of Hong Kong

Chi-Keung Tang  
The Hong Kong University of Science and Technology

### Camouflage Images

Hung-Kuo Chu  
Wei-Hsin Hsu  
National Cheng Kung University

Niloy J. Mitra  
Indian Institute of Technology Delhi

Daniel Cohen-Or  
Tel Aviv University

Tien-Tsin Wong  
The Chinese University of Hong Kong

Tong-Yee Lee  
National Cheng Kung University

### Structure-Based ASCII Art

Xuemiao Xu  
Linling Zhang  
Tien-Tsin Wong  
The Chinese University of Hong Kong

### From Image Parsing to Painterly Rendering

Kun Zeng  
Lotus Hill Institute

Mingtian Zhao  
Lotus Hill Institute and  
University of California, Los Angeles

Caiming Xiong  
Lotus Hill Institute

Song-Chun Zhu  
Lotus Hill Institute and  
University of California, Los Angeles

### Rendering Hair & Scattering

TUESDAY, 27 JULY, 9-10:30 AM

#### SESSION CHAIR

Philip Dutré  
Katholieke Universiteit Leuven

### A Radiative Transfer Framework for Rendering Materials With Anisotropic Structure

Wenzel Jakob  
Adam Arbree  
Jonathan T. Moon  
Kavita Bala  
Steve Marschner  
Cornell University

### Line-Space Gathering for Single Scattering in Large Scenes

Xin Sun  
Microsoft Research Asia

Kun Zhou  
Zhejiang University

Stephen Lin  
Baining Guo  
Microsoft Research Asia

### Interactive Hair Rendering Under Environment Lighting

Zhong Ren  
Microsoft Research Asia

Kun Zhou  
Tengfei Li  
Wei Hua  
Zhejiang University

Baining Guo  
Microsoft Research Asia

### An Artist-Friendly Hair Shading System

Iman Sadeghi  
University of California, San Diego,  
Walt Disney Animation Studios

Heather Pritchett  
Walt Disney Animation Studios

Henrik Wann Jensen  
University of California, San Diego

Rasmus Tamstorf  
Walt Disney Animation Studios



# Technical Papers

## ■ Full Conference Access

### Expressive Rendering & Illustrations

TUESDAY, 27 JULY, 10:45 AM-12:15 PM

#### SESSION CHAIR

Victor Ostromoukhov  
University of Montreal

#### Programmable Motion Effects

Johannes Schmid  
ETH Zürich

Robert W. Sumner  
Huw Bowles  
Disney Research Zürich

Markus Gross  
ETH Zürich, Disney Research Zürich

### Illustrating How Mechanical Assemblies Work

Niloy J. Mitra  
Yong-Liang Yang  
King Abdullah University of Science and Technology

Dong-Ming Yan  
The University of Hong Kong

Wilmot Li  
Adobe Systems Incorporated

Maneesh Agrawala  
University of California, Berkeley

### Programmable Rendering of Line Drawing From 3D Scenes

Stephane Grabi  
University of Grenoble and INRIA

Emmanuel Turquin  
University of Grenoble

Frédo Durand  
Massachusetts Institute of Technology

François X. Sillion  
INRIA and University of Grenoble

### 2.5D Cartoon Models

Alec Rivers  
Massachusetts Institute of Technology

Takeo Igarashi  
The University of Tokyo

Frédo Durand  
Massachusetts Institute of Technology

### Fabrication

TUESDAY, 27 JULY, 10:45 AM-12:15 PM

#### SESSION CHAIR

Tim Weyrich  
University College London

#### Reliefs as Images

Marc Alexa  
Technische Universität Berlin

Wojciech Matusik  
Disney Research Zürich

### Physical Reproduction of Materials With Specified Subsurface Scattering

Milos Hasan  
Harvard University

Martin Fuchs  
Princeton University

Wojciech Matusik  
Disney Research

Hanspeter Pfister  
Harvard University

Szymon Rusinkiewicz  
Princeton University

### Fabricating Spatially Varying Subsurface Scattering

Yue Dong  
Tsinghua University

Jiaping Wang  
Microsoft Research Asia

Fabio Pellacini  
Dartmouth College

Xin Tong  
Baining Guo  
Microsoft Research Asia

### Design and Fabrication of Materials With Desired Deformation Behavior

Bernd Bickel  
ETH Zürich, Disney Research Zürich

Moritz Bächer  
Harvard University

Miguel Otaduy  
Universidad Rey Juan Carlos

Hyunho Richard Lee  
Hanspeter Pfister  
Harvard University

Markus Gross  
ETH Zürich, Disney Research Zürich

Wojciech Matusik  
Disney Research Zürich

# Technical Papers

## ■ Full Conference Access

### GPU Rendering

TUESDAY, 27 JULY, 2-3:30 PM

#### SESSION CHAIR

Sylvain Lefebvre  
REVES/INRIA Sophie-Antipolis

#### Micropolygon Ray Tracing With Defocus and Motion Blur

Qiming Hou  
Tsinghua University

Hao Qin  
Wenyao Li  
Zhejiang University

Baining Guo  
Microsoft Research Asia

Kun Zhou  
Zhejiang University

#### Real-Time Lens-Blur Effects and Focus Control

Sungkil Lee  
Max-Planck-Institut für Informatik

Elmar Eisemann  
Max-Planck-Institut für Informatik,  
Universität des Saarlandes

Hans-Peter Seidel  
Max-Planck-Institut für Informatik

#### OptiX: A General Purpose Ray Tracing Engine

Steven G. Parker  
James Bigler  
Andreas Dietrich  
Heiko Friedrich  
Jared Hoberock  
David Luebke  
David McAllister  
Morgan McGuire  
Keith Morley  
Austin Robison  
Martin Stich  
NVIDIA Corporation

#### Reducing Shading on GPUs Using Quad-Fragment Merging

Kayvon Fatahalian  
Solomon Boulos  
James Hegarty  
Stanford University

Kurt Akeley  
Microsoft Research

William R. Mark  
Intel Corporation

Henry Moreton  
NVIDIA Corporation

Pat Hanrahan  
Stanford University

### Physics-Based Sound & Bubbles

TUESDAY, 27 JULY, 2-3:30 PM

#### SESSION CHAIR

George Drettakis  
REVES/INRIA Sophia-Antipolis

#### Precomputed Wave Simulation for Real-Time Sound Propagation of Dynamic Sources in Complex Scenes

Nikunj Raghuvanshi  
Microsoft Corporation  
University of North Carolina at Chapel Hill

John Snyder  
Microsoft Corporation

Ravish Mehra  
Ming Lin  
University of North Carolina at Chapel Hill

Naga Govindaraju  
Microsoft Corporation

#### Rigid-Body Fracture Sound With Precomputed Soundbanks

Changxi Zheng  
Doug L. James  
Cornell University

#### Sounding Liquids: Automatic Sound Synthesis From Fluid Simulation

William Moss  
Hengchin Yeh  
University of North Carolina at Chapel Hill

Jeong-Mo Hong  
Dongguk University

Ming C. Lin  
Dinesh Manocha  
University of North Carolina at Chapel Hill

#### A Practical Simulation of Dispersed Bubble Flow

Doyub Kim  
Seoul National University

Oy-young Song  
Sejong University

Hyeong-Seok Ko  
Seoul National University

# Technical Papers

## ■ Full Conference Access

### Planning & Terrain

TUESDAY, 27 JULY, 2-3:30 PM

#### SESSION CHAIR

Michiel van de Panne  
University of British Columbia

### Robust Physics-Based Locomotion Using Low-Dimensional Planning

Igor Mordatch  
Martin de Lasa  
Aaron Hertzmann  
University of Toronto

### Optimizing Walking Controllers for Uncertain Inputs and Environments

Jack M. Wang  
David J. Fleet  
Aaron Hertzmann  
University of Toronto

### Terrain-Adaptive Bipedal Locomotion Control

Jia-chi Wu  
Zoran Popović  
University of Washington

### Optimal Feedback Control for Character Animation Using an Abstract Model

Yuting Ye  
C. Karen Liu  
Georgia Institute of Technology

### Displays and Eyes

TUESDAY, 27 JULY, 3:45-5:15 PM

#### SESSION CHAIR

Marc Levoy  
Stanford University

### Nonlinear Disparity Mapping for Stereoscopic 3D

Manuel Lang  
Alexander Hornung  
Oliver Wang  
Disney Research Zürich

Steven Poulakos  
Disney Research Zürich, ETH Zürich

Aljoscha Smolic  
Disney Research Zürich

Markus Gross  
Disney Research Zürich, ETH Zürich

### A Multi-Layered Display With Water Drops

Peter Barnum  
Srinivasa G. Narasimhan  
Takeo Kanade  
Carnegie Mellon University

### Netra: Interactive Display for Estimating Refractive Errors and Focal Range

Vitor F. Pamplona  
Ankit Mohan  
Manuel M. Oliveira  
Ramesh Raskar  
MIT Media Lab

### Photorealistic Models for Pupil-Light Reflex and Iridal Pattern Deformation

Vitor F. Pamplona  
Manuel M. Oliveira  
Universidade Federal do Rio Grande do Sul

Gladimir V. G. Baranoski  
University of Waterloo

### Geometry Algorithms & Sampling

TUESDAY, 27 JULY, 3:45-5:30 PM

#### SESSION CHAIR

Pedro Sander  
The Hong Kong University of Science and Technology

### Improving Chen & Han's Algorithm on the Discrete Geodesic Problem

Shi-Qing Xin  
Guo-jin Wang  
Zhejiang University

### Feature-Preserving Triangular Geometry Images for Level-of-Detail Representation of Static and Skinned Meshes

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

Liang Peng  
Intel Corporation

John Hart  
University of Illinois at Urbana-Champaign

### Controllable Conformal Maps for Shape Deformation and Interpolation

Ofir Weber  
Craig Gotsman  
Technion - Israel Institute of Technology

### Accurate Multidimensional Poisson-disk Sampling

Manuel N. Gamito  
Lightwork Design Ltd

Steve C. Maddock  
The University of Sheffield

### Multi-Class Blue Noise Sampling

Li-Yi Wei  
Microsoft Research

# Technical Papers

## ■ Full Conference Access

### Collisions and Contact

WEDNESDAY, 28 JULY, 9-10:30 AM

#### SESSION CHAIR

Joseph Teran  
University of California, Los Angeles

### Star Contours for Efficient Hierarchical Self-Collision Detection

Sara C. Schwartzman  
Alvaro G. Pérez  
Miguel A. Otaduy  
Universidad Rey Juan Carlos

### Subspace Self-Collision Culling

Jernej Barbič  
University of Southern California

Doug L. James  
Cornell University

### Volume Contact Constraints at Arbitrary Resolution

Jérémie Allard  
INRIA

François Faure  
Université Joseph Fourier - Grenoble I

Florent Falipou  
Christian Duriez  
INRIA

Paul G. Kry  
McGill University

### Collision-Free Construction of Animated Feathers Using Implicit Constraint Surfaces

Andrew J. Weber  
Galen Gornowicz  
DreamWorks Animation

### Boundaries, Edges & Gradients

WEDNESDAY, 28 JULY, 9-10:30 AM

#### SESSION CHAIR

Sylvain Paris  
Adobe Systems Incorporated

### RepFinder: Finding Approximately Repeated Scene Elements for Image Editing

Ming-Ming Cheng  
Fang-Lue Zhang  
Tsinghua University

Niloy J. Mitra  
Indian Institute of Technology Delhi,  
King Abdullah University of Science and  
Technology

Xiaolei Huang  
Lehigh University

Shi-Min Hu  
Tsinghua University

### Edge-Based Image Coarsening

Raanan Fattal  
Hebrew University

Robert Carroll  
Maneesh Agrawala  
University of California, Berkeley

### GradientShop: A Gradient-Domain Optimization Framework for Image and Video Filtering

Pravin Bhat  
Weta Digital

C. Lawrence Zitnick  
Michael F. Cohen  
Microsoft Research

Brian Curless  
University of Washington

### Distributed Gradient-Domain Processing of Planar and Spherical Images

Michael Kazhdan  
Johns Hopkins University

Dinoj Surendran  
Microsoft Corporation

Hugues Hoppe  
Microsoft Research

# Technical Papers

## ■ Full Conference Access

### Textures

WEDNESDAY, 28 JULY,  
10:45 AM-12:15 PM

#### SESSION CHAIR

Greg Turk  
Georgia Institute of Technology

### By-Example Synthesis of Architectural Textures

Sylvain Lefebvre  
REVES/INRIA Sophia-Antipolis, ALICE/  
INRIA Nancy

Samuel Hornus  
ALICE/INRIA Nancy, GEOMETRICA/INRIA  
Sophia-Antipolis

Anass Lasram  
ALICE/INRIA Nancy

### Synthesizing Structured Image Hybrids

Eric Risser  
Trinity College Dublin

Charles Han  
Columbia University

Rozenn Dahyot  
Trinity College Dublin

Eitan Grinspun  
Columbia University

### Vector Solid Textures

Lvdi Wang  
Tsinghua University

Kun Zhou  
Zhejiang University

Yizhou Yu  
University of Illinois at Urbana-Champaign

Baining Guo  
Microsoft Research Asia

### Mesh Colors

Cem Yuksel  
John Keyser  
Texas A&M University

Donald H. House  
Clemson University

### Video

WEDNESDAY, 28 JULY,  
10:45 AM-12:15 PM

#### SESSION CHAIR

Rick Szeliski  
Microsoft Research

### Unstructured Video-Based Rendering: Interactive Exploration of Casually Captured Videos

Luca Ballan  
ETH Zürich

Gabriel J. Brostow  
University College London

Jens Puwein  
Marc Pollefeys  
ETH Zürich

### Dynamic Video Narratives

Carlos D. Correa  
Kwan-Liu Ma  
University of California, Davis

### Video Tapestries With Continuous Temporal Zoom

Connelly Barnes  
Princeton University

Dan B. Goldman  
Eli Shechtman  
Adobe Systems Incorporated

Adam Finkelstein  
Princeton University

### Motion-Based Video Retargeting With Optimized Crop-and-Warp

Yu-Shuen Wang  
Hui-Chih Lin  
National Cheng Kung University

Olga Sorkine  
New York University

Tong-Yee Lee  
National Cheng Kung University

# Technical Papers

## ■ Full Conference Access

### Perception, Presence & Animation

WEDNESDAY, 28 JULY, 2-3:30 PM

#### SESSION CHAIR

Ravin Balakrishnan  
University of Toronto

### Fool Me Twice: Exploring and Exploiting Error Tolerance in Physics-Based Animation

Thomas Y. Yeh  
Interactive Research and Technology

Glenn Reinman  
University of California, Los Angeles

Sanjay J. Patel  
University of Illinois at Urbana-Champaign

Petros Faloutsos  
University of California, Los Angeles

### Seeing is Believing: Body Motion Dominates in Multisensory Conversations

Cathy Ennis  
Rachel McDonnell  
Carol O' Sullivan  
Trinity College Dublin

### Simulating Virtual Environments Within Virtual Environments as the Basis for a Psychophysics of Presence

Mel Slater  
Bernhard Spanlang  
David Corominas  
Universitat de Barcelona

### Using Blur to Affect Perceived Distance and Size

Robert T. Held  
University of California, San Francisco  
and University of California, Berkeley

Emily A. Cooper  
James F. O'Brien  
Martin S. Banks  
University of California, Berkeley

### Urban Reconstruction & Explanation

WEDNESDAY, 28 JULY, 2-3:30 PM

#### SESSION CHAIR

Brian Curless  
University of Washington

### SmartBoxes for Interactive Urban Reconstruction

Liangliang Nan  
Andrei Sharf  
Shenzhen Institute of Advanced Technology

Hao Zhang  
Simon Fraser University

Daniel Cohen-Or  
Tel-Aviv University

Baoquan Chen  
Shenzhen Institute of Advanced Technology

### Non-Local Scan Consolidation for 3D Urban Scenes

Qian Zheng  
Andrei Sharf  
Guowei Wan  
Yangyan Li  
Shenzhen Institute of Advanced Technology

Niloy J. Mitra  
Indian Institute of Technology Delhi

Daniel Cohen-Or  
Tel-Aviv University

Baoquan Chen  
Shenzhen Institute of Advanced Technology

### Ambient Point Clouds for View Interpolation

Michael Goesele  
Jens Ackermann  
Simon Fuhrmann  
Carsten Haubold  
Ronny Klowsky  
Technische Universität Darmstadt

Drew Steedly  
Microsoft Corporation

Richard Szeliski  
Microsoft Research

### Street Slide: Browsing Street-Level Imagery

Johannes Kopf  
Microsoft Research Redmond

Billy Chen  
Microsoft Corporation

Richard Szeliski  
Michael F. Cohen  
Microsoft Research

# Technical Papers

## ■ Full Conference Access

### Appearance Capture & Image Processing

WEDNESDAY, 28 JULY, 3:45-5:15 PM

#### SESSION CHAIR

Steve Marschner  
Cornell University

### Acquisition and Analysis of Bispectral Bidirectional Reflectance and Reradiation Distribution Functions

Matthias B. Hullin  
Max-Planck-Institut für Informatik

Johannes Hanika  
Boris Ajdin  
Universität Ulm

Hans-Peter Seidel  
Max-Planck-Institut für Informatik

Jan Kautz  
University College London

Hendrik P. A. Lensch  
Universität Ulm

### Manifold Bootstrapping for SVBRDF Capture

Yue Dong  
Tsinghua University

Jiaping Wang  
Xin Tong  
Microsoft Research Asia

John Snyder  
Microsoft Research

Yanxiang Lan  
Tsinghua University

Moshe Ben-Ezra  
Microsoft Research Asia

Baining Guo  
Microsoft Research Asia

### A Coaxial Optical Scanner for Synchronous Acquisition of 3D Geometry and Surface Reflectance

Michael Holroyd  
Jason Lawrence  
University of Virginia

Todd Zickler  
Harvard University

### Smoothed Local Histogram Filters

Michael Kass  
Pixar Animation Studios

Justin Solomon  
Pixar Animation Studios,  
Stanford University

### Understanding Shape

WEDNESDAY, 28 JULY, 3:45-5:15 PM

#### SESSION CHAIR

Misha Kazhdan  
John Hopkins University

### Discrete-Scale Axis Representations for 3D Geometry

Balint Miklos  
ETH Zürich

Joachim Giesen  
Friedrich-Schiller-Universität Jena

Mark Pauly  
Ecole Polytechnique Federale de  
Lausanne

### Learning 3D Mesh Segmentation and Labeling

Evangelos Kalogerakis  
Aaron Hertzmann  
Karan Singh  
University of Toronto

### Symmetry-Factored Embedding and Distance

Yaron Lipman  
Xiaobai Chen  
Ingrid Daubechies  
Thomas Funkhouser  
Princeton University

### A Connection Between Partial Symmetry and Inverse Procedural Modeling

Martin Bokeloh  
Max-Planck-Institut für Informatik

Michael Wand  
Universität des Saarlandes and  
Max-Planck-Institut für Informatik

Hans-Peter Seidel  
Max-Planck-Institut für Informatik

# Technical Papers

## ■ Full Conference Access

### Cloth Animation

THURSDAY, 29 JULY, 9-10:30 AM

#### SESSION CHAIR

Mario Botsch  
Bielefeld University

### Efficient Yarn-Based Cloth With Adaptive Contact Linearization

Jonathan M. Kaldor  
Doug L. James  
Steve Marschner  
Cornell University

### Stable Spaces for Real-Time Clothing

Edilson de Aguiar  
Leonid Sigal  
Disney Research Pittsburgh

Adrien Treuille  
Carnegie Mellon University

Jessica K. Hodgins  
Disney Research Pittsburgh

### Example-Based Wrinkle Synthesis for Clothing Animation

Huamin Wang  
Florian Hecht  
Ravi Ramamoorthi  
James O'Brien  
University of California, Berkeley

### A Deformation Transformer for Real-Time Cloth Animation

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

### 3D Modeling

THURSDAY, 29 JULY, 9-10:30 AM

#### SESSION CHAIR

Peter Wonka  
Arizona State University

### A Framework for Modeling 3D Scenes Using Pose-Free Equations

Daniel G. Aliaga  
Ji Zhang  
Mireille Boutin  
Purdue University

### 3D Modeling With Silhouettes

Alec Rivers  
Frédo Durand  
Massachusetts Institute of Technology

Takeo Igarashi  
The University of Tokyo

### Apparent Layer Operations for Manipulation of Deformable Objects

Takeo Igarashi  
The University of Tokyo

Jun Mitani  
University of Tsukuba

### Popup: Automatic Paper Architectures From 3D Models

Xian-Ying Li  
Chao-Hui Shen  
Shi-Sheng Huang  
Tsinghua University

Tao Ju  
Washington University in St. Louis

Shi-Min Hu  
Tsinghua University



# Technical Papers

## ■ Full Conference Access

### Perceptual Rendering Methods

THURSDAY, 29 JULY, 10:45 AM-12:15 PM

#### SESSION CHAIR

Adam Finkelstein  
Princeton University

#### Toward a Perceptual Space for Gloss

Josh Wills  
University of California, San Diego

Sameer Agarwal  
Google

David Kriegman  
Serge Belongie  
University of California, San Diego

#### Effects of Global Illumination Approximations on Material Appearance

Jaroslav Krivanek  
Cornell University

James A. Ferwerda  
Rochester Institute of Technology

Kavita Bala  
Cornell University

#### Subtle Gaze Direction

Reynold Bailey  
Rochester Institute of Technology

Ann McNamara  
Texas A&M University

Nisha Sudarsanam  
Mindjet Corporation

Cindy Grimm  
Washington University in St. Louis

#### Apparent Display Resolution Enhancement for Moving Images

Piotr Didyk  
Max-Planck-Institut für Informatik

Elmar Eisemann  
L'école Télécom ParisTech,  
CNRS-LTIC, Universität des Saarlandes,  
Max-Planck-Institut für Informatik

Tobias Ritschel  
Karol Myszkowski  
Hans-Peter Seidel  
Max-Planck-Institut für Informatik

### Fluids II

THURSDAY, 29 JULY, 10:45 AM- 12:15 PM

#### SESSION CHAIR

Michael Kass  
Pixar Animation Studios

#### A Novel Algorithm for Incompressible Flow Using Only a Coarse Grid Projection

Michael Lentine  
Wen Zheng  
Ronald Fedkiw  
Stanford University

#### Filament-Based Smoke With Vortex Shedding and Variational Reconnection

Steffen Weissmann  
Ulrich Pinkall  
Technische Universität Berlin

#### Underwater Cloth Simulation With Fractional Derivatives

Oktar Ozgen  
Marcelo Kallmann  
Lynnette E. S. Ramirez  
Carlos F. M. Coimbra  
University of California, Merced

#### Discrete Viscous Threads

Miklos Bergou  
Columbia University

Basile Audoly  
Université Pierre et Marie Curie -  
Paris 6, Centre national de la recherche  
scientifique

Etienne Vouga  
Columbia University

Max Wardetzky  
Universität Göttingen

Eitan Grinspun  
Columbia University

# Technical Papers

## ■ Full Conference Access

### Meshing

THURSDAY, 29 JULY, 10:45 AM-12:15 PM

#### SESSION CHAIR

Mark Meyer  
Pixar Animation Studios

### Feature-Aligned T-Meshes

Ashish Myles  
New York University

Nico Pietroni  
Istituto di Scienza e Tecnologie  
dell'Informazione

Denis Kovacs  
Denis Zorin  
New York University

### A Wave-Based Anisotropic Quadrangulation Method

Muyang Zhang  
Jin Huang  
Xinguo Liu  
Hujun Bao  
Zhejiang University

### On Centroidal Voronoi Tessellation – Energy Smoothness and Fast Computation

Yang Liu  
LORIA/INRIA and  
The University of Hong Kong

Wenping Wang  
The University of Hong Kong  
Bruno Levy  
LORIA/INRIA

Feng Sun  
Dong-Ming Yan  
Lin Lu  
The University of Hong Kong

Chenglei Yang  
Shandong University

### Lp Centroidal Voronoi Tessellation and its Applications

Bruno Levy  
Yang Liu  
INRIA

### Surface Fields

THURSDAY, 29 JULY, 2-3:30 PM

#### SESSION CHAIR

Charles Loop  
Microsoft Research

### Parameterizing Subdivision Surfaces

Lei He  
Scott Schaefer  
Texas A&M University

Kai Hormann  
Università della Svizzera italiana

### Topology- and Error-Driven Extension of Scalar Functions From Surfaces to Volumes

Giuseppe Patane'  
Michela Spagnuolo  
Bianca Falcidieno  
CNR-IMATI

### A Multi-Resolution Approach to Heat Kernels on Discrete Surfaces

Amir Vaxman  
Technion - Israel Institute of Technology

Mirela Ben-Chen  
Stanford University

Craig Gotsman  
Technion - Israel Institute of Technology

### Geometry-Aware Direction Field Processing

Nicolas Ray  
Bruno Vallet  
Laurent Alonso  
Bruno Levy  
INRIA

# Technical Papers

■ Full Conference Access

## Human Modeling

THURSDAY, 29 JULY, 2-3:30 PM

### SESSION CHAIR

David Forsyth  
University of Illinois at Urbana-Champaign

## Learning Behavior Styles With Inverse Reinforcement Learning

Seong Jae Lee  
Zoran Popović  
University of Washington

## A Synthetic-Vision-Based Steering Approach for Crowd Simulation

Jan Ondrej  
Julien Pettre  
Anne-Helene Olivier  
Stephane Donikian  
INRIA Rennes

## Comprehensive Biomechanical Modeling and Simulation of the Upper Body

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

## Gesture Controllers

Sergey Levine  
Philipp Krähenbühl  
Sebastian Thrun  
Vladlen Koltun  
Stanford University

## Image Enhancement

THURSDAY, 29 JULY, 3:45-5:15 PM

### SESSION CHAIR

Dan Goldman  
Adobe Systems Incorporated

## Multi-Scale Image Harmonization

Kalyan Sunkavalli  
Harvard University

Micah K. Johnson  
Massachusetts Institute of Technology

Wojciech Matusik  
Disney Research

Hanspeter Pfister  
Harvard University

## Personal Photo Enhancement Using Example Images

Neel Joshi  
Microsoft Corporation

Wojciech Matusik  
Disney Research

Edward H. Adelson  
Massachusetts Institute of Technology,  
CSAIL

David J. Kriegman  
University of California, San Diego

## Parametric Reshaping of Human Bodies in Images

Shizhe Zhou  
Zhejiang University

Hongbo Fu  
City University of Hong Kong

Ligang Liu  
Zhejiang University

Daniel Cohen-Or  
Tel-Aviv University

Xiaoguang Han  
Zhejiang University

## Image Warps for Artistic Perspective Manipulation

Robert Carroll  
University of California, Berkeley

Aseem Agarwala  
Adobe Systems Incorporated

Maneesh Agrawala  
University of California, Berkeley

# Technical Papers

■ Full Conference Access

## Biped Control

THURSDAY, 29 JULY, 3:45-5:15 PM

### SESSION CHAIR

Jovan Popović  
Adobe Systems Incorporated,  
University of Washington

## Sampling-Based Contact-Rich Motion Control

Libin Liu  
Tsinghua University

KangKang Yin  
Microsoft Research Asia

Michiel van de Panne  
The University of British Columbia

Tianjia Shao  
Tsinghua University

Weiwei Xu  
Microsoft Research Asia

## Data-Driven Biped Control

Yoonsang Lee  
Sungeun Kim  
Jehee Lee  
Seoul National University

## Generalized Biped Walking Control

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

## Feature-Based Locomotion Controllers

Martin de Lasa  
Igor Mordatch  
Aaron Hertzmann  
University of Toronto

# Exhibitor Tech Talks

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- Basic Conference Pass
- ▲ Computer Animation Festival

#siggraph #techtalks



**Comprehensive summaries of the latest technologies in computer graphics and interactive Techniques. SIGGRAPH 2010 exhibitors demonstrate software, hardware, and systems; answer questions; and host one-on-one conversations about how their applications improve professional and technical performance.**

## AMD

TUESDAY, 27 JULY, 11:15 AM-12:15 PM  
WEDNESDAY, 28 JULY, 11:15 AM-12:15 PM

## CCT International

WEDNESDAY, 28 JULY, 2:15-3:15 PM

### C3D: 5D and Beyond

CCT (the software arm of CCC International, a major EPC Contractor) is a leader in the field of 5D construction. As a 3D-based visual framework for visualizing and controlling a construction-project life cycle, C3D is widely used on large construction projects to provide custom solutions for site engineers, project managers, control managers, and project owners.

In this talk, CCT introduces the concept of 5D construction and its applications to the construction market. The talk includes a demonstration of CCT's 5D generic framework and massive model-visualization engine featuring the highly interoperable HyperModel (US Patent 12/578,521), where solution providers and end users can create project semantics and workflows with dynamic links to the 3D model. Other module demonstrations include: the semantic-based InfoVis Engine, the massive Model Rendering Engine, the reporting engine, and the system-integration engine. The talk concludes with case studies and live demos.

## Web3D Consortium

WEDNESDAY, 28 JULY, 3:45-4:40 PM

### X3D: Delivering New Dimensions on the Web

X3D is the only open-standard (ISO), royalty-free file format and run-time player specification for 4D virtual environments. It remains the most robust and versatile open standard for implementation of high-integrity and highly capable 4D multimedia information spaces. With multiple encodings and API bindings, it is compatible with many web and industry technologies. The data-integration capacities and the rich set of componentized features are rapidly expanding X3D's value across applications, from mobile to AR, CAD, and medical.

This talk reviews the current state of the innovative X3D community of content and application developers, and their work to ensure interoperability, longevity, and ownership of your content. See the latest real-world interactive 3D applications and find out how you can build and protect your content investment in this ever-changing competitive market.

Presented by Virginia Polytechnic Institute and State University, Bitmanagement, Fraunhofer Heinrich-Hertz-Institut, the Naval Postgraduate School, and others.

## NVIDIA Corporation

WEDNESDAY, 28 JULY, 9 AM-5 PM

### Technical Sessions

NVIDIA hosts a series of six technical deep dives on rendering, performance analysis, and visual effects. The presentations focus on how to take advantage of the latest hardware and tools from NVIDIA and discuss how NVIDIA supports the latest standards, such as OpenGL 4.0.

Contact: David Weller, [dweller@nvidia.com](mailto:dweller@nvidia.com)

# Exhibitor List

as of 26 May, 2010

## Age Requirement

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.

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● Basic Conference Pass

▲ Computer Animation Festival

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 3D Consortium  
 3dMD a 3Q company  
 The3DShop.com  
 3DTotal.com  
 3DVIA, Dassault Systemes  
 3D World magazine  
 A K Peters, Ltd.  
 Aberdeen LLC  
 Academy of Art University  
 Addison-Wesley  
 Allegorithmic  
 AMAX Engineering Corp.  
 AMD  
 American Paper Optics, Inc.  
 Andersson Technologies LLC  
 Animation Magazine Inc.  
 Anthro Corporation  
 ASC-American Cinematographer  
 Autodesk, Inc.  
 Axceleon Inc.  
 Ballistic Media Pty. Ltd.  
 Bell Computer  
 BLICK CORPORATION  
 Blue Sky Studios, Inc.  
 BlueArc Corporation  
 Cap Digital Paris Region  
 Carnegie Mellon Entertainment  
 Technology Center  
 Caustic Graphics, Inc.  
 CCT International  
 CEA-LIST  
 cebas Visual Technology Inc.  
 CG Wave  
 CGAL-The Computational Geometry  
 Algorithms Library  
 Chaos Software Ltd.  
 Cogswell Polytechnical College  
 Computer Graphics World  
 (COP Communications, Inc.)  
 Conservatoire National des  
 Arts et Métiers (CNAM)  
 Craft Animations and Entertainment AB  
 Cubix Corporation  
 CyberGlove Systems LLC  
 DAZ 3D  
 DigiPen Institute of Technology  
 Dimensional Imaging Ltd.  
 Dux Soft Pvt. Ltd.  
 EEFX.COM - Chroma Key Screens  
 & Supplies  
 EnvisionTEC  
 e-on software, inc.  
 Exact Metrology, Inc.  
 FileCatalyst  
 Focal Press  
 The Foreign Trade Corporation of  
 Costa Rica-Procomer

Fusion-io  
 Google  
 GNWC  
 Golaem  
 Hansoft AB  
 HD3D  
 HTW Berlin  
 IdN magazine  
 IEEE Computer Society  
 ImageMovers Digital  
 Imagineer Systems Ltd.  
 IntegrityWare, Inc.  
 Intel Corporation  
 Intelligraphics Inc.  
 iPi Soft  
 Isilon Systems, Inc.  
 iStockphoto LP  
 It's Art  
 Joe Alter, Inc.  
 JourneyEd.com  
 Khronos Group  
 King Abdullah University of Science  
 and Technology  
 L'Etude et la Supervision des  
 Trucages (EST)  
 Lightspeed Design, Inc.  
 LightWork Design Ltd.  
 Louisiana State University, Center for  
 Computation & Technology  
 Lumiscaphe  
 MAXON Computer Inc.  
 Measurand Inc.  
 MelroseMAC  
 Mercenaries Engineering  
 Mikros Image  
 Mines ParisTech  
 Motion Analysis Corporation  
 NaturalPoint Inc.  
 Neomis Animation  
 NETDIMENSION CORPORATION  
 New York University - CADA  
 NewTek, Inc.  
 Nexstar  
 NextEngine Inc.  
 Next Limit Technologies  
 Nickelodeon Animation Studios  
 Nokia, Qt Development Frameworks  
 NorPix Inc.  
 NVIDIA Corporation  
 Objet Geometries Ltd.  
 OC3 Entertainment, Inc.  
 OCALI Inc.  
 Okino Computer Graphics, Inc.  
 Organic Motion, Inc.  
 PILGWAY  
 PipelineFx, LLC  
 Pixar Animation Studios

PixelActive  
 The Pixel Farm  
 Pixologic, Inc.  
 Planar Systems, Inc.  
 PNY Technologies  
 Point Grey Research Inc.  
 Polhemus  
 Prime Focus  
 Proexport USA - Colombian  
 Government Trade Bureau  
 Purdue University, Department of  
 Computer Graphics Technology  
 Rhythm & Hues Studios  
 Ringling College of Art and Design  
 Robert McNeel & Associates  
 Rochester Institute of Technology  
 Rocketbox Studios GmbH  
 Savannah College of Art and Design  
 Scaleform Corporation  
 Shapeways  
 Shotgun Software, Inc.  
 Side Effects Software  
 Smith Micro  
 Sony Pictures Imageworks  
 SpeedTree  
 SpheronVR AG  
 Springer  
 Stash Media Inc.  
 Stratasys 3D Printers &  
 Production Systems  
 TechViz  
 Thales  
 THQ Inc.  
 threeRivers 3D, Inc.  
 Tobii Technology AB  
 Trinity3D.com  
 Tweak Software  
 Universcience  
 University of Central Florida -  
 Florida Interactive Entertainment  
 Academy  
 Vancouver Film School  
 Vicon  
 Wacom Technology Corporation  
 Web3D Consortium  
 Wiley Publishing  
 Wolfram Research, Inc.  
 WorldViz  
 Xerox Corporation  
 Xsens Technologies B.V.  
 Zygo Media Group, Inc.

## General Information

### Airport Shuttle Discounts

SIGGRAPH 2010 has partnered with Super Shuttle to offer transportation to and from Los Angeles International Airport (LAX). SIGGRAPH 2010 attendees receive a \$3 discount on a one-way ticket when they book service through Super Shuttle. These discounts are valid from 20 July until 3 August 2010. For more information on how to access the Super Shuttle coupon visit: [www.siggraph.org/s2010](http://www.siggraph.org/s2010)

### 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 2010 speakers and award winners. To suggest books, CDs, or DVDs that should be available in the bookstore, contact:

Breakpoint Books  
dave@breakpointbooks.com

### Camera and Recording Policies

No cameras or recording devices are permitted at SIGGRAPH 2010. Abuse of this policy will result in the loss of the individual's registration credentials.

SIGGRAPH 2010 employs a professional photographer and reserves the right to use all images that this photographer takes during the conference for publication and promotion of future ACM SIGGRAPH events.

### 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

#### Airline Check-in

Airline check-in is available on Wednesday, 28 July and Thursday, 29 July for domestic flights from LAX on Air Tran, Alaska Airlines, American Airlines, Continental Airlines, Delta Airlines, JetBlue, Northwest Airlines, and United Airlines. With this service, attendees can avoid airport check-in lines and receive their boarding documents and luggage tags at the convention center. For more information: [www.siggraph.org/s2010](http://www.siggraph.org/s2010)

#### Business Center

A self-service business center is located in the Concourse Hallway area of the convention center. Attendees can make black-and-white copies and use the center's computers to check email and print documents (payment requires a credit or debit card: AMEX, MasterCard, Visa.)

#### Food Services

Several restaurants, concessions, and food carts are available throughout the convention center for the convenience of SIGGRAPH 2010 attendees.

### Internet Access

Free wireless access will be available for SIGGRAPH 2010 in limited areas in the Los Angeles Convention Center. SIGGRAPH 2010 will not provide public workstations for internet access.

### Luggage and Coat Check

Luggage and coat-check services (\$2 for small items and \$3 for large items) are available at the Los Angeles Convention Center from Sunday, 25 July through Thursday, 29 July.

### Parking

SIGGRAPH 2010 attendees can park at the Los Angeles Convention Center parking lot for \$12 per day. There are no in/out privileges.

### Shuttle Bus Service

SIGGRAPH 2010 provides complimentary shuttle service between many conference hotels and the Los Angeles Convention Center.

### IMPORTANT NOTICE

Attendees who use the SIGGRAPH 2010 hotel reservation system to make reservations at hotels served by the SIGGRAPH 2010 shuttle buses will receive a shuttle wristband when they check in. Attendees who do not book through the SIGGRAPH 2010 reservation system and wish to use the shuttle service can purchase wristbands at the SIGGRAPH Store. Attendees without wristbands will not be allowed to use the shuttle service.

### 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 2010 Merchandise Pickup Center. Lost merchandise vouchers will not be replaced.

Access: 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.

### Travel & Housing

Visit the SIGGRAPH 2010 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/s2010](http://www.siggraph.org/s2010)

Or contact:  
onPeak  
SIGGRAPH 2010 Travel Partner  
[siggraph2010@onPeakevents.com](mailto:siggraph2010@onPeakevents.com)

SIGGRAPH 2010 has negotiated discount rates for hotels in Los Angeles. These discounts are available to SIGGRAPH 2010 attendees only. Please make your hotel reservation by 25 June 2010. Reservations made after 25 June will be based on availability only, and rates may increase.

# Included With Your Registration

## Registration Categories

- Full Conference Access
- Basic Conference Pass
- ▲ Computer Animation Festival

- ● Art Gallery
- ● ▲ Award Presentations
- ● Award Talks
- ● ▲ Birds of a Feather
- ▲ Computer Animation Festival
- Courses
- ● Emerging Technologies
- ● ▲ Exhibition
- ● ▲ Exhibitor Tech Talks
- Geek Bar
- ● International Resources
- ● ▲ Job Fair
- ● ▲ Keynote Speakers
- Panels
- Papers: Technical, Art, Games, and Transactions on Graphics
- ● Posters
- Reception
- ● Research Challenge
- ● ▲ SIGGRAPH Dailies!
- ● ▲ Technical Papers Fast Forward
- ● The Sandbox
- ● The Studio
- Talks

## Technical Materials

The printed *ACM Transactions on Graphics* (Conference Proceedings Special Issue), which contains the Technical Papers and the ACM SIGGRAPH awards is NOT included with any registration category. The Proceedings is available for purchase at SIGGRAPH 2010.

### ■ Full Conference DVD-ROM

This digital publication contains the electronic version of the Technical Papers and Game Papers, including images and auxiliary material; all of the course and tutorial notes, including auxiliary material (movies, source code, HTML presentations); and the permanent record of the Courses, Emerging Technologies, Panels, Posters, SIGGRAPH Dailies!, Talks, and the permanent record of the Art Gallery and the Computer Animation Festival.

The DVD is included with all Full Conference registrations, and it is available for purchase at SIGGRAPH 2010. The content of the printed version of the *ACM Transactions on Graphics* (Conference Proceedings Special Issue) is included on the Full Conference DVD-ROM.

Basic Conference registration does not include any technical materials.

#### NOTE:

Full Conference registrants must pick up the Full Conference DVD-ROM included with registration at SIGGRAPH 2010 at the Merchandise Pickup Center located in South Lobby.

#### Technical Materials are also available after the conference, contact:

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



# Registration Fees & Information

The printed *ACM Transactions on Graphics* (Conference Proceedings Special Issue) is not included in your registration and may be purchased separately.

Member rates refer to ACM SIGGRAPH membership.

## Conference Registration Categories

- Full Conference Access
- Basic Conference Pass
- ▲ Computer Animation Festival

■ Full Conference Access	ON OR BEFORE 4 JUNE	ON OR BEFORE 2 JULY	AT SIGGRAPH 2010
ACM SIGGRAPH Member	\$895	\$1,070	\$1,170
Non-Member	\$945	\$1,095	\$1,220
Student Member	\$395	\$445	\$495

Includes admission to ALL conference programs and events, including the Exhibition (Tuesday-Thursday), Computer Animation Festival, Full Conference DVD-ROM, and reception ticket.

■ Full Conference One-Day Pass	ON OR BEFORE 4 JUNE	ON OR BEFORE 2 JULY	AT SIGGRAPH 2010
ACM SIGGRAPH Member	\$325	\$375	\$425
Non-Member	\$375	\$425	\$475
Student Member	\$175	\$200	\$225

Includes admission to ALL conference programs and events, Computer Animation Festival for day(s) attending, and Exhibition (Tuesday-Thursday). A Computer Animation Festival Full Festival Pass for ALL days can be added at the time of registration, at a discounted fee of \$100.

Note: Does NOT include reception ticket or Full Conference DVD-ROM.

● Basic Conference Access	ON OR BEFORE 4 JUNE	ON OR BEFORE 2 JULY	AT SIGGRAPH 2010
ACM SIGGRAPH Member	\$95	\$125	\$150
Non-Member	\$125	\$150	\$175

Includes admission to Art Gallery, Birds of a Feather, Exhibitor Tech Talks, Emerging Technologies, Keynote Speakers, International Resources, Job Fair, Posters, The Sandbox, SIGGRAPH Dailies!, The Studio, and Exhibition (Tuesday-Thursday).

A Computer Animation Festival Full Festival Pass for ALL days can be added at the time of registration, at a discounted fee of \$175.

● Basic Conference One-Day Pass	PURCHASED BEFORE OR AT SIGGRAPH 2010
	\$45

Includes admission to Art Gallery, Birds of a Feather, Exhibitor Tech Talks, Emerging Technologies, Keynote Speakers, International Resources, Job Fair, Posters, The Sandbox, SIGGRAPH Dailies!, The Studio for day(s) attending, and Exhibition (Tuesday-Thursday).

▲ Computer Animation Festival	FULL FESTIVAL PASS	ONE-DAY PASS
ACM SIGGRAPH Member	\$175	\$50
Non-Member	\$200	\$50
Student Member	\$150	\$50
Additional Guest	\$200	\$50

Full Festival Pass includes admission to the Computer Animation Festival for the full week, and Exhibition (Tuesday-Thursday).

The One-Day Pass includes admission to the Computer Animation Festival for the day(s) attending, and Exhibition (Tuesday-Thursday).

# SIGGRAPH 2010 Committee



**ACM SIGGRAPH is a diverse group of researchers, artists, developers, filmmakers, scientists, and other professionals, who share an interest in computer graphics and interactive techniques. The community values excellence, passion, integrity, volunteerism, and cross-disciplinary interaction.**

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**ACM SIGGRAPH CONFERENCE CHIEF STAFF EXECUTIVE**

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