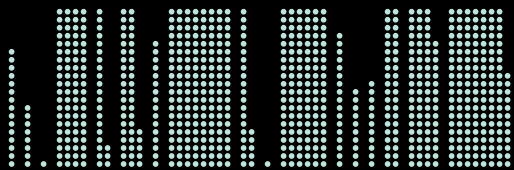


# Advance Program



**SIGGRAPH**2013  
Left Brain + Right Brain



**779** learning experiences across  
**17** robust program areas including  
**160** exhibiting companies

+



**1000's** of experts,  
friends, and colleagues

=



**5** value-filled inspiring  
days of SIGGRAPH

The **40th** International  
**Conference** and **Exhibition**  
on **Computer Graphics** and  
**Interactive Techniques**

**Conference** 21–25 July 2013  
**Exhibition** 23–25 July 2013  
**Anaheim** Convention Center



Sponsored by ACM SIGGRAPH

[www.siggraph.org/s2013](http://www.siggraph.org/s2013)

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**Recently added updates as of 8 July:**

Production Session Updates, p22

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Job Fair Participants, p51

**Don't Miss the  
Keynote Session:**

**The Academy of Motion  
Picture Arts and Sciences  
Marc Davis Lecture Series:  
Giants' First Steps**

Monday, 22 July, 11:30 am-1 pm

Eight distinguished animation film directors share their experiences along complex paths to filmmaking success.

# Conference at a Glance

Conference schedule subject to change.

## Conference Registration Categories

**F** Full Conference Access    **S** Select Conference Access    **E+** Exhibits Plus    **E** Exhibits Only    **Ex** Exhibitors

	Sunday, 21 July	Monday, 22 July	Tuesday, 23 July	Wednesday, 24 July	Thursday, 25 July
Registration/ Merchandise Pickup Center	8 am-6 pm	8:30 am-6 pm	8:30 am-6 pm	8:30 am-6 pm	8:30 am-1pm
SIGGRAPH Store	8 am-6 pm	8:30 am-6 pm	8:30 am-6 pm	8:30 am-6 pm	8:30 am-5 pm
<b>F S</b> ACM SIGGRAPH Award Presentations		10:45-11:30 am			
<b>F S</b> ACM SIGGRAPH Award Talks		2-3:30 pm			
ACM Student Research Competition Final Presentation					2-3:30 pm
<b>F S E+ Ex</b> 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
<b>F</b> Art Papers			9 am-12:15 pm		
<b>F S Ex</b> Birds of a Feather	Throughout the week				
Business Symposium (Additional fee required)	8:30 am-6 pm				
<b>F S</b> Computer Animation Festival Electronic Theater		6-8 pm	6-8 pm	6-8 pm	10:45 am-12:30 pm
<b>F S</b> Computer Animation Festival Daytime Selects		9 am-5 pm	9 am-5 pm	9 am-5 pm	
<b>F</b> Courses	9 am-5:15 pm	2-5:15 pm	9 am-5:15 pm	9 am-5:15 pm	9 am-5:15 pm
<b>F S</b> Dailies				6-8 pm	
<b>F S E+ Ex</b> 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
<b>F S E+ E Ex</b> Exhibition			9:30 am-6 pm	9:30 am-6 pm	9:30 am-3:30 pm
<b>F S E+ E Ex</b> Exhibitor Tech Talks			9:30 am-6 pm	9:30 am-6 pm	9:30 am-3:30 pm
<b>F S E+ E Ex</b> Exhibits Fast Forward		3:45-5:15 pm			
<b>F</b> Geek Bar	9 am-5:15 pm	9 am-5:35 pm	9 am-5:35 pm	9 am-5:35 pm	9 am-5:15 pm
International Center	9 am-6 pm	9 am-6 pm	9 am-6 pm	9 am-6 pm	9 am-3:30 pm
<b>F S E+ E Ex</b> Job Fair			9:30 am-6 pm	9:30 am-6 pm	9:30 am-3:30 pm
<b>F S Ex</b> Keynote Session		11:30 am-1 pm			
<b>F</b> Panel					2-3:30 pm
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	
<b>F S</b> Production Sessions	10:45 am-3:30 pm	9-10:30 am 3:45-5:15 pm	10:45 am-12:15 pm 3:45-5:15 pm	9 am-5:15 pm	10:45 am-2:15 pm
<b>F S</b> Real-Time Live!			5:30-7 pm		
<b>F</b> Reception		8-10 pm			
<b>F</b> SIGGRAPH Mobile				9 am-5:15 pm	
Special Events			8-9 pm <b>F S E+</b> Cut&Paste	8 pm - 12:30 am <b>F S E+ E Ex</b> SIGGRAPH After Dark	
<b>F S E+ Ex</b> Studio	noon-5:30 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-1 pm
<b>F</b> Talks		9-10:30 am	2-3:30 pm	9 am-12:15 pm	9 am-5:35 pm
<b>F</b> Technical Papers		9 am-5:55 pm	9 am-5:35 pm	9 am-5:35 pm	9 am-5:15 pm
<b>F S</b> Technical Papers Fast Forward	6-8 pm				

# Reasons to Attend SIGGRAPH 2013

If you study, expand, create, use, and/or love computer graphics and interactive techniques, you need to be in Anaheim in July. It's your only chance this year to meet, learn from, and schmooze with colleagues and friends from **83** countries.



5 full days and nights of learning the latest from the greatest and showing them what's next, real, and effective.

The result: You and your organization will be inspired and informed. Ready for a successful and rewarding year.

## Experts In Residence

Consolidate new knowledge and skills by working directly with the experts in the field:

- 152** Technical Papers
- 120+** Posters
- 75+** Talks (includes Studio and SIGGRAPH Mobile)
- 66+** Birds of a Feather sessions
- 23** Courses
- 14** Studio projects
- 12** Studio workshops
- 7** Art Papers

And explore ingenious left-brain, right-brain projects in the **15 Art Gallery** works and **16 Emerging Technologies** demos.

## Essential Resources

The SIGGRAPH 2013 Exhibition presents hardware, software, and services from over **160** of the leading organizations in the industry. Some of them have exactly what you're looking for, and all of them have good stories to tell about what they do and why. In Exhibitor Tech Talks, they explain how.

## World-Class Animation and Visual Effects

You'll see the best of the past year's work in animated storytelling, scientific visualization, games, and feature films:

- 80+** Computer Animation Festival pieces
- 45** Dailies presentations
- 15** Production Sessions
- 10** Real-Time Live! demos

## Pyrotechnics

SIGGRAPH 2013 is just across a major boulevard from Disneyland. Even if you don't spend some time in the Magic Kingdom, you will probably enjoy its spectacular audio/visual show at 10 pm. Disney displays serious fireworks every night.

# Conference Overview

## SIGGRAPH 2013

Experience astounding images, and learn how they were created. Interact with tomorrow's digital systems, and understand them. Meet the leading international innovators in computer graphics and interactive techniques, and share their knowledge.

At SIGGRAPH 2013, you'll find all the data, techniques, people, and inspiration you need for another successful year of research, development, creativity, and production.

### Conference Registration Categories

- F** Full Conference Access
- S** Select Conference Access
- E+** Exhibits Plus
- E** Exhibits Only
- Ex** Exhibitors

One-Day registration includes one day admission to all conference programs and events and the Exhibition (Tuesday - Thursday). Does not include reception ticket or Full Conference DVD-ROM.

### **F** Reception

Monday, 22 July, 8-10 pm | Anaheim Convention Center,  
Arena Outdoor Plaza



**Celebrate another year of achievement, plan future collaborations, and share delicious desserts and toast-worthy beverages under the Southern California stars at the SIGGRAPH community's highest-energy, most-anticipated social event of 2013.**

**F S** #siggraph #awards

### ACM SIGGRAPH Awards Presentations

(Immediately preceding the Keynote Session)

**F S** #siggraph #awards

### ACM SIGGRAPH Award Talks

#### The Steven Anson Coons Award for Outstanding Creative Contributions to Computer Graphics

Presented during odd-numbered years, this award recognizes long-term creative impact on the field of computer graphics.

#### 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 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 is given annually to recognize outstanding service to ACM SIGGRAPH by a volunteer over a significant period of time.

### ACM Student Research Competition

Fifteen student posters are selected for judging at SIGGRAPH 2013. The panel of distinguished judges selects five semi-finalists, who present their work to the judges. Three winners present their posters to SIGGRAPH 2013 attendees.

**F S E+ Ex** #siggraph #artgallery

### Art Gallery XYZN: Scale

Unique perspectives that focus on the ability to iteratively scale digital representations at will: in-out-up-down, back and forth, + and -. These core functions enable us to change size and location over time, and at different degrees of resolution.

**F S Ex** #siggraph #bof

### Birds of a Feather (BOF)

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

**F S** #siggraph #caf

### Computer Animation Festival

The past year's finest achievements in animation, visual effects, and visualization presented in the Electronic Theater and the Daytime Selects.

**F S** #siggraph #courses

### Courses

Learn from the experts and gain inside knowledge that's critical to career advancement. Courses range from an introduction to the foundations of computer graphics and interactive techniques to advanced instruction on the most current techniques and topics.

**F S** #siggraph #dailies

### Dailies

A showcase of excellence in modeling, shading, animation, lighting, effects, and more, plus stories about completing projects despite seemingly endless obstacles. Each presenter has one minute to present an animation and describe the work.

**F S E+ E Ex** #siggraph #etech

### Emerging Technologies

Innovative technologies and applications in several fields, from displays and input devices to collaborative environments and robotics, and technologies that apply to film and game production.

**F S E+ E Ex** #siggraph #exhibits

### Exhibition

The year's largest, most comprehensive exhibition of hardware systems, software tools, and creative services in the computer graphics and interactive techniques marketplace. Established industry leaders and emerging challengers display, discuss, and demonstrate the products, systems, techniques, ideas, and inspiration that are creating the digital future.

**F S E+ E Ex** #siggraph #techtalks

### Exhibitor Tech Talks

SIGGRAPH 2013 exhibitors demonstrate software, hardware, and systems; answer questions; and host one-on-one conversations about how their applications improve professional and technical performance.

**F S E+ E Ex** #siggraph #exhibits

### Exhibits Fast Forward

A sneak peak of the products and announcements that companies plan to make during the Exhibition in a fast paced, entertaining session prior to the Exhibition opening.

**F** #siggraph #geekbar

### Geek Bar

Real-time human networking. Streaming content from the SIGGRAPH 2013 session rooms.

**F S** #siggraph #keynote

### Keynote Session

Surprising insight, and entertaining stories from innovators in computer graphics, interactive techniques, and/or related fields.

#siggraph #international

### International Resources

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

**F S E+ E Ex** #siggraph #jobfair

### Job Fair

Looking for opportunity? Interested in meeting with some inspiring companies? Discover your future at SIGGRAPH 2013. In the Job Fair, attendees connect with employers before, during, and after the conference via the CreativeHeads.net job board and candidate profiling system.

**F** #siggraph #panels

### Panels

Expert panelists share experiences, opinions, insights, speculation, disagreement, and controversy with each other and the audience. Panel topics range from motion-controlled gaming to the growing use of virtual production in game and film creation.

**F**

### Papers

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

#siggraph #techpapers

### Technical Papers

SIGGRAPH Technical Papers reveal new directions and define the future of computer graphics and interactive techniques. Emerging themes for 2013 include imaging complex phenomena, 3D printing, and fabrication of realistic materials.

#siggraph #artpapers

### Art Papers

Scholars and artists explore the changing roles of artists and the methods of art-making in an increasingly networked and computationally mediated world.

#siggraph #posters

### Posters

In-progress research, student projects, and late-breaking work ranging from applications of computer graphics to in-depth analysis of specific subjects. Posters are on display for attendees to browse at their leisure. During Poster Presentations, authors discuss their work with attendees.

**F S** #siggraph #production

### Production Sessions

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

**FS** #siggraph #realtime

**Real-Time Live!**

Demos of the latest trends and techniques that push the boundaries of interactive visuals.

**F** #siggraph #mobile

**SIGGRAPH Mobile**

Talks, panels, workshops, and demonstrations that explore what’s possible, and when, for computers that can remain in their bags at security checkpoints.

**Special Events**

**FSE+**

**Cut&Paste**

A design competition consisting of three teams.

**FSE+ E Ex**

**SIGGRAPH After Dark**

Two blockbuster films, “Toy Story” and “Jurassic Park”, in an after-dark film show on a giant outdoor screen.

**FSE+ Ex** #siggraph #studio

**Studio**

Learn, experiment, and create in this collaborative hands-on working environment. Play with the latest in 3D printing, modeling, and animation software. Bring your ideas to life with tomorrow’s technologies in gigapixel imaging, motion capture, and more.

**F** #siggraph #talks

**Talks**

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

**FS** #siggraph #techpapers

**Technical Papers Fast Forward**

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.

#siggraph #symposium

**SIGGRAPH Business Symposium**

**Sunday, 21 July, 8:30 am-6 pm**

**The Symposium for Content Creation Executives**

In this co-located, one-day program, seasoned leaders in computer graphics and content creation focus on how to survive and thrive in a constantly disruptive business environment. The special program of talks, panels, and candid dialogue is limited to 250 studio leaders and facility executives in the production and creative communities, investment bankers, lawyers, and government representatives.

Partial List of Business Symposium Sessions:

**Panel: Innovating Business Models**

Don McGowan, Moderator  
General Counsel, The Pokémon Company International

Meredith Amdur  
VP Digital Strategy, DirecTV

Phil Ashcroft  
Independent Producer

Matthew Cohen  
Director of Business Development, Machinima

**Panel: Creative Deal Structures for Growth And Survival**

Don McGowan, Moderator  
General Counsel, The Pokémon Company International

Steve Goldstein  
Partner, Stubbs Alderton & Markiles, LLP

Joleen Winther Hughes  
Principal, Hughes Media Law Group

Justine Kasznica  
Schnader Harrison Segal & Lewis LLP

**Keynote: Disruption in the Battlefield**

Speaker:  
Captain Thomas Chaby  
Executive Officer, Naval Special Warfare Center

**Panel: The Role of R&D In Production (and Profit)**

Carl Rosendahl, Moderator  
Carnegie Mellon University

Lincoln Wallen  
CTO, DreamWorks Animation SKG

Scott Cronce  
VP Technology, Electronic Arts

Joe Alter  
Principal, Joe Alter Inc

Farchad Bidgolirad  
Head of Film R&D, Ubisoft Entertainment

**Talk: Pre-Visualizing a Road for Financing and Expansion**

Speaker:  
Chris Edwards  
CEO & Creative Director, The Third Floor, Inc.

A **separate admission fee** is required for the Business Symposium. It is **not included** in any of the SIGGRAPH 2013 registration categories.



# Conference Schedule

(Subject to change)

## Registration/Merchandise Pickup Center

Sunday, 21 July	8 am-6 pm
Monday, 22 July-Wednesday 24 July	8:30 am-6 pm
Thursday, 25 July	8:30 am-1 pm

## Art Gallery, Emerging Technologies, Posters\*, Studio

Sunday, 21 July	Noon-5:30 pm
Monday, 22 July-Wednesday 24 July	9 am-5:30 pm
Thursday, 25 July	9 am-1 pm

\*Posters close at 5:30 pm on Thursday, 25 July.

## Sunday, 21 July

### 8:30 am-6 pm

#### SIGGRAPH Business Symposium

(Not included with SIGGRAPH conference registration packages. This is an additional cost. See page 54.)

### 9-10 am

**BOF:** Cross-disciplinary Education – Co-Sponsored by the SIGGRAPH Education Committee & Leonardo Education and Art Forum (LEAF)

### 9 am-12:15 pm

**Course:** Introduction to Computer Graphics

**Course:** Mobile Game Creation for Everyone

### 9 am-5:15 pm

#### Geek Bar

### 9 am-6 pm

#### International Center

### 9:30-10:30 am

**BOF:** Using New Media Technologies to Augment the Experience of Watching Performative Art

### 10-11 am

**BOF:** Visualization for Science and Engineering Education

### 10:30-11:30 am

**ACM SIGGRAPH Theater Event:** CG in Australasia

### 10:45 am-12:15 pm

**Production Session:** The Making of Pixar’s “The Blue Umbrella”

### 11 am-Noon

**BOF:** The ACME Network’s ACME Animation Online Mentoring Community

### Noon-1 pm

**ACM SIGGRAPH Theater Event:** IVRC (International Collegiate Virtual Reality Contest)

### Noon-1:30 pm

**BOF:** Madding Crowd

### Noon-2 pm

**BOF:** Studio View of Demo Reels

### 12:30-1:30 pm

**BOF:** Ready, Steady, SIGGRAPH

### 1-2:30 pm

**BOF:** Blender Foundation–Community Meeting

### 2-3 pm

**ACM SIGGRAPH Theater Event:** Overview of SIGGRAPH 2013

**BOF:** SEAD: Innovation Thinking

### 2-3:30 pm

**Production Session:** The Open Source Swimming Hole; C’mon In The Water’s Fine^h^h^h Murky

#### Studio Talks:

- Playing Audrey II: Creating a Digital Actor Through Game Technology
- Skyfarer: A Mixed-Reality Shoulder Exercise Game
- Red Ball–Performing With iPads

**Talks:** “Epic” Tale

### 2-5:15 pm

**Course:** An Introduction to OpenGL Programming

**Course:** Recent Advances in Light-Transport Simulation: Theory & Practice

**Course:** The Digital Production Pipeline

**Course:** Turbulent Fluids

### 3-4 pm

**BOF:** Learn by Doing: Using Rapid Prototyping Game Development Events to Enhance and Augment the Classroom Experience

### 3-5 pm

**BOF:** ACM SIGGRAPH Theater Event: ACM SIGGRAPH Digital Art Community

### 3:30-5 pm

**BOF:** Blender Foundation–Artist Showcase and Demos

### 3:45-4:30 pm

**Studio Talk:** The Bleeding Edge of 3D Printing and Digital Fabrication

### 3:45-5:15 pm

**SIGGRAPH Mobile Workshop:** Make Mobile Apps Quickly

**Talks:** Getting Riggy With It

### 4-5 pm

**BOF:** ASIFA-Hollywood Animation Educators Forum: What is the State of Online Animation Instruction Today?

### 4:30-5:15 pm

#### Emerging Technologies Talks

### 5-6 pm

**ACM SIGGRAPH Theater Event:** CG in Mexico

### 6-8 pm

**Technical Papers Fast Forward Preview**

### 8:30-11 pm

**BOF:** Taipei ACM SIGGRAPH Chapter Reunion



## Monday, 22 July

### 8-9 am

**BOF:** Tools and Trends Incorporating Multisensory Information in Science, Math, and Art Integrative Education

### 9-10 am

**BOF:** 3D Printing From the Experts

**NVIDIA Exhibitor Session:** Multi-GPU Programming for Visual Computing

### 9-10:30 am

**SIGGRAPH Mobile Workshop:** Graphics on the Go

#### Studio Talks:

– Visualizing Progression in EVE Online

– Biological Printing

**Talks:** A Cloud of Shadows

**Talks:** Catching the Eye

**Talks:** Effects Omelette

**Technical Papers:** Color & Compositing

**Technical Papers:** Faces & Hands

**Technical Papers:** Geometry & Topology

### 9 am-5:35 pm

#### Geek Bar

### 9 am-6 pm

**Computer Animation Festival:** Daytime Selects

#### International Center

### 10-11 am

**BOF:** Art, Science, and Interactivity: Creating Engaging Experiences in Education

### 10:30-11:30 am

**NVIDIA Exhibitor Session:** Seamless Compute and OpenGL Graphics Development in Nsight Visual Studio

### 10:45-11:30 am

**ACM SIGGRAPH Award Presentations**

### 11 am-Noon

**BOF:** SIGGRAPH Education Committee - Undergraduate Research Alliance

### 11:30 am-1 pm

**Keynote Session:** the Academy of Motion Picture Arts and Science Marc Davis Lecture Series: Giants' First Steps

### Noon-1 pm

**BOF:** Integrated Help: Information at the Time of Need

**NVIDIA Exhibitor Sessions:** The Future of Visual Computing – OpenGL 4.3 on ARM

### 1-2 pm

**BOF:** ERC – Funding Opportunities in Europe for Creative Minds From Anywhere in the World

**BOF:** Open Source in Graphics Education

### 1-3 pm

**BOF:** Creative Professionals in Government

### 1:30-2:30 pm

**NVIDIA Exhibitor Session:** NVIDIA IndeX – Enabling Interactive and Scalable Visualization for Large Data

### 1:30-3:30 pm

**BOF:** LA ACM SIGGRAPH Chapter Social

### 2-3 pm

**BOF:** SCENE, Novel Representations for Digital Scenes

**BOF:** Industry and Academia Collaboration for Better Education

### 2-3:15 pm

#### Studio Talks:

– Clara.io: Full-Featured 3D Content Creation for the Web and Cloud Era

### 2-3:30 pm

**ACM SIGGRAPH Award Talks**

**Course:** Numerical Methods for Linear Complementarity Problems in Physics-Based Animation

**Course:** Story: It's Not Just for Writers ... Anymore

**Studio Workshop:** Sketching and Rapid Visualization (Tales From the Auto Industry)

**Production Session:** Storytelling Through Stereography Industry Panel

### 2:30-3:30 pm

**BOF:** Face Off: The Facial Animation Debate

### 2-5:15 pm

**Course:** Geometry Processing With Discrete Exterior Calculus

**Course:** Ray Tracing is the Future and Ever Will Be

### 3-4 pm

**BOF:** Creating Worlds of Art and Music

**NVIDIA Exhibitor Sessions:** GPU Ray Tracing and Advanced Rendering Solutions

### 3:15-3:30 pm

**Dailies Preview**

### 3:30-4:30 pm

**ACM SIGGRAPH Theater Event:** CG in Asia

### 3:45-4:30 pm

**Studio Talk:** Alternative Performance Capturing

### 3:45-5:15 pm

**Exhibits Fast Forward Preview**

**Studio Workshop:** 3D Scanning and Fine Toning With FaceGen

### 3:45-5:35 pm

**Technical Papers:** Computational Light Capture

**Technical Papers:** Rods & Shells

### 3:45-5:55 pm

**Technical Papers:** Line Drawing

### 4-5 pm

**BOF:** Marilyn Friedman Meetup

**BOF:** VFX Student and Intern Showcase

### 4:30-5:15 pm

**Emerging Technologies Talks**

### 4:30-5:30 pm

**NVIDIA Exhibitor Sessions:** Building Ray Tracing Applications With OptiX

### 5-6:30 pm

**BOF:** Global VFX Pipelines

### 6-7 pm

**BOF:** Open Shading Language (OSL)

### 6-8 pm

**Computer Animation Festival:** Electronic Theater

### 6:30-8 pm

**BOF:** The 26th Anniversary CG Show/ SAKE Barrel Opening Party at SIGGRAPH 2013

### 8-10 pm

**Networking Dessert Reception**

## Tuesday, 23 July

### 9-10 am

**Intel Exhibitor Session:** From Research to Production, How AVSM and AOIT Made Their Way Into Games

**NVIDIA Exhibitor Session:** High Performance Graphics for 4K and Ultra High Resolution Displays

### 9-10:30 am

**Art Papers:** Early Pioneers of Electronic Art

**Production Session:** Industrial Light & Magic Presents: 'Cancel the Apocalypse' – The Visual Effects of "Pacific Rim"

**Course:** Lights! Speed! Action! Fundamentals of Physical Computing for Programmers

#### Studio Talks:

- A Retailer's Way Into 3D: IKEA
- Interactive Card Weaving Design and Construction
- Join the Digital Text Revolution

**Studio Workshop:** Pi Drum: Raspberry Computers, MAXmsp, and PD

**Technical Papers:** Perception

**Technical Papers:** Surfaces & Differential Geometry

### 9 am-12:15 pm

**Course:** Advances in New Interfaces for Musical Expression

**Course:** Advances in Real-Time Rendering in Games Part I

### 9 am-5:35 pm

**Geek Bar**

### 9 am-6 pm

**Computer Animation Festival:** Daytime Selects

**International Center**

### 9:30-10:30 am

**NVIDIA Nsight Visual Studio Edition Labs Exhibitor Session:** Learn How to Debug OpenGL 4.2 with NVIDIA® Nsight™ Visual Studio Edition 3.1

### 9:30-11 am

**BOF:** Women In Animation International

### 9:30 am-6 pm

**Exhibition**

**Job Fair**

### 9:45-10:45 am

**Exhibitor Tech Talk:** ZSpace—zSpace: A Revolutionary Way to Experience 3D Content

### 10:30-11:30 am

**NVIDIA Exhibitor Session:** GPU Programming for Video and Image Processing Applications

### 10:45-11:45 am

**Intel Exhibitor Session:** Fast Volumetric Shadows Using Epipolar Sampling and 1D Min-Max Binary Trees

### 10:45 am-12:15 pm

**Art Papers:** Hybrid Media, Contemporary Practice

**Production Session:** Sony Pictures Imageworks Presents: Take a Journey Down the Yellow Brick Road

**Production Session:** Walt Disney Animation Studios Presents "Frozen": The Craft of Character and Cold

**Course:** Combining GPU Data-Parallel Computing With OpenGL

#### Studio Talks:

- SmartVCS: Shooting Avatar on Your iPad?
- Screencasting Strategies: Heuristics for Using Video Content in 3D Computer Graphics Technological and Aesthetic Education

**Studio Workshop:** Hard Surface Techniques in ZBrush

**Technical Papers:** Fluid Grids & Meshes

**Technical Papers:** Points

### 11 am-Noon

**BOF:** Virtual Globes Using WebGL and Cesium

**NVIDIA Nsight Visual Studio Edition Labs Exhibitor Session:** Learn How to Profile OpenGL 4.2 With NVIDIA® Nsight™ Visual Studio Edition 3.1

### 11 am-12:30 pm

**BOF:** CAD Export to the Web Using X3D

### 11 am-1 pm

**BOF:** From Golden Statue to Pink Slip: A Conversation on the State of the Industry

### 11:15 am-12:15 pm

**Exhibitor Tech Talk:** Advanced Micro Devices, Inc.: Real-Time ACES Decoding and AMD FirePro GPU-Enabled RRT/ODT Processing at 4K

### Noon-1 pm

**NVIDIA Exhibitor Sessions:** NVIDIA TEGRA: Attacking Mobile Entertainment With Sword and SHIELD

### Noon-1:30 pm

**ACM SIGGRAPH Theater Event:** ISEA International Foundation – Open Forum

### 12:15-1:15 pm

**Poster Sessions**

### 12:15-1:45 pm

**Intel Exhibitor Session:** Faster, Better Pixels on the Go and in the Cloud With OpenCL on Intel® Architecture

### 12:30-2 pm

**BOF:** ACM SIGGRAPH Carto BOF

### 12:45-1:45 pm

**Exhibitor Tech Talk:** Unity Technologies

### 1-2:30 pm

**BOF:** Kinect Scanning Users

### 1:30-2:30 pm

**NVIDIA Nsight Visual Studios Edition Labs Exhibitor Session:** Learn How to Debug OpenGL 4.2 With NVIDIA® Nsight™ Visual Studio Edition 3.1

## Tuesday, 23 July

### 1:30-2:30 pm

**NVIDIA Exhibitor Sessions:** Developing Next Generation Human Machine Interfaces (HMI)

### 2-3 pm

**Intel Exhibitor Session:** Faster Video Creation With Higher Productivity Using Intel® Developer Tools and OpenCL

### 2-3:30 pm

**BOF:** Volume Rendering and Medical Visualization Using X3D

**Production Session:** Warner Brothers Presents the VFX for “Man of Steel”

### Shotgun User Group Session

#### Studio Talks:

- Fight Our Shadow Robot
- Romibo Robot Project
- Mutation

**Studio Workshop:** 3D Data Capture

**Talks:** Multi-Disciplinary Collaboration in Education

**Technical Papers:** Image-Based Reconstruction

**Technical Papers:** Shape Analysis

**Technical Papers:** Voxels & Liquids

**Leonardo, Art Papers and Art Gallery Reception**

### 2-5:15 pm

**Course:** Advances in Real-Time Rendering in Games Part II

**Course:** OpenSubdiv From Research to Industry Adoption

### 2:15-3:15 pm

**Exhibitor Tech Talk:** Imagination Technologies - Accelerating Look Development With Real-Time, Interactive Ray Traced Viewports

### 3-4 pm

**NVIDIA Exhibitor Session:** CUDA Best Practices

**NVIDIA Nsight Visual Studio Edition Labs Exhibitor Session:** Learn How to Profile OpenGL 4.2 With NVIDIA® Nsight™ Visual Studio Edition 3.1

### 3-4:30 pm

**BOF:** Kinect Motion Capture Users

**BOF:** Open Sourcing the Pipeline

### 3-5 pm

**BOF:** Animating Diversity: Creating a New Hollywood Narrative

**BOF:** Managing Creative Projects

**BOF:** REST 3D

### 3:15-4:15 pm

**Intel Exhibitor Session:** Journey of Pixels in Adobe Photoshop on Intel HD Graphics

### 3:30-4:15 pm

**ACM SIGGRAPH Theater Event:** CG in Latin America: Encontro dos Brasileiros – Brazilian Meeting

### 3:30-5 pm

**BOF:** Web 3D Consortium Town Hall Meeting

### 3:45-4:30 pm

**Studio Talk:** The Tampa to Anaheim Soup-to-Nuts Hackshack

### 3:45-4:45 pm

**Exhibitor Tech Talk:** SiliconArts— SiliconArts RayCore®: Real-Time Ray Tracing GPU for Mobile and Embedded Applications

### 3:45-5:15 pm

**Studio Workshop:** Motion Capture Pipeline From Movies to Games

**Production Session:** Industrial Light & Magic Presents: The Visual Effects of “Start Trek Into Darkness”

### 3:45-5:35 pm

**Technical Papers:** Data-Driven Animation

**Technical Papers:** Design & Authoring

**Technical Papers:** Video & Warping

### 4-5 pm

**Educators Meet and Greet**

### 4-5:30 pm

**BOF:** Renderfarming

### 4-6 pm

**BOF:** ACCAD/OHIO STATE ALUMNI

### 4:15-5:15 pm

**ACM SIGGRAPH Theater Event:** CG in Latin America

### 4:30-5:15 pm

**Emerging Technologies Talks**

### 4:30-5:30 pm

**Intel Exhibitor Session:** Performance Tuning Applications for Intel GEN Graphics for Linux and Android

**NVIDIA Exhibitor Session:** State of the Art of Virtualized Graphics

**NVIDIA Nsight Visual Studio Edition Labs Exhibitor Session:** Learn How to Debug OpenGL 4.2 With NVIDIA® Nsight™ Visual Studio Edition 3.1

### 5:15-6 pm

**ACM SIGGRAPH Theater Event:** CG in Latin America: Reception

### 5:30-6:30 pm

**BOF:** OpenSubdiv BOF

### 5:30-7 pm

**BOF:** Dynamic Simulation in Production

**Real-Time Live!**

### 6-8 pm

**Computer Animation Festival:** Electronic Theater

**ACM SIGGRAPH Pioneer Reception** (Open to Pioneer members only.)

### 7-8 pm

**Cut&Paste:** Characterized @ SIGGRAPH

## Wednesday, 24 July

### 9-10:30 am

#### Art Talks I

**Production Session:** The Visual Effects of Marvel's "Iron Man 3"

**Production Session:** DreamWorks Animation Presents: A Journey to the Crodaceous

**SIGGRAPH Mobile Panel:** New Directions and Developments in Mobile GPU Design

**Studio Workshop:** Creating Paths From Illustrator to After Effects

**Talks:** Put That in Your Pipe!

**Technical Papers:** Building Structures & Layouts

**Technical Papers:** Global Illumination

### 9-11:45 am

**Intel Exhibitor Session:** Natural User Interaction With Perceptual Computing

### 9 am-12:15 pm

**Course:** Multithreading and VFX

### 9 am-5:15 pm

**SIGGRAPH Mobile Demonstrations**

### 9 am-5:35 pm

**Geek Bar**

### 9 am-6 pm

**Computer Animation Festival:** Daytime Selects

**International Center**

### 9:30-10:30 am

**NVIDIA Nsight Visual Studio Edition Labs Exhibitor Session:** Learn How to Profile OpenGL 4.2 With NVIDIA® Nsight™ Visual Studio Edition 3.1

### 9:30 am-6 pm

**Exhibition**

**Job Fair**

### 9:45-10:45 am

**Exhibitor Tech Talk:** Unity Technologies

### 10-11 am

**BOF:** OpenScenograph

**BOF:** Khronos Chapters

### 10-11:30 am

**BOF:** X3D 4.0 Futures with HTML5, X3DOM, and AR

### 10:30-11:30 am

**BOF:** The Character of an Animator and the Animated Character

### 10:45 am-12:15 pm

#### Art Talks II

**Production Session:** LAIKA Presents: The Seamless Fusion of Stop-Motion and Visual Effects Technologies in LAIKA's Feature Films

**SIGGRAPH Mobile Talks:** Advances in Mobile Graphics

**Studio Workshop:** ZBrush

**Talks:** Game Cinematics & Stereoscopic

**Technical Papers:** Advanced Rendering

**Technical Papers:** Quads & Meshing

**Technical Papers:** Water & Snow With Particles

### 11 am-Noon

**ACM SIGGRAPH Theater Event:** Digital Content Association of Japan

**BOF:** Teaching CG & VFX Online

**BOF:** Practical Acceleration of Alembic

**BOF:** Khronos Camera Control Open Standard Initiative

**NVIDIA Nsight Visual Studio Edition Labs Exhibitor Session:** Learn How to Profile OpenGL 4.2 With NVIDIA® Nsight™ Visual Studio Edition 3.1

### 11:15 am-12:15 pm

**Exhibitor Tech Talk:** Advanced Micro Devices, Inc.: FirePro Technologies for Visual Computing

### 11:30 am-12:30 pm

**BOF:** Texture Painters BOF

### 11:30 am-1 pm

**BOF:** Augmented and Mixed Reality

### 12:15-1:15 pm

#### Poster Sessions

### 12:15-1:45 pm

#### Intel Exhibitor Sessions:

- New Visual Services on Distributed Displays and the Internet
- The Intel Science and Technology Center (ISTC) for Visual Computing

### 12:45-1:45 pm

**Exhibitor Tech Talk:** Unity Technologies

### 1-1:55 pm

**BOF:** KITE – Khronos Initiatives for Training and Education

### 1-2 pm

**BOF:** Heterogeneous Systems Architecture Foundation

### 1-2:30 pm

**ACM SIGGRAPH Theater Event:** CG in USA + Canada

**BOF:** JogAmp: 2D/3D & Multimedia Across Devices

**BOF:** Leonardo Community Meeting

### 1:30-2:30 pm

**NVIDIA Nsight Visual Studio Edition Labs Exhibitor Session:** Learn How to Profile OpenGL 4.2 With NVIDIA® Nsight™ Visual Studio Edition 3.1

### 2-3 pm

**BOF:** COLLADA/gITF

**Intel Exhibitor Session:** Advantages of Multi-core CPUs vs GPUs for Volumetric Ray Casting

## Wednesday, 24 July

### 2-3:30 pm

**BOF:** Computer Graphics for Simulation

**Production Session:** OLM Digital Presents the Anime Spirit: From Pokémon, Pac-Man to Live Action Films

#### Shotgun Pipeline User Group (Tank) Session

**SIGGRAPH Mobile Talks:**  
Mobile Case Studies

#### Studio Talks:

- 2.5D Graphics in Mobile Apps Using "Corona SDK"
- Alternative Digital Fine Art Printmaking
- Collaborative Rephotography

**Studio Workshop:** Drawing Machines

#### Technical Papers:

Deformation & Distortion

**Technical Papers:** Materials

#### Technical Papers:

Surface Reconstruction

### 2-5:15 pm

**Course:** Efficient Real-Time Shadows

**Course:** OpenVDB: An Open-Source Data Structure and Toolkit for High-Resolution Volumes

### 2:15-3:15 pm

**Exhibitor Tech Talk:** Imagination Technologies -- The Architecture of High-End Mobile Graphics Hardware

### 2:30-4 pm

**ACM SIGGRAPH Theater Event:** CG in Europe, Just Bring It! Europe Still Standing Strong?

### 2:30-4:30 pm

**BOF:** Christians in Computer Animation

### 3-3:55 pm

**NVIDIA Nsight Visual Studio Edition Labs Exhibitor Session:** Learn How to Debug OpenGL 4.2 with NVIDIA® Nsight™ Visual Studio Edition 3.1

### 3-4 pm

**BOF:** OpenCL

### 3-5 pm

**BOF:** Motion Graphics

**BOF:** Managing Remote Creative Projects—Online Collaboration

### 3:15-4:15 pm

**Intel Exhibitor Session:** High Performance Computing, Analysis and Visualization With Xeon and Xeon Phi on TACC Stampede

### 3:45-4:30 pm

**Studio Talk:** Air Painting with Corel Painter Freestyle and the Leap Motion Controller: A Revolutionary New Way to Paint!

### 3:45-4:45 pm

**Exhibitor Tech Talk:** Web3D Consortium: X3D – Your Solution for Real-Time, Interactive, Mobile 3D Graphic

### 3:45-5:15 pm

**Production Session:** Blue Sky Studios Presents: The Fantastical World of Epic

**SIGGRAPH Mobile Talks:** New Mobile Techniques

**Studio Workshop:** Preparing Files for 3D Printing

### 3:45-5:35 pm

**Technical Papers:** Artistic Rendering & Stylization

**Technical Papers:** Sounds & Solids

**Technical Papers:** Structures, Faces & Building

### 4-4:55 pm

**BOF:** OpenCL

### 4-5 pm

**ACM SIGGRAPH Theater Event:** CG in Africa + Middle East

### 4:30-5:15 pm

**Emerging Technologies Talks**

### 4:30-5:30 pm

**Intel Exhibitor Session:** From Virtual to Reality – How High Fidelity Visualization Based on Autodesk Rapid RT Technology is Accelerating Product Design Decisions

**NVIDIA Nsight Visual Studio Edition Labs Exhibitor Session:** Learn How to Profile OpenGL 4.2 with NVIDIA® Nsight™ Visual Studio Edition 3.1

### 5:15-6 pm

**ACM SIGGRAPH Theater Event:** CG in Africa +Middle East Reception

### 5:30-7:30 pm

**BOF:** Clemson Digital Production Arts Reunion

### 6-6:55 pm

**BOF:** WebGL

### 6-8 pm

**Computer Animation Festival:** Electronic Theater

#### Dailies

### 6:30-9 pm

**BOF:** Purdue University Birds of a Feather

### 7-7:55 pm

**BOF:** OpenGL

### 8-8:55 pm

**BOF:** OpenGL ES

### 8 pm-12:30 am

**SIGGRAPH After Dark**



## Thursday, 25 July

### 9-10 am

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**Intel Exhibitor Session:** New Flexible High Efficient Intel Iris/Iris Pro Quick Sync Video

### 9-10:30 am

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**Course:** A Practical Guide to Art/Science Collaborations

**Course:** Dynamic 2D/3D Registration for the Kinect

**Studio Talks:** Tower of the Dragon

**Talks:** Face the Facts

**Technical Papers:** Sampling

**Technical Papers:** Skinning & Deformation

### 9 am-12:15 pm

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**Course:** Physically Based Shading in Theory and Practice

### 9 am-5:15 pm

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**Geek Bar**

### 9:30 am-3:30 pm

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**Exhibition**

**International Center**

**Job Fair**

### 10:45-11:45 am

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**Intel Exhibitor Session:** Bring Out the Best in Pixels: Video Pipe in Bake a Pi

### 10:45 -11:45 am

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**Production Session:** Rhythm & Hues Studios Presents: How to Bake a Pi

**SIGGRAPH Mobile Workshop:** Mobile Visual Computing in C++ on Android

**Talks:** Complete Fabrication

**Talks:** Rendering Grab Bag

**Technical Papers:** Display Hardware

**Technical Papers:** Precomputed Rendering

**Technical Papers:** Surface Modeling

### 10:45 am-12:30 pm

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**Computer Animation Festival:** Electronic Theater

### 11 am-Noon

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**ACM SIGGRAPH Theater Event:** Join the International Resources Committee in 2014!

### 12:15-1:45 pm

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**Intel Exhibitor Session:** ISPC: A SPMD Compiler for Xeon Phi & CP – Tutorial

### 12:30-1 pm

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**BOF:** FINE - Freeview Immersive Networked Experience

### 12:45-2:15 pm

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**Production Session:** Scare School 101: The Making of Disney•Pixar's "Monsters University"

### 2-3:30 pm

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**ACM Student Research Competition Final Presentation**

**Panel:** The State of the Visual Effects Industry

**Technical Papers:** 3D Printing

**Technical Papers:** Hardware Rendering

**Technical Papers:** Laplacians, Light Field & Layouts

### 2-5:15 pm

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**Course:** Rendering Massive Virtual Worlds

### 3:45-5:15 pm

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**Talks:** A Corps of Cores, of Course!

**Talks:** Movie Sampler

**Technical Papers:** Appearance Fabrication

### 3:45-5:35 pm

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**Talks:** It's Raining Monsters

# Art Gallery, XYZN: Scale

**F S E+ Ex** #siggraph #artgallery

Aesthetics of scale in digital representation: in-out-up-down, back and forth, + and -, past and present.

## Reception: Leonardo, Art Papers, and Art Gallery

**F S E+ Ex** #siggraph #artgallery

Tuesday, 23 July, 2-3:30 pm

Mix and mingle with the artists, designers, and authors whose work was selected for SIGGRAPH 2013. Your hosts: the SIGGRAPH 2013 Art Gallery and Art Papers committees.

*Sponsored by Leonardo/ISAST and The MIT Press*



### Cloud Pink

Yunsil Heo  
Hyunwoo Bang  
Seoul National University

### Digiti Sonus

Yoon Chung Han  
University of California, Santa Barbara

Byeong-jun Han  
Korea University

### Drawing Machine

Robert Twomey  
University of Washington

### Expressive Maps

Santiago Lombeyda  
California Institute of Technology

### Four Mountains

Mark Stock  
Independent Artist

### Hybrid Basketry - Interweaving Digital Practice Within Contemporary Craft

Amit Zoran  
MIT Media Lab

### Rhumb Lines

Barbara Keating  
E CLIPS

James McAleer

Sam Keating

### Shared Skies

Kim Abeles  
Abeles Studio

### Spatial Hyperlink

Wan-Ying Lai  
Ming-Chang Wu  
Shen-Guan Shih  
National Taiwan University of Science and Technology

### SwarmVision

George Legrady  
Marco Pinter  
Danny Bazo  
University of California, Santa Barbara

### The Long View

Daniel Lunk  
Lee Cherry  
Jim Martin  
Dwayne Martin  
Pat Fitzgerald  
North Carolina State University

### This Exquisite Forest

Chris Milk  
Aaron Koblin  
Google, Inc.

### Traces: Plankton on the Move

Cynthia Rubin  
C B Rubin Studio

Susanne Menden-Deuer  
Elizabeth Harvey  
University of Rhode Island

Jerry Fishenden  
Independent Composer/Developer

### Visualizing Federal Spending

Rebecca Ruige Xu  
Missouri State University

Sean Hongsheng Zhai  
Red Dot Blue Square LLC

Water Columns  
Mark Weston  
University of South Florida

### Water Columns

Mark Weston  
University of South Florida



# Art Papers

F #siggraph #artpapers

In collaboration with Leonardo/ISAST, SIGGRAPH 2013 features not only artists and artwork, but also the processes and theoretical frameworks for making art and contextualizing its place in society.

Explore the changing roles of artists and the methods of art-making in an increasingly networked and computationally mediated world.

Present excellent ideas in accessible ways.

Inform artistic disciplines, set standards, and stimulate future trends.

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 the Art Gallery. Publication of this special issue coincides with SIGGRAPH 2013.

## Early Pioneers of Electronic Art

Tuesday, 23 July, 9-10:30 am

Session Chair:

Tad Hirsch, University of Washington

### The Electric “Now Indigo Blue”: Synthetic Color and Video Synthesis Circa 1969

How the Abe Video Synthesizer, built at WGBH in 1969, created the foundation for colorism in the history of electronic computer art.

Carolyn Kane

Hunter College, City University of New York

### The Emergence and Growth of Evolutionary Art 1980-1993

What was the aesthetic and scientific background of the first evolutionary artworks of the 1980s, in particular those of British artist William Latham?

Nicholas Lambert

Birkbeck College

William Latham

Frederic Fol Leymarie

Goldsmiths College, University Of London

### Early History of French Computer Graphics

This analysis of the emergence of computer graphics in France (1970-1990) explores pioneering examples of computer-mediated creativity.

Cécile Welker

Université Sorbonne Nouvelle -

Paris and École Nationale supérieure des Arts

Décoratifs de Paris

## Hybrid Media, Contemporary Practice

Tuesday, 23 July, 10:45 am-12:15 pm

Session Chair:

Teri Rueb, University at Buffalo

### Hybrid Basketry: Interweaving Digital Practice Within Contemporary Craft

In Hybrid Basketry, 3D printed structures are shaped to allow growth and development of hand-woven patterns. While the 3D printed plastic contributes the aesthetics of the digital curvatures and manifolds, the hand-woven reed, jute, and canvas fibers infuse the baskets with a unique organic appeal.

Amit Zoran

MIT Media Lab

### KIMA - A Holographic Telepresence Environment Based on Cymatic Principles

In KIMA, presence is conveyed through sound as the essence of communication. A holographic screen display allows for real-time interaction with cymatic patterns and modulation of the shared soundscape.

Oliver Gingrich

Alain Renaud

Bournemouth University

Eugenia Emets

Artist

## Null By Morse: Historical Optical Communication to Smartphones

An installation artwork that critiques some current concepts of innovation by combining vintage communication technology with smartphones.

Tom Schofield

Newcastle University

## Ut Pictura Poesis: Drawing into Space

The implications of a conceptual drawing project in which lines of coherent light are inscribed on the geometry of space as a support. The drawings interrogate understood advantages of diagrams by placing their simple denotative visual structures in a context that has no metaphorical equivalent in human experience.

David Griffin

OCAD University

# Computer Animation Festival

FS #siggraph #caf



Image Credit: "Little Talks" - Of Monsters and Men © 2012 Mihai Wilson & Marcella Moser, WeWereMonkeys

In 2013, SIGGRAPH's Computer Animation Festival celebrates its 40th year as the world's leading festival of the most innovative and accomplished computer graphics. The Computer Animation Festival is recognized by the Academy of Motion Picture Arts and Sciences as a qualifying festival. Since 1999, several works originally presented in the Computer Animation Festival have been nominated for or have received a "Best Animated Short" Academy Award.

## The SIGGRAPH 2013 Computer Animation Festival presents:

### Electronic Theater

Showing Monday through Thursday, the Electronic Theater showcases an eclectic mix of the finest work in computer graphics from the last 12 months.

### Daytime Selects

The most creative, innovative, and aesthetic computer graphics presented by submission category, including: Animated Shorts, Visual Effects, Real-Time Graphics, Music Videos, Commercials, and Visualization.

### Production Sessions

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

### Real-Time Live!

Live presentations reviewing the year's most innovative real-time graphics, celebrating interactive rendering techniques across all fields and hardware platforms.

# Courses

F #siggraph #courses

Learn from the experts in the field and gain inside knowledge that can be critical to career advancement. Courses are structured sessions that often include elements of interactive demonstration, performance, or other imaginative approaches to teaching.

Full Conference Access registration allows attendees access to all SIGGRAPH 2013 Courses.

Seating is on a first-come, first-served basis. Please be sure to arrive early for the Course you wish to attend.

## SIGGRAPH University [NEW]

Four SIGGRAPH 2013 Courses will be recorded and archived for the new online SIGGRAPH University, a year-round resource for learning the basic principles of computer graphics and interactive techniques:

### Mobile Game Creation for Everyone

Sunday, 21 July, 9 am-12:15 pm  
Introductory

### Project Anarchy from Havok

Joel Van Eenwyk,  
Havok Field Application Engineer

### Unity Game Engine from Unity 3D

### Corona Game Engine from Corona Labs

Walter Luh, Founder/  
CEO of Corona Labs

## Introduction to Computer Graphics

Sunday, 21 July, 9 am-12:15 pm  
Introductory

Andrew Glassner  
The Imaginary Institute  
Joe Robins

## The Digital Production Pipeline

Sunday, 21 July, 2-5:15 pm  
Introductory

Darin Grant  
Method Studios

Michael Stein  
MPC

Steve Lavietes  
Sony Pictures Imageworks

Jonathan Gibbs  
PDI / Dreamworks

Barbara Ford Grant  
How to Make Good Pictures, LLC

## Introduction to Modern OpenGL

Sunday, 21 July, 2-5:15 pm  
Introductory

Edward Angel  
University of New Mexico

Dave Shreiner  
ARM

## Sunday, 21 July

### Recent Advances in Light-Transport Simulation: Theory & Practice

Sunday, 21 July, 2-5:15 pm  
Intermediate

A survey of recent advances in robust light-transport simulation methods. Based on a clear exposition of the path-integral framework, the course discusses a wide range of algorithms and the issues that arise when these advanced methods are applied in practice.

Jaroslav Krivanek  
Charles University in Prague

Iliyan Georgiev  
Universität des Saarlandes

Anton S. Kaplanyan  
Karlsruher Institut für Technologie

Juan Cañada  
Next Limit Technologies

## Turbulent Fluids

Sunday, 21 July, 2-5:15 pm  
Advanced

For developers interested in implementing fluid solvers, this course provides the knowledge to apply powerful turbulence models. For artists who are curious about the technology, it provides a better understanding of when and how to make use of the different turbulence methods.

Nils Thuerey  
ScanlineVFX GmbH

Theodore Kim  
University of California, Santa Barbara

Tobias Pfaff  
University of California, Berkeley

## Monday, 22 July

### Numerical Methods for Linear Complementarity Problems in Physics-Based Animation

Monday, 22 July, 2-3:30 pm  
Intermediate

Linear Complementarity Problems (LCPs) are popular mathematical models for contact forces and fluid-solid wall-boundary conditions, but they are notoriously hard to solve. The practical numerical methods presented in this course may help researchers explore LCPs as models for other problems or improve current applications.

Kenny Erleben  
Københavns Universitet

## Story: It's Not Just for Writers ... Anymore

Monday, 22 July, 2-3:30 pm  
Introductory

This visual presentation explains the elements of classic story structure normally found in complete screenwriting courses in a condensed format for programmers, technical artists, designers, and artists who make movies, animation, VFX, and games come to life.

Craig Caldwell  
University of Utah

## Ray Tracing is the Future and Ever Will Be

Monday, 22 July, 2-5:15 pm  
Advanced

New technologies for parallel ray tracing and upcoming hardware have the potential to finally democratize ray tracing as a disruptive technology. While ray tracing usually is associated with photorealistic image synthesis, it could also overcome rasterization in mobile hardware.

Alexander Keller  
Tero Karras  
NVIDIA Research

Ingo Wald  
Intel Corporation

Timo Aila  
Samuli Laine  
NVIDIA Research

Jacco Bikker  
NHTV University of Applied Sciences Breda

Christiaan Gribble  
SURVICE Engineering Company

Won-Jong Lee  
Samsung

James McCombe  
Imagination Technologies Limited

## Geometry Processing With Discrete Exterior Calculus

Monday, 22 July, 2-5:15 pm  
Intermediate

How fundamental geometry processing tools (smoothing, parameterization, editing, geodesics, etc.) can be implemented quickly, robustly, and efficiently within a single common framework: Discrete Exterior Calculus (DEC). The course also reviews recent

extensions of DEC that improve efficiency, accuracy, and versatility.

Fernando de Goes  
Keenan Crane  
Mathieu Desbrun  
Peter Schröder  
California Institute of Technology

## Tuesday, 23 July

### Lights! Speed! Action! Fundamentals of Physical Computing for Programmers

Tuesday, 23 July, 9-10:30 am  
Introductory

This course covers the use of basic electronics and hardware interfacing in simple physical-computing components, including LEDs, servos, motors, sensors, and switches.

Erik Brunvand  
University of Utah

### Advances in Real-Time Rendering in Games Part 1

Tuesday, 23 July, 9 am-12:15 pm  
Advanced

This course summarizes the best graphics practices and research from the game-development community and provides practical and production-proven algorithms.

Natasha Tatarchuk  
Bungie Studios

### Advances in New Interfaces for Musical Expression

Tuesday, 23 July, 9 am-12:15 pm  
Introductory

In this introduction to NIME, the conference on New Interfaces for Musical Expression, attendees learn key aspects of the theory and practice of musical interface design. Case studies include augmented and sensor-based instruments, and camera-based, mobile, and networked music making.

Sidney Fels  
The University of British Columbia

Michael Lyons  
Ritsumeikan University

## Combining GPU Data-Parallel Computing With OpenGL

Tuesday, 23 July, 10:45 am-12:15 pm  
Introductory

Data-parallel computing is a paradigm in which the same analysis is applied to different data elements. Many applications in visual computing work this way. This course explains data-parallel solutions and shows how each is used to solve visual computing problems and interface with the rendering engine.

Mike Bailey  
Oregon State University

## Advances in Real-Time Rendering in Games Part 2

Tuesday, 23 July, 2-5:15 pm  
Advanced

Natasha Tatarchuk  
Bungie Studios

## OpenSubdiv From Research to Industry Adoption

Tuesday, 23 July, 2- 5:15 pm  
Intermediate

This course describes recent research on open-source technology for GPU-accelerated subdivision surfaces and how it is applied in animated film production and creation of real-time content for mobile devices.

Charles Loop  
Microsoft Research

Dirk Van Gelder  
Pixar Animation Studios

Nathan Litke  
DigitalFish, Inc.

Rachid El Guerrab  
Baback Elmieh  
Motorola Mobility LLC

Manuel Kraemer  
Pixar Animation Studios



## Wednesday, 24 July

### Multithreading and VFX

Wednesday, 24 July, 9 am-12:15 pm  
Intermediate

Practical application of multithreading in rigging, animation, dynamics, simulation, and rendering for film and games, as well as a threading implementation for a full-scale commercial application that covers all of these areas.

James Reinders  
Intel Corporation

George ElKoura  
Pixar Animation Studios

Erwin Coumans  
Advanced Micro Devices, Inc.

Ron Henderson  
Martin Watt  
DreamWorks Animation

Edward Lam  
Side Effects Software

### OpenVDB: An Open-Source Data Structure and Toolkit for High-Resolution Volumes

Wednesday, 24 July, 2-5:15 pm  
Intermediate

This course introduces both novice end-users and expert developers to the fundamentals of the OpenVDB data structure and accompanying toolset, and describes how OpenVDB is currently applied in movie production and commercial third-party software.

Ken Museth  
DreamWorks Animation

Jeff Lait  
Side Effects Software Inc.

John Johansson  
Digital Domain 3.0, Inc.

Jeff Budsberg  
Ron Henderson  
Mihai Alden  
Peter Cucka  
David Hill  
Andrew Pearce  
DreamWorks Animation

### Efficient Real-Time Shadows

Wednesday, 24 July, 2-5:15 pm  
Intermediate

This course presents modern techniques for computing shadows. The focus is on real-time solutions, but recent promising interactive and offline approaches are covered as well. The course covers basic theory and many applied insights from the movie and game industries, which are valuable for practitioners in academia and industry.

Elmar Eisemann  
Delft University of Technology

Ulf Assarsson  
Chalmers University Of Technology

Michael Schwarz  
Weta Digital

Nikolas Kasyan  
Crytek

Michael Wimmer  
Technische Universität Wien

## Thursday, 25 July

### A Practical Guide to Art/ Science Collaborations

Thursday, 25 July, 9-10:30 am  
Introductory

A practical guide to the role of Art/ Science collaborations, including examples of projects, their motivations, and their outcomes. The course analyzes important elements of successful cases, based on research and personal experiences from professionals in relevant fields.

Dan Sandin  
Daria Tsoupikova  
University of Illinois at Chicago

Helen-Nicole Kostis

### Dynamic 2D/3D Registration for the Kinect

Thursday, 25 July, 9-10:30 am  
Introductory

Recent technical advances in RGB-D sensors have opened new possibilities for real-time, portable, accurate, and affordable systems for motion capture. This course summarizes the ingredients required to build facial motion capture systems using RGB-D devices such as the Microsoft Kinect.

Sofien Bouaziz  
Mark Pauly  
École Polytechnique Fédérale de Lausanne

### Physically Based Shading in Theory and Practice

Thursday, 25 July, 9 am-12:15 pm  
Intermediate

Physically based shading is transforming the approach to production rendering. With physically based models, artists and technicians can easily create realistic materials that behave well under a variety of lighting conditions. Building upon previous incarnations of the course, the instructors present further research on the subject from film and game production.

Stephen McAuley  
Stephen Hill  
Ubisoft Entertainment

Adam Martinez  
Sony Pictures Imageworks

Ryusuke Villemin  
Pixar Animation Studios

Matt Pettineo  
Ready at Dawn Studios, LLC

Dimitar Lazarov  
Treyarch

David Neubelt  
Ready at Dawn Studios, LLC

Brian Karis  
Epic Games, Inc.

Christophe Hery  
Pixar Animation Studios

Naty Hoffman  
2K

Håkan Zap Andersson  
Autodesk Inc.

### Rendering Massive Virtual Worlds

Thursday, 25 July, 2-5:15 pm  
Intermediate

This course explores issues associated with rendering massive virtual worlds in real time. Topics include: procedural content generation, data compression and transmission, out-of-core rendering, and virtual texture applications.

Graham Sellers  
Juraj Obert  
Advanced Micro Devices, Inc.

Patrick Cozzi  
University of Pennsylvania

Kevin Ring  
Analytical Graphics, Inc.

Emil Persson  
Joel de Vahl  
Avalanche Studios

J.M.P. van Waveren  
Id Software, LLC

# Emerging Technologies

FS E+ Ex #siggraph #etech

## AGATHE: A Tool for Personalized Rehabilitation of Cognitive Functions

Evelyne Klinger  
Arts et Métiers ParisTech

## AIREAL: Tactile Gaming Experiences in Free Air

Rajinder Sodhi  
University of Illinois

Matthew Glisson  
Ivan Poupyrev  
Alex Rothera  
Disney Research Pittsburgh

Joanna Dauner  
Berlin University of Arts

## An Autostereoscopic Projector Array Optimized for 3D Facial Display

Koki Nagano  
University of Southern California

Andrew Jones  
USC Institute for Creative Technologies

Jing Liu  
University of California at Santa Cruz

Jay Busch  
Paul Debevec  
Mark Bolas  
Xueming Yu  
USC Institute for Creative Technologies

## AquaTop Display: A True “Immersive” Water Display System

Yasushi Matoba  
Yoichi Takahashi  
Taro Tokui  
Shin Phuong  
Shingo Yamano  
Hideki Koike  
The University of Electro-Communications

## EMY: Full-Body Exoskeleton

Yann Perrot  
Alexandre Verney  
Boris Moriniere  
Philippe Garrec  
CEA LIST

## Foveated 3D Display

Mark Finch  
John Snyder  
Brian Guenter  
Microsoft Research

## HapSeat: A Novel Approach to Simulate Motion in Audio/Visual Experiences

Fabien Danieau  
Technicolor Research & Innovation, INRIA

Julien Fleureau  
Philippe Guillotel  
Nicolas Mollet  
Technicolor Research & Innovation

Marc Christie  
IRISA, Université de Rennes 1

Anatole Lécuyer  
INRIA

## IllumiRoom: Peripheral Projected Illusions for Interactive Experiences

Brett Jones  
University of Illinois, Urbana-Champaign

Hrvoje Benko  
Eyal Ofek  
Andrew Wilson  
Microsoft Research

## Incendiary Reflection: Evoking Emotion Through Deformed Facial Feedback

Shigeo Yoshida  
Sho Sakurai  
Takui Narumi  
Tomohiro Tanikawa  
Michitaka Hirose  
The University of Tokyo

## Light-in-Flight: Transient Imaging Using Photonic Mixer Devices

Felix Heide  
Matthias Hullin  
James Gregson  
Wolfgang Heidrich  
The University of British Columbia

## MicroTips: Augmenting Information for Microscopic Inspection

Jungman Chung  
Kyungwon Yun  
Hyunwoo Bang  
Seoul National University

## Near-Eye Light-Field Displays

Douglas Lanman  
David Luebke  
NVIDIA Research

## PAPILLON: Expressive Eyes for Interactive Characters

Eric Brockmeyer  
Ivan Poupyrev  
Moshe Mahler  
Disney Research Pittsburgh

Joanna Dauner  
Berlin University of Arts

James Krahe  
Yuri Suzuki  
Alex Rothera  
Disney Research Pittsburgh

## Skyfarer: A Mixed-Reality Shoulder Exercise Game

Marientina Gotsis  
Vangelis Lympouridis  
David Turpin  
Fotos Frangoudes  
University of Southern California

Somboon Maneeakobkunwong  
Rancho Los Amigos National  
Rehabilitation Center

Maryalice Jordan-Marsh  
University of Southern California

## TransWall

Heejeong Heo  
Seungki Kim  
Hyungkun Park  
Jeeyong Chung  
Geehyuk Lee  
Woohun Lee  
Korea Advanced Institute of  
Science and Technology

## VibroTracker: A Vibrotactile Sensor for Tracking Objects

Leo Miyashita  
Yuko Zou  
Masatoshi Ishikawa  
The University of Tokyo

## WAYLA: Novel Gaming Experience Through Unique Gaze Interaction

Wein Chang  
Po-an Shen  
Kushal Ponnampalnam  
Carnegie Mellon University, Madeira Interactive  
Technologies Institute

Helena Barbosa  
Madeira Interactive Technology Institute

Monchu Chen  
Carnegie Mellon University, Madeira Interactive  
Technologies Institute

Sergi Bermúdez  
Madeira Interactive Technology Institute

# Production Sessions

**F S** #siggraph #caf

Learn how world-class creative and production talent created the computer animation and visual effects in some of the Computer Animation Festival’s most provocative works.



Image credit: © 2013 Warner Bros. Courtesy of Industrial Light & Magic

## The Making of Pixar’s “The Blue Umbrella”

Sunday, 21 July, 10:45 am-12:15 pm

A screening of Pixar’s “The Blue Umbrella” will be followed by a “Making-of” presentation with the director Saschka Unseld. He will retrace his journey from discovery of the idea all the way through the Pixar story process and onto the big screen. Get a behind-the-scenes look at the artistry and technology that went into every frame and then re-watch “The Blue Umbrella” with new eyes.

### Speaker

Saschka Unseld  
Director of “The Blue Umbrella”

## The Open Source Swimming Hole; C’mon In The Water’s Fine^h^h^h Murky

Sunday, 21 July, 2-3:30 pm

Open Source Software (OSS) has become an integral piece of the ever-expanding Animation and Visual Effects industry. With OSS firmly implemented into many studios’ production and development pipelines, what has been gained? Professionals within these fields will discuss the challenges and benefits of using OSS, reflecting on how the industry has changed as a result. They will look back on their own innovations that have become widespread within the community, in addition to revealing what future developments are in the works.

The panelists represent a community of developers and enthusiasts who encourage open collaboration, as they share their thoughts and experiences with the world.

### Topics Include:

What are some legality challenges that arise when implementing OSS into a company’s pipeline?

The benefits and disadvantages between closed source and open source software

The future of OSS in various studio settings

Updates and new developments from the panelists

### Panelists

Rob Bredow  
Sony Pictures Imageworks

Andrew Pearce  
DreamWorks Animation

Bill Polson  
Pixar Animation Studios

Ton Roosendaal  
Blender Foundation

Kevin Gambrel  
Disney Animation Studios



## Monday, 22 July

### Storytelling Through Stereography Industry Panel

Monday, 22 July, 2-3:30 pm

This panel brings together the Stereoscopic supervisors from some of the leading studios in the computer animation industry to discuss the artistry of the Stereo process and to show how storytelling is enhanced through the use of stereo.

From the beginning, stereography has been seen as either a gimmick, a trend, or a technical process done in post production. But now, stereography has moved into the filmmakers tool belt – filmmakers have begun using stereography to raise and lower the emotional temperature of a film in the same way as lighting, color, composition, and the choice of lens.

In this panel we will discuss the varied approaches that each studio has used. We will discuss our individual philosophies and our interactions with the directors in the execution of each of our films. We will present specific examples from recent movies.

#### Panelists

Dan Abramovich, Stereo Supervisor  
Blue Sky Studios

Robert Neuman, Stereo Supervisor  
Walt Disney Animation Studios

Joshua Hollander, Director of 3D Production  
Pixar Animation Studios

Rob Engle, Freelance Stereo Supervisor

Gil Zimmerman, Head of Layout  
DreamWorks Animation

## Tuesday, 23 July

### 'Cancel the Apocalypse' – Industrial Light & Magic Presents: The Visual Effects of "Pacific Rim"

Tuesday, 23 July, 9-10:30 am

From aliens that threaten Earth's very existence to massive human-piloted robots, this panel discusses the wide-ranging scope of Industrial Light & Magic's effects work on Guillermo del Toro's science fiction epic "Pacific Rim". The artists cover creative and technical challenges overcome in the areas of asset development, character animation, lighting, digital environments, advanced fluid simulation work, and more.

#### Panelists

John Knoll, Visual Effects Supervisor  
Industrial Light & Magic

Hal Hickel, Animation Supervisor  
Industrial Light & Magic

### Sony Pictures Imageworks Presents: Take a Journey Down the Yellow Brick Road

Tuesday, 23 July, 10:45 am-12:15 pm

Sony Pictures Imageworks, under the direction of VFX supervisor Scott Stokdyk, created the majority of the visual effects for Disney's "Oz the Great and Powerful".

As a cinematic prequel to L. Frank Baum's first book, The Wonderful Wizard of Oz, the film explores the backstory of the wizard character. The goal of the film was to create a beautiful stylized environment for the land of Oz and bring to life computer graphics characters that accompany Oz on his journey, including Finley the monkey, the porcelain China Girl, and various creatures that surprise them along the way.

### Walt Disney Animation Studios Presents "Frozen": The Craft of Character and Cold

Tuesday, 23 July, 10:45 am-12:15 pm

The team from Walt Disney Animation Studios gives a first-time, behind-the-scenes look at their November 2013 film, "Frozen". Attendees learn how the team of artists and technologists created the film's characters through visual development, rigging, animation, and advanced rendering tools, and discover how the elements of cold - ice, snow and frost - were brought to life through new simulation techniques.

### Warner Brothers Presents the VFX for "Man of Steel"

Tuesday, 23 July, 2-3:30 pm

The Visual Effects teams from MPC, Weta Digital, Double Negative, Scanline and LookFX will each provide a unique insight into their work on Man of Steel. This session is designed to highlight signature moments from the film and show how creative contributions came from around the globe to help deliver one of the year's most exciting films. The final Q&A with all five VFX studios is not to be missed.

#### Panelists

Dan Lemmon, Visual Effects Supervisor  
Weta Digital

Guillaume Rocheron, Visual Effects Supervisor  
MPC

Ged Wright, Visual Effects Supervisor  
Double Negative

Stephan Trojansky, President/Sr. VFX Supervisor  
Scanline VFX

Max Ivins, Visual Effects Supervisor  
LOOK Effects

## Tuesday, 23 July

### Industrial Light & Magic Presents: The Visual Effects of “Star Trek Into Darkness”

Tuesday, 23 July, 3:45-5:15 pm

Visual Effects Supervisor Roger Guyett and the team from ILM discuss the visual effects challenges overcome for the intergalactic manhunt portrayed in J.J. Abrams’ “Star Trek Into Darkness”. From the on-set approach to the effects work to constructing a Starfleet and building and destroying future San Francisco and London, the panelists will cover the creative solutions developed for the film.

#### Panelists

Roger Guyett, Visual Effects Supervisor/  
Second Unit Director

Paul Kavanagh, Animation Supervisor

### DreamWorks Animation Presents: A Journey to the Croodaceous

Wednesday, 23 July, 9-10:30 am

A behind-the-scenes look at DreamWorks Animation’s hit film “The Croods” directed by Chris Sanders and Kirk DeMicco. The session explores the artistic and technical challenges of bringing uniquely designed, appealing, gritty and at times dangerous prehistoric characters, creatures and environments to life, all with the ultimate goal of delivering an insightful emotional family journey set against a pending natural disaster. The artistic leadership of the film will talk about the aesthetic decisions made along with the technical and workflow innovations necessary to accomplish the film.

#### Panelists

Chris Sanders, Director

Matt Baer, Head of Effects

Mark Edwards, Head of Lighting

Damon Crowe, Character Effects Supervisor

## Wednesday, 24 July

### The Visual Effects of Marvel’s “Iron Man 3”

Wednesday, 24 July, 9-10:30 am

In Marvel’s “Iron Man 3,” from Director Shane Black, brash-but-brilliant industrialist Tony Stark/Iron Man goes on a harrowing quest to find the enemy who has destroyed his personal world. Marvel Studios, Digital Domain, Scanline VFX, and Weta Digital take SIGGRAPH audiences through their VFX journey as they created some of the movie’s most heart-stopping moments – the house attack sequence, the dramatic ‘barrel of monkeys’ sky rescue and the climactic final battle.

#### Panelists

Victoria Alonso, EVP of Visual Effects and Post Production, Marvel Studios/Executive Producer Iron Man 3

Christopher Townsend, VFX Supervisor, ‘Iron Man 3’

Guy Williams, VFX Supervisor, Weta Digital

Geoff Baumann, CG Supervisor, Digital Domain

Bryan Grill, VFX Supervisor, Scanline VFX

### LAIKA Presents: The Seamless Fusion of Stop-Motion and Visual Effects Technologies in LAIKA’s Feature Films

Wednesday, 24 July, 10:45 am-12:15 pm

LAIKA, the Oregon-based animation studio behind the remarkable features ParaNorman (2012), Coraline (2009) and The Boxtrolls (in theaters 26 September 2014) has inspired audiences – and industry professionals – with an unprecedented visual artistry. Animators breathe life into meticulously hand-crafted puppets while visual effects artists seamlessly enhance the performance with cutting-edge technologies. This unparalleled fusion of stop-motion and computer graphics has garnered the studio two Oscar nominations and worldwide acclaim. In this session, Georgina Hayns and Brian McLean address the key interdependent and collaborative relationships between these uniquely different but critically important departments.

The presentation will address the following:

The use of Maya and Zbrush to enhance practical sculptors;

3D Printed material and subsurface scattering to allow puppet builders to break free of previous design limitations;

The advancements in color 3D printing and the enabling of puppet builders to evolve beyond prior design limitations;

The use of in-house developed silicones which enable character performance previously unseen in stop-motion animation;

The utilization of 3D Printers to pre-vis puppet construction issues and control how practical materials perform;

The use of laser cutting fabrics to enhance the design and functionality of the puppets costumes.

Production puppets will be displayed during the presentation.

#### Panelists

Georgina Hayns  
Creative Supervisor, Puppet Fabrication

Brian McLean  
Director of Rapid Prototype, LAIKA, Inc.

### OLM Digital Presents the Anime Spirit: From Pokémon, Pac-Man to Live Action Films

Wednesday, 24 July, 2-3:30 pm

Anime has gained great popularity in the world for its unique expressiveness in contrast to western animation. OLM Digital, a digital production company in Tokyo, keeps trying new anime styles, making the Pokémon movies over 15 years. This session presents the company’s various works in 2D/3D hybrid anime, 3DCG, S3D anime and live-action films. It focuses on how the anime spirit of OLM Digital is applied to various visual forms. The brand-new Pac-Man animated TV series, a collaborative work with Sprite Animation Studios, is also one of the highlights of this session.

#### Panelists

Yasuhiro Mikami, CGI Director  
Masashi Kobayashi, CGI Producer  
OLM Digital, Inc.

Moto Sakakibara, CEO and Creative Director  
Sprite Animation Studios

Ken Anjyo, R&D supervisor  
OLM Digital, Inc.

## Wednesday, 24 July

### Blue Sky Studios Presents: The Fantastical World of Epic

Wednesday, 24 July, 3:45-5:15 pm

At Blue Sky Studios we have always taken inspiration from nature, and that is certainly true of our latest movie, Epic. For example, the armor of the Leafmen was inspired by the multi-segmented exoskeleton of crickets. Their costumes use iris petals instead of muslin fabric, and thistle down instead of tulle. Looking at real-world physics, Leafmen could jump more than twice their height, and their sense of time would be sped up by the change of scale, which was taken into consideration during animation. Along with that, the selective use of a wider-than-usual lens package helped us tell a story about a seemingly distant and fantastical world that feels right at your fingertips. We plan to show this process, along with portions of Epic, which demonstrate these points. We will show some of the reference material that designers and animators used as inspiration and how our cinematography was carefully mapped out in order to better serve our story-telling endeavor.

#### Panelists

Mike Knapp, Art Director

Galen Chu, Supervising Animator

Renato Falcão, Cinematographer

### Rhythm & Hues Studios Presents: How to Bake a Pi

Thursday, 25 July, 10:45 am-12:15 pm

Get a first-hand look at the story behind the stunning, Oscar-winning visuals of “Life of Pi” as Rhythm & Hues takes you on a journey from script to screen through a world of vast oceans, carnivorous islands, flying fish, bioluminescent jellyfish, whales, and tigers. Leaders from the visual effects team discuss in detail how they attempted to tackle the project, share the hard lessons learned along the way, and explain the complex process used to seamlessly combine live-action with extensive digital environments and hand-crafted character animation in a fully stereo pipeline that required a total rethink of much of the traditional VFX process.

### Scare School 101: The Making of Disney•Pixar’s “Monsters University”

Thursday, 25 July, 12:45-2:15 pm

The filmmaking team will guide attendees through the production process of the summer 2013 Disney•Pixar film, “Monsters University”. Twelve years after the original film, see how creators rebuilt the Monster world; updated familiar characters into college-age versions of themselves; designed, built and lit a campus fit for a monster; and populated the university with a student body of diverse, unique and terrifying monster types.

## Panels

Panels are moderated discussion on important topics, with expert panelists chosen by the organizers to provide a wide range of perspectives.

### The State of the Visual Effects Industry

Thursday, 25 July, 2-3:30 pm

This panel explores the wide variety of business practices and issues surrounding the current state of visual effects production from several perspectives: visual effects artists, visual effects producers, and visual effects company owners and executives. Topics include the industry’s business history, current business pros and cons, and future prospects for an industry in transition.

#### Moderator

Jim Hillin, Visual Effects Supervisor, Indie Feature “Home”

#### Panelists

Dave Rand, Senior Visual Effects Artist

Scott Squires, Visual Effects Supervisor

Scott Ross

Steve Kaplan, Labor Organizer, The Animation Guild, Local 839 IATSE

# Real-Time Live!

**F S** #siggraph #realtime

The premier showcase for the latest trends and techniques that push the boundaries of interactive visuals. A fast-paced, 90 minute show of cutting-edge, aesthetically stimulating real-time work.



Image Credit: Butterfly Effect, Renaldas Zioma, Unity Technologies

## Adding More Life to Your Characters With TressFX

Jason Lacroix  
Square Enix Co., Ltd.

## Butterfly Effect

Renaldas Zioma  
Unity Technologies

## Digital Ira: High-Resolution Facial Performance Playback

Graham Fyffe  
USC Institute for Creative Technologies

Jorge Jimenez  
Activision, Inc.

Oleg Alexander  
Jay Busch  
Paul Graham  
Borom Tunwattanapong  
Koki Nagano  
Ryosuke Ichikari  
Paul Debevec  
Andrew Jones  
USC Institute for Creative Technologies

Javier von der Pahlen  
Etienne Danvoye  
Bernardo Antoniazzi  
Michael Eheler  
Zbynek Kysela  
Activision, Inc.

Curtis Beeson  
Steve Burke  
Mark Daly  
NVIDIA Corporation

## Massive Destruction in Real Time

Matthias Müller-Fischer  
Nuttapong Chentanez  
Tae-Yong Kim  
Bryan Galdrikian  
NVIDIA Corporation

## Real-Time Crowd Direction With Creation: Horde

Philip Taylor  
Fabric Engine Inc.

## Shadertoy: Live Coding for Reactive Shaders

Inigo Quilez  
Pol Jeremias  
Beautypi

## Slice:Drop - Collaborative Medical Imaging in the Browser

Daniel Haehn  
Nicolas Rannou  
Rudolph Pienaar  
P. Ellen Grant  
Boston Children's Hospital

## Spontaneous Fantasia

J-Walt Adamczyk

## Square

Thomas Mann  
Still

Daniel Szymanski  
Andreas Rose  
Framefield GmbH

Wolf Budgenhagen  
Still

## Unreal Engine 4 Infiltrator Demonstration

Dana Cowley  
Brian Karis  
Epic Games, Inc.

# SIGGRAPH Mobile

F #siggraph #mobile

Today smartphones, tablets combine serious graphics hardware with very cool software, good cameras, full-color screens, and high-resolution sensors that deliver precision space-time data everywhere in the world. What's next? In talks, workshops, and demonstrations, SIGGRAPH Mobile explores what's possible, and when for computers that can remain in their bags at security checkpoints.

## SIGGRAPH Mobile Panel

Wednesday, 24 July, 9-10:30 am

### New Directions and Developments in Mobile GPU Design

Eric Demers  
QUALCOMM Incorporated

Barthold Lichtenbelt  
NVIDIA Corporation

David Blythe  
Intel Corporation

Dave Shreiner  
ARM Inc.

James McCombe  
Imagination Technologies Limited

Anand Shimpi  
AnandTech, Inc.

## SIGGRAPH Mobile Talks: Advances in Mobile Graphics

Wednesday, 24 July, 10:45 am-12:15 pm

### Unity: The Chase - Pushing the Limits of Modern Mobile GPU

Renaldas Zioma  
Ole Ciliox  
Unity Technologies

### Moving to Mobile Graphics and GPGPU: Forget Everything You Know

Andrew Garrard  
Samsung Research UK

### Challenges With High-Quality Mobile Graphics

Sam Martin  
Geomerics Ltd.

Marius Bjørge  
Sandeep Kakarlapudi  
Jan-Harald Fredriksen  
ARM Holdings, plc

## SIGGRAPH Mobile Talks: Mobile Case Studies

Wednesday, 24 July, 2-3:30 pm

### The Collaborative Composite Image, the MAG Project

Susan Lakin  
David Halbstein  
Rochester Institute of Technology

### Red Ball - Performing With iPads

Marla Schweppe  
Rochester Institute of Technology

Darren Stevenson  
PUSH Physical Theatre

### Social Reform Through Mobile Gaming (Seed.Genesis)

Alexis Polanco  
Danielle Esmaya  
Nathaniel Martin  
Bradley Chun  
Mateusz Mrowiec  
Joseph Hewitt  
New Jersey Institute of Technology

## Sketching Data: Lessons Learned From a Formative User Evaluation

Jacquelyn Martino  
Rachel Bellamy  
Paul Matchen  
Harold Ossher  
John Richards  
Cal Swart  
IBM Research

## SIGGRAPH Mobile Talks: New Mobile Techniques

Wednesday, 24 July, 3:45-5:15 pm

### Multi-Channel Acoustic Data Transmission to Ad-Hoc Mobile Phone Arrays

Roman Frigg  
Thomas Gross  
ETH Zürich

Stefan Mangold  
Disney Research Zürich

### Reliable Product Visualization on Mobile Devices

Jan Hermes  
Andrea Weidlich  
Realtime Technology AG

### Create Games in Real-Time Across Mobile Devices

Ashraf Samy Hegab  
MultiPlay.io

### OpenCL - OpenGL ES Interop: A Case Study of Processing Live Video Streams on a Mobile Device

Adrian Bucur  
Samsung Research UK



## SIGGRAPH Mobile Demonstrations

### A Portable Exploratorium: Creating Hands-On Learning Experiences for the iPad

Everyone with a smartphone or tablet is carrying around a portable laboratory, yet few museums and educational content providers have taken advantage of this to create innovative learning experiences. Representatives from the Exploratorium are meeting this challenge through development of two recent apps, Color Uncovered and Sound Uncovered.

Jean Cheng  
Exploratorium

### CreatAR

Make anything ... anywhere with the the creatAR mobile app, which finally makes augmented-reality creation easy for smartphone and tablet users. Anyone with a smartphone or tablet can create whatever they want wherever they want simply by asking for it. Recreate your world with creatAR.

Mark Skwarek  
Polytechnic Institute of New York University,  
New York City College of Technology

Animesh Anand  
Polytechnic Institute of New York University

### Create Games in Real Time Across Mobile Devices

Drag, drop, edit, 3D models, levels, UI, and source code in real time across iOS, Android, and Windows Phone.

Ashraf Samy Hegab  
MultiPlay.io

### Enhanced Mobile Products Visualization in Augmented Showcase

Using MobileAR and Leap Motion to enhance product-visualization experiences on any mobile device. The system improves the tracking quality of hands, reduces the latency caused in augmented-reality showcases, and increases user expectations of handheld products.

Junming Peng  
Fraunhofer IDM @ NTU

### Multi-Channel Acoustic Data Transmission to Ad-Hoc Mobile Phone Arrays

For show environments like cinemas or theaters, this new mobile application creates a reliable communication channel from the event to groups of mobile phones located in the audience, based on cooperative diversity in audio data transmission.

Roman Frigg  
Thomas Gross  
ETH Zürich

Stefan Mangold  
Disney Research Zürich

### ourcam: On-Site Programming Environment for Digital Photography

This integrated development environment on a mobile device has a visual programming language and a program-sharing function, and stores specific techniques for taking digital photos and methods for building media within the digital camera for prototyping on-the-fly photographic ideas at any location.

Ryo Oshima  
Yasuaki Kakehi  
Keio University

### Sphero Augmented Reality: When Balls Become Beavers

A moving robot fiducial takes augmented reality on mobile devices to a entirely new level.

Jonathan Carroll  
Fabrizio Polo  
Orbotix, Inc.

## SIGGRAPH Mobile Workshops Presented in the Studio

### Make Mobile Apps Quickly

Sunday, 21 July, 3:45-5:15 pm

Learn how to make cross-platform graphics applications for mobile devices.

Gil Irizarry  
Conoa

### Graphics on the Go

Monday, 22 July, 9-10:30 am

Using a variety of free open-source tools, build mobile apps quickly and easily.

Gil Irizarry  
Conoa

### Mobile Visual Computing in C++ on Android

Thursday, 25 July, 10:45 am-12:15 pm

This workshop teaches the basics to get started quickly with your visual-computing project on Android using native C++ code, from setting up tools to running your first native application, and it dives into deeper topics, including computer vision with OpenCV, camera control on FCam, and performance tuning.

Yun-Ta Tsai  
Orazio Gallo  
David Pajak  
Kari Pulli  
NVIDIA Research

# Studio

**F S E+ Ex** #siggraph #studio

A hands-on creative space for art and design of all kinds, where the latest technologies and brightest minds come together to learn, experiment, and create. Play with the latest in 3D printing, modeling, and animation software.

Full Conference Access, Select Conference Access, Exhibits Plus and Exhibitors registration allows attendees access to the Studio. Please be sure to arrive early for the Studio Talks and workshops you wish to attend. Seating is on a first-come, first-served basis.

## Studio Talks

Explorations and explanations at the forefront of creative practice: sessions on design computing, gaming, mobile devices, and many other aspects of cyber adventure.

**Sunday, 21 July, 2-3:30 pm**

### Playing Audrey II: Creating a Digital Actor Through Game Technology

Monica Evans  
Kathryn Evans  
The University of Texas at Dallas

### Skyfarer: A Mixed-Reality Shoulder Exercise Game

Marientina Gotsis  
Vangelis Lympouridis  
David Turpin  
Fotos Frangoudes  
University of Southern California

Somboon Maneekobkunwong  
Rancho Los Amigos National Rehabilitation Center

Maryalice Jordan-Marsh  
University of Southern California

### Red Ball - Performing With iPads

Marla Schweppe  
Rochester Institute of Technology

Darren Stevenson  
PUSH Physical Theatre

**Sunday, 21 July, 3:45-4:30 pm**

### The Bleeding Edge of 3D Printing and Digital Fabrication

Daniel Collins  
Arizona State University/Herberger Institute for Design and the Arts

Robert Michael Smith  
New York Institute of Technology

Bre Petis  
MakerBot Industries, LLC

John William Penn  
JWP Design

Don Vance  
Arizona State University

**Sunday, 21 July, 4:45-5:30 pm**

### Emerging Technologies Talks

**Monday, 22 July, 9-10:30 am**

### Visualizing Progression in EVE Online

Orvar Halldorsson  
Amar Birgir Jonsson  
CCP Games

### Biological Printing

Robert Smith  
New York Institute of Technology

**Monday, 22 July, 2-3:15 pm**

### Clara.io: Full-Featured 3D Content Creation for the Web and Cloud Era

Ben Houston  
Exocortex Technologies, Inc.

Catherine Leung  
Seneca College of Applied Arts and Technology

**Monday, 22 July, 3:15-3:30 pm**

### Dailies Preview

**Monday, 22 July, 3:45-4:30 pm**

### Alternative Performance Capturing

Michael Bußler  
Simon Spielmann  
Volker Helzle  
Nicole Rothermel  
Filmakademie Baden-Württemberg

**Monday, 22 July, 4:45-5:30 pm**

### Emerging Technologies Talks

**Tuesday, 23 July, 9-10:30 am**

### A Retailer's Way Into 3D: IKEA

Martin Enthed  
IKEA Communications AB

### Interactive Card Weaving Design and Construction

Yuki Igarashi  
Jun Mitani  
University of Tsukuba

### Join the Digital Text Revolution

Morgan McGuire  
Williams College

**Tuesday, 23 July, 10:45 am-12:15 pm**

### SmartVCS: Shooting Avatar on Your iPad?

Girish Balakrishnan  
Paul Diefenbach  
Drexel University

### Screencasting Strategies: Heuristics for Using Video Content in 3D Computer Graphics Technological and Aesthetic Education

Shaun Foster  
David Halbstein  
Rochester Institute of Technology

**Tuesday, 23 July, 2-3:30 pm**

### Fight Our Shadow Robot

Hiroshi Suzuki  
Haro Hayami  
Hisashi Sato  
Kanagawa Institute of Technology

### Romibo Robot Project

Aubrey Shick  
Carnegie Mellon University

### Mutation

Phillip Renato  
Kendall College of Art and Design

**Tuesday, 23 July, 3:45-4:30 pm**

### The Tampa to Anaheim Soup-to-Nuts Hackshack

Anat Pollack  
Mark Weston  
University of South Florida

**Tuesday, 23 July, 4:45-5:30 pm**

### Emerging Technologies Talks



Wednesday, 24 July, 9-10:30 am

**Art Talks 1**

Wednesday, 24 July, 10:45 am-12:15 pm

**Art Talks II**

Wednesday, 24 July, 2-3:30 pm

**2.5D Graphics in Mobile Apps Using “Corona SDK”**

Walter Luh  
Corona Labs

**Alternative Digital Fine Art Printmaking**

Lyn Bishop  
Lyn Bishop Fine Art

Nance Paternoster  
Digital Artist

**Collaborative Rephotography**

Ruth West  
University of North Texas

Abby Halley  
Daniel Gordon  
Washington University in St. Louis

Jarlath O’Neil-Dunne  
University of Vermont

Robert Pless  
Washington University in St. Louis

Wednesday, 24 July, 3:45-4:30 pm

**Air Painting with Corel Painter Freestyle and the Leap Motion Controller: A Revolutionary New Way to Paint!**

Jeremy Sutton  
Sutton Studios & Gallery

Wednesday, 24 July, 4:45-5:30 pm

**Emerging Technologies Talks**

Thursday, 25 July, 9-10:30 am

**Tower of the Dragon**

Tracy McSheery  
PhaseSpace, Inc.

Thursday, 25 July, 10:45 am-12:15 pm

**SIGGRAPH Mobile Talk: Mobile Visual Computing in C++ on Android**

Yun-Ta Tsai  
Orazio Gallo  
David Pajak  
Kari Pulli  
NVIDIA Research

**Studio Workshops**

A series of in-depth workshops taught by the best in the industry (maximum capacity: 40 persons per workshop; first come, first served).

Sunday, 21 July, 3:45-5:15 pm

**SIGGRAPH Mobile Workshop: Make Mobile Apps Quickly**

Gil Irizarry  
Conoa

Monday, 22 July, 9-10:30 am

**SIGGRAPH Mobile Workshop: Graphics on the Go**

Gil Irizarry  
Conoa

Monday, 22 July, 2-3:30 pm

**Sketching and Rapid Visualization (Tales From the Auto Industry)**

Michael Torpey  
Kia Design Center America

Monday, 22 July, 3:45-5:15 pm

**3D Scanning and Fine Tooning With FaceGen**

Ketrina Yim  
PhaseSpace, Inc.

Tuesday, 23 July, 9-10:30 am

**Pi Drum: Raspberry Computers, MAXmsp, and PD**

Miller Puckette  
University of California, San Diego

Byron Lahey  
Hilary Harp  
Arizona State University

Barry Moon  
Arizona State University

Tuesday, 23 July, 10:45 am-12:15 pm

**Hard Surface Techniques in ZBrush**

Timothy Jones  
Jumpstart

Tuesday, 23 July, 2-3:30 pm

**3D Data Capture**

Daniel Collins  
Arizona State University/Herberger Institute for Design and the Arts

Aubrey Wigner  
Arizona State University

Dan Gustafson  
Next Engine

Jacki Schklar  
3DMD

Denise Grauzinis-Bartels Denise  
4D Dynamics

Joseph Hudy  
Arizona State University/Herberger Institute for Design and the Arts

Chris Lane  
3DMD

Tuesday, 23 July, 3:45-5:15 pm

**Motion Capture Pipeline From Movies to Games**

Kan Anant  
PhaseSpace, Inc.

Oliver Hotz  
Origami Digital

Wednesday, 24 July, 9-10:30 am

**Creating Paths From Illustrator to After Effects**

Ben Levy  
Arizona State University

Wednesday, 24 July, 10:45 am-12:15 pm

**ZBrush**

Thomas Roussel  
Pixologic

Wednesday, 24 July, 2-3:30 pm

**Drawing Machines**

Ginger Alford  
Trinity Valley School

Erik Brunvand  
University of Utah

Wednesday, 24 July, 3:45-5:15 pm

**Preparing Files for 3D Printing**

Donald Vance  
Michael Bortfeld  
Arizona State University/Herberger Institute for Design and the Arts

## Studio Projects

### Air Painting & More: Revolutionary New Ways to Paint!

Experience air painting with the Leap Motion Controller and Corel Painter Freestyle, an exciting new digital-painting paradigm in which you control your brush strokes through the finger movements in the air, plus the latest in photo painting with Corel Painter and painting on the iPad.

Jeremy Sutton  
Sutton Studios & Gallery

### CUMOS+: Cubic Kaleidoscope Workshop

In this workshop for producing cubic kaleidoscopes, attendees draw pictures on a computer and use a cutting plotter to cut them into polycarbonate mirrors. Then they incorporate colorful light into the interior of the cubic kaleidoscope, using color-seal film and permanent-marker pens.

Minori Yamazaki  
Keisuke Shuto  
Junichi Kanebako  
Hiroko Uchiyama  
Joshi University of Art and Design

### digiplastySIGGRAPH

Digiplasty is an on-going digital-sculpture experiment that focuses on shared-control geometry authoring and editing. DigiplastySIGGRAPH explores shared-control editing for character creation and animation.

James Stewart  
Makai Smith  
Eleonor Lindvall  
digiplasty

### Electromagnetic and Radiation Spaces

An open collaborative research project that investigates hidden physical processes in our everyday environment, which is saturated by electromagnetic waves, especially ionic radiation. The project investigates the effect of electromagnetic waves and ionic radiation on living cells and organisms.

Robert Lisek  
Institute for Research in Science and Art

### Fight Our Shadow Robot

A digital workshop that offers paper-craft activities transforming characters from 2D to 3D and into interactive game play.

Hiroshi Suzuki  
Haruo Hayami  
Hisashi Sato  
Kanagawa Institute of Technology

### Interactive Card-Weaving Design and Construction

An interactive system to assist design of original weaving patterns and their construction. Users can design the color of each warp yarn, the direction of four yarns passing through each card, and the direction and number of rotations of the cards.

Yuki Igarashi  
Jun Mitani  
University of Tsukuba

### iPi Mocap: Multi-Kinect Motion Capture Technology

A multi-Kinect, markerless motion capture technology. With two depth-sensing cameras positioned in front and in back of the actor, the system accurately captures fine details of human motion.

Michael Nikonov  
Pavel Sorokin  
Andrey Bibitchev  
Vasily Maslov  
iPi Soft LLC

### Pi Drums

PI Drums are ordinary drums transformed into programmable electronic instruments. Program your own interactive musical interfaces using the Pure Data graphical programming environment and Raspberry PI computers.

Barry Moon  
Arizona State University

Miller Puckette  
University of California, San Diego

Hilary Harp  
Byron Lahey  
Arizona State University

### Romibo Robot Project

An overview of the Romibo Project, which is designing a low-cost research tool for social robotics and STEM education.

Aubrey Shick  
Carnegie Mellon University

### SmartVCS: Shooting Avatar on Your iPad?

With accessible hardware such as multi-touch tablets and the latest video game motion controllers, there is an opportunity to develop a new virtual-camera system utilizing only consumer technologies and openly accessible game engines.

Girish Balakrishnan  
Drexel University

### The Importance of Being Earnest: The Steampunk Version

Attendees are invited to participate in this project to create a unique animation during SIGGRAPH 2013.

Kan Anant  
Tracy McSheery  
PhaseSpace, Inc.

### The Tampa-to-Anaheim Soup-to-Nuts Hackshack

This DIY workshop provides tools to develop ad-hoc solutions to issues of everyday life. Projects include creating microphones, speakers, solenoid instruments, and paper circuits. Small projects provide instruction in 3D modeling, electronics, strategies for clockwork mechanization, and armchair engineering.

Anat Pollack  
Mark Weston  
University of South Florida

**Wurm Hole One-Minute Portrait  
Sculptures**

In this project, inspired by the Austrian performance artist Erwin Wurm, attendees perch on a custom CNC platform that rotates while a 3D IR sensor continuously scans their bodies over a 12-foot vertical arc. Output is sent to 3D printers for creation of souvenir “one-minute” portrait sculptures.

Daniel Collins  
Aubrey Wigner  
Don Vance  
Arizona State University

# Talks

F #siggraph #talk

SIGGRAPH 2013 Talks 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.

Full Conference Access registration allows attendees access to all SIGGRAPH 2013 Talks. Seating is on a first-come, first-served basis. Please be sure to arrive early for the Talk you wish to attend.

## Sunday, 21 July

### “Epic” Tale

Sunday, 21 July, 2-3:30 pm

Session Chair:

Mikki Rose, Sony Imageworks

### Crafting the Vision Effect: An Interactive, Particle-Based Hologram for “Epic”

Andrew Schneider

Matthew Roach

Justin Gladis

Blue Sky Studios, Inc.

### Directable Fluids for the Distinct Worlds of “Epic”

Ilan Gabai

Alen Lai

David Quirus

Diego Garzon

Blue Sky Studios, Inc.

### Procedural Texturing in “Epic”

Hugo Ayala

Jamie Macdougall

Chris Chapman

Blue Sky Studios, Inc.

### Bats, Birds, and Boggans: The Simulated Armies of “Epic”

Thierry Dervieux-Lecocq

David Gatenby

Mark Adams

Justin Bisceglia

Blue Sky Studios, Inc.

### Getting Riggy With It

Sunday 21 July, 3:45-5:35 pm

Session Chair:

Cindy Grimm, Oregon State University

### Pixels to Parks: New Animation Techniques for Fantasyland

Akhil Madhani

Walt Disney Imagineering

Justin Walker

Gene Lee

Aaron Adams

Walt Disney Animation Studios

Alexis Wieland

Walt Disney Imagineering

Evan Goldberg

Walt Disney Animation Studios

### Mixing Dynamics and Blend Shapes for “Hulk”

Julien Cohen Bengio

John Doublestein

Chase Cooper

Industrial Light & Magic

### Simplicial Interpolation for Animating the Hulk

Julien Cohen Bengio

Rony Goldenthal

Industrial Light & Magic

### BlockParty 2: Visual Procedural Rigging for Film, TV, and Games

Rachel Rose

Mike Jutan

John Doublestein

Industrial Light & Magic

### Enhanced Dual Quaternion Skinning for Production Use

Gene Lee

Andy Lin

Matt Schiller

Scott Peters

Mark McLaughlin

Frank Hanner

Walt Disney Animation Studios

## Monday, 22 July

### Catching the Eye

Monday, 22 July, 9-10:30 am

Session Chair: Craig Barnes, Navteq

### Near-Eye Light Field Displays

Douglas Lanman

David Luebke

NVIDIA Research

### Survey and Evaluation of Tone-Mapping Operators for HDR Video

Gabriel Eilertsen

Jonas Unger

Linköpings universitet

Robert Wanat

Rafal Mantiuk

Bangor University

### Coded-Exposure HDR Light-Field Video Recording

David Schedl

Clemens Birklbauer

Oliver Bimber

Johannes Kepler Universität Linz

### On-Set Depth Capturing for VFX Productions Using Time of Flight

Simon Spielmann

Volker Helzle

Filmakademie Baden-Württemberg

Rahul Nair

Heidelberg University

### Effects Omelette

Monday, 22 July, 9-10:30 am

Session Chair: Mark Carlson, DreamWorks Animation

### “Man of Steel”: Procedural City Building and Destruction

Sarah Harries

Double Negative Visual Effects

### Simulating Fluids Using a Coupled Voxel-Particle Data Model

Dan Bailey

Double Negative Visual Effects

**Jack's Frost: Controllable Magic Frost Simulations for "Rise of the Guardians"**

David Lipton  
Ben Sutherland  
Ken Museth  
DreamWorks Animation

**Bubbles and Foam in "Partysaurus Rex"**

Adam Harder  
Chris Mangnall  
Pixar Canada

**A Cloud of Shadows**

Monday, 22 July, 9-10:30 am

Session Chair: Marc Olano, University of Maryland, Baltimore County

**Imperfect Voxelized Shadow Volumes**

Chris Wyman  
NVIDIA Corporation

Zeng Dai  
University of Iowa

**Sub-Pixel Shadow Mapping**

Pascal Lecocq  
Pascal Gautron  
Jean-Eudes Marvie  
Gaël Sourimant  
Technicolor Research & Innovation

**Lighting Technology of "The Last of Us"**

Michal Iwanicki  
Naughty Dog, Inc.

**Interactive Indirect Lighting Computed in the Cloud**

Cyril Crassin  
David Luebke  
Michael Mara  
Morgan McGuire  
Brent Oster  
Peter Shirley  
Peter-Pike Sloan  
Chris Wyman  
NVIDIA Corporation

**Tuesday, 23 July**

**Multi-Disciplinary Collaboration in Education**

Tuesday, 23 July, 2-3:30 pm

Session Chair: Glenn Goldman, New Jersey Institute of Technology

**Exploring the Intersection of Art, Music, and Technology**

Susan Lakin  
Joe Geigel  
Rochester Institute of Technology

**Arts/Tech Collaboration With Embedded Systems and Kinetic Art**

Erik Brunvand  
University of Utah

**Creating a Nimble New Curriculum for Digital Media Artists**

Nicola Marae Allain  
SUNY Empire State College

**Best Practices in Short Animation Production in Private/Public Partnerships: An Agile Approach**

Mark Jones  
Sean Craig  
Seneca College of Applied Arts and Technology

**Wednesday, 24 July**

**Put That in Your Pipe!**

Wednesday, 24 July, 9-10:30 am

Session Chair: Mat Selby, Sony Pictures Imageworks

**TidScene: Pixar's Pipeline Backplane**

Arun Rao  
Pixar Animation Studios

**Lurch!: Interactive Rendering Pipeline Automation**

Alexander Kolliopoulos  
Pixar Animation Studios

**ReviewTool: A Database-Driven Visual Effects Editing Application**

Damien Fagnou  
Christopher Cameron  
Adam Valdez  
Moving Picture Company

**Pronto: Scheduling the Un-Schedulable**

Hannes Ricklefs  
Moving Picture Company

**Game Cinematics & Stereoscopic**

Wednesday, 24 July, 10:45 am-12:15 pm

Session Chair: Riccard Linde, Activision Publishing @ Central

**Zerg Rush Hour: Simulating Swarms for StarCraft 2 Cinematics**

Matt Cordner  
Bill La Barge  
Blizzard Entertainment

**Blizzard Entertainment - Diablo III Cinematics Wing Effects**

Christopher Yang  
Hosuk Chang  
Bill La Barge  
Jeremy Pilgrim  
Blizzard Entertainment

**A Practical Guide to Native Stereoscopic Productions**

Parag Havaladar  
Sony Pictures Imageworks

**Thursday, 25 July**

**Face the Facts**

Thursday, 25 July, 9-10:30 am

Session Chair: Emily Whiting, ETH Zürich

**A Deformer-Based Approach to Facial Rigging**

Gene Lee  
John Kahwaty  
Greg Smith  
Andy Lin  
Matt Schiller  
Walt Disney Animation Studios

**Driving High-Resolution Facial Blendshapes With Video Performance Capture**

Graham Fyffe  
USC Institute for Creative Technologies

**Hair Growth by Means of Sparse Modeling and Advection**

Ashraf Ghoniem  
Ken Museth  
DreamWorks Animation

**Incendiary Reflection: Evoking Emotion Through Deformed Facial Feedback**

Shigeo Yoshida  
Sho Sakurai  
Takuji Narumi  
Tomohiro Tanikawa  
Michitaka Hirose  
The University of Tokyo

**Complete Fabrication**

Thursday, 25 July, 10:45 am-12:15 pm

Session Chair: Scott Schaefer, Texas A&M University

**D-Tech Me: Fabricating 3D Figurines With Personalized Faces**

Jose Rafael Tena  
Moshe Mahler  
Thabo Beeler  
Iain Matthews  
Max Grosse  
Hengchin Yeh  
Disney Research

**Sketch-Based Pipeline for Mass Customization**

Kristian Hildebrand  
Marc Alexa  
Technische Universität Berlin

**Isosurface Stuffing Improved: Acute Lattices and Feature Matching**

Crawford Doran  
Athena Chang  
Robert Bridson  
The University of British Columbia

**Constructable: Interactive Construction of Functional Mechanical Devices**

Stefanie Mueller  
 Pedro Lopes  
 Konstantin Kaerer  
 Bastian Kruck  
 Patrick Baudisch  
 Hasso-Plattner-Institut für  
 Softwaresystemtechnik GmbH)

**Rendering Grab Bag**

Thursday, 25 July, 10:45 am-12:15 pm

Session Chair: Pete Segal, Luxology

**SnugBlur!: Constraint-Preserving Motion Blur**

William Kerr  
 David Ryu  
 Pixar Animation Studios

**Pencil-Tracing Mirage: Principle and its Evaluation**

Katsuhisa Kanazawa  
 Tokyo Healthcare University

Yuma Sakato  
 Tokiichiro Takahashi  
 Tokyo Denki University

**Screen-Space Curvature for Production-Quality Rendering and Compositing**

Nicolas Mellado  
 Pascal Barla  
 Gaël Guennebaud  
 Patrick Reuter  
 INRIA

Gregory Duquesne  
 Luxology LLC

**Discrete Texture Design Using a Programmable Approach**

Hugo Loi  
 INRIA-LJK CNRS

Thomas Hurtut  
 L'Université Paris Descartes, Sorbonne Paris Cité

Romain Vergne  
 Joëlle Thollot  
 INRIA-LJK CNRS

**A Corps of Cores, of Course!**

Thursday, 25 July, 3:45-5:15 pm

Session Chair: Abe Wiley,  
 Advanced Micro Devices, Inc.

**Embree Ray Tracing Kernels for CPUs and the Xeon Phi Architecture**

Sven Woop  
 Intel Labs

Louis Feng  
 Intel Corporation

Ingo Wald  
 Carsten Benthin  
 Intel Labs

**Parallel JavaScript: Bringing the Compute Power of Multi-Core CPUs and GPUs to the World of Web Graphics**

Stephan Herhut  
 Richard Hudson  
 Jaswanth Sreeram  
 Tatiana Shpeisman  
 Intel Labs

**Movie Sampler**

Thursday, 25 July, 3:45-5:15 pm

Session Chair: Eric Tabellion,  
 PDI/DreamWorks

**Oz: The Great and Volumetric**

Magnus Wrenninge  
 Chris Kulla  
 Viktor Lundqvist  
 Sony Pictures Imageworks

**Rendering Fur for "Life of Pi"**

Ivan Neulander  
 Toshi Kato  
 Kevin Beason  
 Rhythm & Hues

**BSSRDF Importance Sampling**

Alan King  
 Solid Angle SL

Christopher Kulla  
 Alejandro Conty  
 Sony Pictures Imageworks

Marcos Fajardo  
 Solid Angle SL

**A Monster's Guide to Cheating in GI Class**

Byron Bashforth  
 Beth Albright  
 Jonathan Hoffman  
 George Nguyen  
 Pixar Animation Studios

**It's Raining Monsters**

Thursday, 25 July, 3:45-5:35 pm

Session Chair: Juan Buhler

**Creating a Monster: Artistic and Technical Challenges**

Michael Honsel  
 Pixar Animation Studios

**Crowds at "Monsters University"**

James Northrup  
 Michael Frederickson  
 Hemagiri Arumugam  
 Pixar Animation Studios

**Vegetation on "Monsters University"**

Antony Carysforth  
 Omar Elafifi  
 Nathan Fariss  
 Henry Garcia  
 Edgar Rodriguez  
 Christine Waggoner  
 Pixar Animation Studios

**Lighting "The Blue Umbrella"**

Brian Boyd  
 Pixar Animation Studios

**Rainy Rain Raining**

Michael O'Brien  
 Allen Hemberger  
 Cody Harrington  
 Amit Baadkar  
 Pixar Animation Studios



# Technical Papers

F #siggraph #techpapers

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 session.

Technical Papers are published as a special issue of ACM Transactions on Graphics. In addition to papers selected by the SIGGRAPH 2013 Technical Papers Jury, the conference presents papers that have been published in ACM Transactions on Graphics during the past year.

Full Conference Access registration allows attendees access to all SIGGRAPH 2013 Technical Papers.

Seating is on a first-come served basis. Please be sure to arrive early for the Technical Papers session you wish to attend.

**F S**

## Technical Papers Fast Forward

Sunday, 21 July, 6-8 pm

Celebrate another year of achievement, plan future collaborations, and share delicious desserts and toast-worthy beverages under the Southern California stars at the SIGGRAPH community's highest-energy, most-anticipated social event of 2013.

## Monday, 22 July

### Geometry & Topology

Monday, 22 July, 9-10:30 am

Session Chair: Alla Sheffer,  
The University of British Columbia

#### An Efficient Computation of Handle-and-Tunnel Loops Via Reeb Graphs

Tamal Dey  
Fengtao Fan  
Yusu Wang  
The Ohio State University

#### Robust Inside-Outside Segmentation Using Generalized Winding Numbers

Alec Jacobson  
Ladislav Kavan  
Olga Sorkine-Hornung  
ETH Zürich

#### Putting Holes in Holey Geometry: Topology Change for Arbitrary Surfaces

Gilbert Bernstein  
University of Washington

Chris Wojtan  
Institute of Science and Technology Austria

#### MeshGit: Diffing and Merging Meshes for Polygonal Modeling

Jonathan Denning  
Dartmouth College

Fabio Pellacini  
Sapienza-Università Di Roma, Dartmouth College

### Color & Compositing

Monday, 22 July, 9-10:30 am

Session Chair: Alexander Hornung,  
Disney Research, Zürich

#### User-Assisted Image Compositing for Photographic Lighting

Ivaylo Boyadzhiev  
Cornell University

Sylvain Paris  
Adobe Research

Kavita Bala  
Cornell University

#### Probabilistic Color-by-Numbers: Suggesting Pattern Colorizations Using Factor Graphs

Sharon Lin  
Daniel Ritchie  
Matthew Fisher  
Pat Hanrahan  
Stanford University

#### Optimizing Color Consistency in Photo Collections

Yoav HaCohen  
The Hebrew University of Jerusalem

Eli Shechtman  
Adobe Research

Dan Goldman  
Adobe Systems Incorporated

Dani Lischinski  
The Hebrew University of Jerusalem



**Example-Based Video Color Grading**

Nicolas Bonneel  
Harvard University

Kalyan Sunkavalli  
Sylvain Paris  
Adobe Systems Incorporated

Hanspeter Pfister  
Harvard University

**Faces & Hands**

Monday, 22 July, 9-10:30 am

**Session Chair: Yaser Sheikh,  
Carnegie Mellon University**

**Online Modeling For Real-Time Facial Animation**

Sofien Bouaziz  
École Polytechnique Fédérale de Lausanne

Yangang Wang  
Tsinghua University

Mark Pauly  
École Polytechnique Fédérale de Lausanne

**3D Shape Regression for Real-Time Facial Animation**

Chen Cao  
Yanlin Weng  
Zhejiang University

Steve Lin  
Microsoft Research Asia

Kun Zhou  
Zhejiang University

**Real-Time Facial Animation With On-the-Fly Correctives**

Hao Li  
University of Southern California,  
Industrial Light & Magic

Jihun Yu  
Yuting Ye  
Industrial Light & Magic

Chris Bregler  
New York University, Industrial Light & Magic

**Video-Based Hand Manipulation Capture Through Composite Motion Control**

Yangang Wang  
Tsinghua University

Jianyuan Min  
Jianjie Zhang  
Texas A&M University

Yebin Liu  
Qionghai Dai  
Tsinghua University

Jinxiang Chai  
Texas A&M University

**Computational Light Capture**

Monday, 22 July, 3:45-5:35 pm

**Session Chair:  
Kari Pulli, NVIDIA Research**

**Femto-Photography—Capturing and Visualizing the Propagation of Light**

Andreas Velten  
Di Wu  
MIT Media Lab

Adrian Jarabo  
Universidad de Zaragoza

Belen Masia  
Universidad de Zaragoza, MIT Media Lab

Christopher Barsi  
Chinmaya Joshi  
Everett Lawson  
MIT Media Lab

Moungi Bawendi  
Massachusetts Institute of Technology

Diego Gutierrez  
Universidad de Zaragoza

Ramesh Raskar  
MIT Media Lab

**Low-Budget Transient Imaging Using Photonic Mixer Devices**

Felix Heide  
Matthias Hullin  
James Gregson  
Wolfgang Heidrich  
The University of British Columbia

**High-Quality Computational Imaging Through Simple Lenses**

Felix Heide  
Mushfiqur Rouf  
Matthias Hullin  
The University of British Columbia

Björn Labitzke  
University of Siegen

Wolfgang Heidrich  
The University of British Columbia

**Compressive Light-Field Photography Using Overcomplete Dictionaries and Optimized Projections**

Kshitij Marwah  
Gordon Wetzstein  
MIT Media Lab

Yosuke Bando  
Toshiba Corporation, MIT Media Lab

Ramesh Raskar  
MIT Media Lab

**A Reconfigurable Camera Add-On for High-Dynamic-Range, Multi-Spectral, Polarization, and Light-Field Imaging**

Alkhazur Manakov  
Universität des Saarlandes,  
Max-Planck-Institut für Informatik

John Restrepo  
Universität des Saarlandes

Oliver Klehm  
Ramon Hegedus  
Max-Planck-Institut für Informatik

Elmar Eisemann  
TU Delft

Hans-Peter Seidel  
Max-Planck-Institut für Informatik

Ivo Ihrke  
Universität des Saarlandes,  
Max-Planck-Institut für Informatik

**Rods & Shells**

Monday, 22 July, 3:45-5:35 pm

**Session Chair:  
Doug James, Cornell University**

**Super Space Clothoids**

Romain Casati  
Florence Bertails-Descoubes  
INRIA Rhone-Alpes

**Thin Skin Elastodynamics**

Duo Li  
Shinjiro Sueda  
Debanga Neog  
Dinesh Pai  
The University Of British Columbia

**Embedded Thin Shells for Wrinkle Simulation**

Paul Kry  
Olivier Rémillard  
McGill University

**Folding and Crumpling Adaptive Sheets**

Rahul Narain  
Tobias Pfaff  
James O'Brien  
University of California, Berkeley

**Adaptive Fracture Simulation of Multi-Layered Thin Plates**

Oleksiy Busaryev  
Tamal Dey  
Huamin Wang  
The Ohio State University

**Line Drawing**

Monday, 22 July, 3:45-5:55 pm

**Session Chair:**

Adam Finkelstein, Princeton University

**Handwriting Beautification Using Tokens Means**C. Lawrence Zitnick  
Microsoft Research**Real-Time Drawing Assistance Through Crowdsourcing**Alex Limpaecher  
Nicolas Feltman  
Adrien Treuille  
Carnegie Mellon UniversityMichael Cohen  
Microsoft Research Redmond**Style and Abstraction in Portrait Sketching**Itamar Berger  
Ariel Shamir  
Interdisciplinary Cente HerzliyaMoshe Mahler  
Disney Research PittsburghElizabeth Carter  
Carnegie Mellon UniversityJessica Hodgins  
Carnegie Mellon University,  
Disney Research Pittsburgh**Topology-Driven Vectorization of Clean Line Drawings**Gioacchino Noris  
Alexander Hornung  
Robert W. Sumner  
Disney Research ZürichMaryann Simmons  
Walt Disney Animation StudiosMarkus Gross  
Disney Research Zürich and ETH Zürich**Interpreting Concept Sketches**Tianjia Shao  
Tsinghua UniversityWilmot Li  
Adobe ResearchKun Zhou  
Zhejiang UniversityWeiwei Xu  
Hangzhou Normal UniversityBaining Guo  
Microsoft Research AsiaNiloy Mitra  
University College London**Stereoscopic 3D Line Drawing**Yongjin Kim  
Pohang University of Science and TechnologyYunjin Lee  
Ajou UniversityHenry Kang  
University of Missouri-St. LouisSeungyong Lee  
Pohang University of Science and Technology**Tuesday, 23 July****Perception**

Tuesday, 23 July, 9-10:30 am

**Session Chair: Diego Gutierrez,**  
Universidad de Zaragoza**Exposing Photo Manipulation With Inconsistent Shadows**Eric Kee  
Dartmouth CollegeJames O'Brien  
University of California, BerkeleyHany Farid  
Dartmouth College**Gloss Perception in Painterly and Cartoon Rendering**Adrien Bousseau  
INRIAJames P. O'Shea  
University of California, BerkeleyFrédo Durand  
Massachusetts Institute of Technology CSAILRavi Ramamoorthi  
Maneesh Agrawala  
University of California, Berkeley**Perception of Perspective Distortions in Image-Based Rendering**Peter Vangorp  
REVES/INRIA, Sophia-Antipolis, University of  
Giessen, Max-Planck-Institut für InformatikChristian Richardt  
REVES/INRIA Sophia-AntipolisEmily Cooper  
University of California, BerkeleyGaurav Chaurasia  
REVES/INRIA Sophia AntipolisMartin Banks  
University of California, BerkeleyGeorge Drettakis  
REVES/INRIA Sophia-Antipolis**Understanding the Role of Phase Function in Translucent Appearance**Ioannis Gkioulekas  
Harvard School of Engineering  
and Applied SciencesBei Xiao  
Massachusetts Institute of TechnologyShuang Zhao  
Cornell UniversityEdward H. Adelson  
Massachusetts Institute of TechnologyTodd Zickler  
Harvard School of Engineering  
and Applied SciencesKavita Bala  
Cornell University**Surfaces & Differential Geometry**

Tuesday, 23 July, 9-10:30 am

**Session Chair: Yaron Lipman,**  
Weizmann Institute of Science**Globally Optimal Direction Fields**Felix Knöppel  
Technische Universität BerlinKeenan Crane  
California Institute of TechnologyUlrich Pinkall  
Technische Universität BerlinPeter Schröder  
California Institute of Technology**Geodesics in Heat: A New Approach to Computing Distance Based on Heat Flow**Keenan Crane  
California Institute of TechnologyClarisse Weischedel  
Max Wardetzky  
University of Göttingen**Weighted Averages on Surfaces**Daniele Panozzo  
ETH ZürichIlya Baran  
Belmont Technology Incorporated, Adobe  
Research, Disney Research ZürichOlga Diamanti  
Olga Sorkine-Hornung  
ETH Zürich

### Robust Fairing Via Conformal Curvature Flow

Keenan Crane  
California Institute of Technology

Ulrich Pinkall  
Technische Universität Berlin

Peter Schröder  
California Institute of Technology

### Fluid Grids & Meshes

Tuesday, 23 July, 10:45 am-12:15 pm

Session Chair: Chris Wojtan,  
Institute of Science and Technology  
Austria

#### Subspace Fluid Re-Simulation

Theodore Kim  
John Delaney  
University of California, Santa Barbara

#### Synthesizing Waves From Animated Height Fields

Michael Nielsen  
Aarhus Universitet

Andreas Söderström  
Weta Digital

Robert Bridson  
The University of British Columbia

#### A New Grid Structure for Domain Extension

Bo Zhu  
Wenlong Lu  
Matthew Cong  
Stanford University

Byungmoon Kim  
Adobe Systems Incorporated

Ronald Fedkiw  
Stanford University

#### Simulating Liquids and Solid Liquid Interactions With Langragian Meshes

Pascal Clausen  
Martin Wicke  
Jonathan R. Shewchuk  
James F. O'Brien  
University of California, Berkeley

### Points

Tuesday, 23 July, 10:45 am-12:15 pm

Session Chair: Tamy Boubekeur,  
Telecom Paris Tech

#### Edge-Aware Point Set Resampling

Hui Huang  
Shenzhen Institute of Advanced Technology

Shihao Wu  
South china University of Technology

Minglun Gong  
Memorial University of Newfoundland

Daniel Cohen-Or  
Tel-Aviv University

Uri Ascher  
The University of British Columbia

Hao Zhang  
Simon Fraser University

#### Mesh Denoising via L<sub>0</sub> Minimization

Lei He  
Scott Schaefer  
Texas A&M University

#### L1-Medial Skeleton of Point Cloud

Hui Huang  
Shenzhen VisuCA Key Lab, Simon Fraser  
University

Shihao Wu  
South China University of Technology

Daniel Cohen-Or  
Tel-Aviv University

Minglun Gong  
Memorial University of Newfoundland

Hao Zhang  
Simon Fraser University

Guiqing Li  
South China University of Technology

Baoquan Chen  
Shenzhen VisuCA Key Lab, Simon Fraser  
University

#### Semantic Decomposition and Reconstruction of Residential Scenes from LiDAR Data

Hui Lin  
Jizhou Gao  
University of Kentucky

Yu Zhou  
Guiliang Lu  
Nanjing University

Mao Ye  
Chenxi Zhang  
University of Kentucky

Ligang Liu  
University of Science and Technology of China

Ruigang Yang  
University of Kentucky

### Voxels & Liquids

Tuesday, 23 July, 2-3:30 pm

Session Chair: Andrew Selle,  
Walt Disney Animation Studios

#### VDB: High-Resolution Sparse Volumes With Dynamic Topology

Ken Museth  
DreamWorks Animation

#### A Two-Continua Approach to Eulerian Simulation of Water Spray

Michael Nielsen  
Ole Østerby  
Aarhus Universitet

#### Liquid Surface Tracking With Error Compensation

Morten Bojsen-Hansen  
Chris Wojtan  
Institute of Science and Technology Austria

#### Closest-Point Turbulence for Liquid Surfaces

Theodore Kim  
University of California, Santa Barbara

Nils Thuerey  
Scanline VFX

Jerry Tessendorf  
Clemson University

### Shape Analysis

Tuesday, 23 July, 2-3:30 pm

Session Chair: Misha Kazhdan,  
Johns Hopkins University

#### Co-Hierarchical Analysis of Shape Structures

Oliver van Kaick  
Simon Fraser University

Kai Xu  
National University of Defense Technology

Hao Zhang  
Simon Fraser University

Yanzhen Wang  
National University of Defense Technology

Shuyang Sun  
Simon Fraser University

Ariel Shamir  
The Interdisciplinary Center Herzliya

Daniel Cohen-Or  
Tel Aviv University

**Learning Part-Based Templates From Large Collections of 3D Shapes**

Vladimir Kim  
Princeton University

Wilmot Li  
Adobe Systems Incorporated

Niloy Mitra  
University College London

Siddhartha Chaudhuri  
Princeton University

Stephen DiVerdi  
Adobe Systems Incorporated, Google Inc.

Thomas Funkhouser  
Princeton University

**Qualitative Organization of Collections of Shapes via Quartet Analysis**

Shi-Sheng Huang  
Tsinghua University

Ariel Shamir  
Interdisciplinary Cente Herzliya

Chao-Hui Shen  
Tsinghua University

Hao Zhang  
Simon Fraser University

Alla Sheffer  
The University of British Columbia

Shi-Min Hu  
Tsinghua University

Daniel Cohen-Or  
Tel Aviv University

**Map-Based Exploration of Intrinsic Shape Differences and Variability**

Raif Rustamov  
Stanford University

Maks Ovsjanikov  
École Polytechnique

Omri Azencot  
Mirela Ben-Chen  
Technion-Israel Institute of Technology

Frederic Chazal  
INRIA Saclay - Île-de-France

Leonidas Guibas  
Stanford University

**Image-Based Reconstruction**

Tuesday, 23 July, 2-3:30 pm

Session Chair: Wojciech Matusik,  
Massachusetts Institute of Technology,  
CSAIL

**Scene Reconstruction From High Spatio-Angular Resolution Light Fields**

Changil Kim  
ETH Zürich, Disney Research Zürich

Henning Zimmer  
ETH Zürich

Yael Pritch  
Alexander Sorkine-Hornung  
Disney Research Zürich

Markus Gross  
ETH Zürich, Disney Research Zürich

**Image-Based Reconstruction and Synthesis of Dense Foliage**

Derek Bradley  
Disney Research Zürich

Derek Nowrouzezahrai  
Université de Montréal

Paul Beardsley  
Disney Research Zürich

**Dynamic Hair Manipulation in Images and Videos**

Menglei Chai  
Zhejiang University

Lvdi Wang  
Microsoft Research Asia

Yanlin Weng  
Xiaogang Jin  
Kun Zhou  
Zhejiang University

**Structure-Aware Hair Capture**

Linjie Luo  
Princeton University

Hao Li  
University of Southern California,  
Industrial Light & Magic

Szymon Rusinkiewicz  
Princeton University

**Video & Warping**

Tuesday, 23 July, 3:45-5:35 pm

Session Chair: Eli Shechtman,  
Adobe Systems

**Automated Video Looping With Progressive Dynamism**

Zicheng Liao  
University of Illinois at Urbana-Champaign

Neel Joshi  
Hugues Hoppe  
Microsoft Research

**Bundled Camera Paths for Video Stabilization**

Shuaicheng Liu  
National University of Singapore

Lu Yuan  
Microsoft Research Asia

Ping Tan  
National University of Singapore

Jian Sun  
Microsoft Research Asia

**Rectangling Panoramic Images via Warping**

Kaiming He  
Microsoft Research Asia

Huiwen Chang  
Tsinghua University

Jian Sun  
Microsoft Research Asia

**Phase-Based Video Motion Processing**

Neal Wadhwa  
Michael Rubinstein

Frédo Durand  
William T. Freeman  
Massachusetts Institute of Technology CSAIL

**Depth Synthesis and Local Warps for Plausible Image-Based Navigation**

Gaurav Chaurasia  
Sylvain Duchene  
INRIA Sophia Antipolis

Olga Sorkine-Hornung  
ETH Zurich

George Drettakis  
REVES/INRIA Sophia Antipolis

**Design & Authoring**

Tuesday, 23 July, 3:45-5:35 pm

Session Chair:

Jehee Lee, Seoul National University

**Make It Stand: Balancing Shapes for 3D Fabrication**Romain Prevost  
Emily Whiting  
ETH ZürichSylvain Lefebvre  
INRIAOlga Sorkine-Hornung  
ETH Zürich**Computational Design of Actuated Deformable Characters**Melina Skouras  
ETH ZürichBernhard Thomaszewski  
Stelian Coros  
Bernd Bickel  
Disney Research ZürichMarkus Gross  
Disney Research Zürich, ETH Zürich**Computational Design of Mechanical Characters**Stelian Coros  
Bernhard Thomaszewski  
Gioacchino Noris  
Disney Research ZürichShinjiro Sueda  
Maira Forberg  
Disney ResearchRobert Sumner  
Disney Research ZürichWojciech Matusik  
Massachusetts Institute of Technology CSAILBernd Bickel  
Disney Research Zürich**Interactive Authoring of Simulation-Ready Plants**Yili Zhao  
Jernej Barbic  
University of Southern California**Parsing Sewing Patterns Into 3D Garment**Floraine Berthouzoz  
University of California, BerkeleyAkash Garg  
Danny Kaufman  
Eitan Grinspun  
Columbia UniversityManeesh Agrawala  
University of California, Berkeley**Data-Driven Animation**

Tuesday, 23 July, 3:45-5:35 pm

Session Chair:

Jinxiang Chai, Texas A&amp;M University

**Non-Polynomial Galerkin Projection on Deforming Meshes**Matt Stanton  
Yu Sheng  
Carnegie Mellon UniversityMartin Wicke  
OtherlabFederico Perazzi  
Amos Yuen  
Srinivasa Narasimhan  
Adrien Treuille  
Carnegie Mellon University**Near-Exhaustive Precomputation of Secondary Cloth Effects**Doyub Kim  
Carnegie Mellon UniversityWoojong Koh  
Rahul Narain  
University of California, BerkeleyKayvon Fatahalian  
Adrien Treuille  
Carnegie Mellon UniversityJames O'Brien  
University of California, Berkeley**Modeling Friction and Air Effects Between Cloth and Deformable Bodies**Zhili Chen  
Huamin Wang  
Renguo Feng  
The Ohio State University**Flow Reconstruction for Data Driven Traffic Animation**David Wilkie  
University of North Carolina at Chapel HillJason Sewall  
Intel CorporationMing Lin  
University of North Carolina at Chapel Hill**Dynamic-Element Textures**Chongyang Ma  
The University of British Columbia,  
Tsinghua UniversityLi-Yi Wei  
The University of Hong Kong,  
Microsoft ResearchSylvain Lefebvre  
INRIAXin Tong  
Microsoft Research Asia**Wednesday, 24 July****Building Structures & Layouts**

Wednesday, 24 July, 9-10:30 am

Session Chair:

Bedrich Benes, Purdue University

**Designing Unreinforced Masonry Models**Daniele Panozzo  
Philippe Block  
Olga Sorkine-Hornung  
ETH Zürich**Computing Self-Supporting Surfaces By Regular Triangulation**Yang Liu  
Microsoft Research AsiaHao Pan  
The University of Hong KongJohn Snyder  
Microsoft ResearchWenping Wang  
The University of Hong KongBaining Guo  
Microsoft Research Asia**On the Equilibrium of Simplicial Masonry Structures**Fernando de Goes  
California Institute of TechnologyPierre Alliez  
INRIA Sophia Antipolis - MéditerranéeHouman Owhadi  
Mathieu Desbrun  
California Institute of Technology**Reciprocal Frame Structures Made Easy**Chi-Wing Fu\*  
Peng Song\*  
Goswami Prashant  
Jianmin Zheng  
Nanyang Technological UniversityNiloy Mitra  
University College LondonDaniel Cohen-Or  
Tel Aviv University

\*Joint primary authors

**Global Illumination**

Wednesday, 24 July, 9-10:30 am

Session Chair:  
Steve Marschner, Cornell University**Robust Adaptive Photon Tracing  
Using Photon-Path Visibility**Toshiya Hachisuka  
Aarhus UniversitetHenrik Wann Jensen  
University of California, San Diego**Adaptive Progressive Photon Mapping**Anton Kaplanyan  
Carsten Dachsbacher  
Karlsruher Institut für Technologie**Gradient-Domain Metropolis  
Light Transport**Jaakko Lehtinen  
Tero Karras  
Samuli Laine  
NVIDIA ResearchMiika Aittala  
Aalto University, NVIDIA ResearchFrédo Durand  
Massachusetts Institute of Technology CSAILTimo Aila  
NVIDIA Research**Axis-Aligned Filtering for Interactive  
Physically-Based Diffuse  
Indirect Lighting**Soham Uday Mehta  
Brandon Wang  
Ravi Ramamoorthi  
University of California, BerkeleyFrédo Durand  
Massachusetts Institute of Technology**Quads & Meshing**

Wednesday, 24 July, 10:45 am-12:15 pm

Session Chair:  
Denis Zorin, New York University**Sketch-Based Generation and Editing  
of Quad Meshes**Kenshi Takayama  
Daniele Panozzo  
ETH ZürichAlexander Sorkine-Hornung  
Disney Research ZürichOlga Sorkine-Hornung  
ETH Zürich**Integer-Grid Maps for Reliable  
Quad Meshing**David Bommes  
INRIA Sophia Antipolis-MéditerranéeMarcel Campen  
Hans-Christian Ebke  
RWTH Aachen UniversityPierre Alliez  
INRIA Sophia Antipolis-MéditerranéeLeif Kobbelt  
RWTH Aachen University**Particle-Based Anisotropic  
Surface Meshing**Zichun Zhong  
Xiaohu Guo  
University of Texas at DallasWenping Wang  
The University of Hong KongBruno Lévy  
INRIA Nancy-Grand EstFeng Sun  
The University of Hong KongYang Liu  
NVIDIA CorporationWeihua Mao  
University of Texas Southwestern  
Medical Center at Dallas**Anisotropic Delaunay Meshes  
of Surfaces**Jean-Daniel Boissonnat  
INRIA Sophia-AntipolisKan-Le Shi  
Tsinghua UniversityJane Tournois  
GeometryFactoryMarianne Yvinec  
INRIA Sophia-Antipolis**Advanced Rendering**

Wednesday, 24 July, 10:45 am-12:15 pm

Session Chair:  
Holly Rushmeier, Yale University**Asynchronous Adaptive Anti-Aliasing  
Using Shared Memory**Rasmus Barringer  
Lund UniversityTomas Akenine-Möller  
Lund University and Intel Corporation**High-Resolution Sparse Voxel DAGs**Viktor Kämpe  
Erik Sintorn  
Ulf Assarsson  
Chalmers University of Technology**5D Covariance Tracing for Efficient Depth  
of Field and Motion Blur**Laurent Belcour  
Grenoble UniversitéCyril Soler  
INRIA Rhône-AlpesKartic Subr  
University College LondonNicolas Holzschuch  
INRIA Rhône-AlpesFrédo Durand  
Massachusetts Institute of Technology, CSAIL**Spectral Appearance Changes Induced  
by Light Exposure**Bradley W. Kimmel  
Gladimir V.G. Baranoski  
T. Francis Chen  
Daniel Yim  
Erik Miranda  
University of Waterloo**Water & Snow With Particles**

Wednesday, 24 July, 10:45 am-12:15 pm

Session Chair: Robert Bridson,  
University of British Columbia**A Material-Point Method for  
Snow Simulation**Alexey Stomakhin  
Craig Schroeder  
University of California, Los AngelesLawrence Chai  
Walt Disney Animation StudiosJoseph Teran  
University of California, Los AngelesAndrew Selle  
Walt Disney Animation Studios**Highly Adaptive Liquid Simulations  
on Tetrahedral Meshes**Ryoichi Ando  
Kyushu University



Nils Thuerey  
ScanlineVFX GmbH

Chris Wojtan  
Institute of Science and Technology Austria

### Position-Based Fluids

Miles Macklin  
Matthias Müller  
NVIDIA Corporation

### Reconstructing Surfaces of Particle-Based Fluids Using Anisotropic Kernels

Jihun Yu  
Industrial Light & Magic

Greg Turk  
Georgia Institute of Technology

## Deformation & Distortion

Wednesday, 24 July, 2-3:30 pm

Session Chair: Ilya Baran,  
Belmont Technology Incorporated

### Controlled-Distortion Constrained Global Parametrization

Ashish Myles  
Denis Zorin  
New York University

### Injective and Bounded Distortion Mappings in 3D

Noam Aigerman  
Yaron Lipman  
Weizmann Institute of Science

### Subspace Integration With Local Deformations

David Harmon  
Denis Zorin  
New York University

### Planar Shape Interpolation With Bounded Distortion

Renjie Chen  
Technion - Israel Institute of Technology

Ofir Weber  
Daniel Keren  
University of Haifa

Mirela Ben-Chen  
Technion - Israel Institute of Technology

## Materials

Wednesday, 24 July, 2-3:30 pm

Session Chair: Szymon Rusinkiewicz,  
Princeton University

### A Practical Microcylinder Appearance Model for Cloth Rendering

Iman Sadeghi  
University of California, San Diego

Oleg Bisker  
Canfield Scientific, Inc.

Joachim De Deken  
Pixar Animation Studios

Henrik Wann Jensen  
University of California, San Diego

### Acquiring Reflectance and Shape From Continuous Spherical Harmonic Illumination

Borom Tunwattanapong  
Graham Fyffe  
Paul Graham  
Jay Busch  
Xueming Yu  
USC Institute for Creative Technologies

Abhijeet Ghosh  
Imperial College London

Paul Debevec  
USC Institute for Creative Technologies

### Practical SVBRDF Capture in the Frequency Domain

Miika Aittala  
Aalto University, NVIDIA Research

Tim Weyrich  
University College London

Jaakko Lehtinen  
NVIDIA Research, Aalto University

### OpenSurfaces: A Richly Annotated Catalog of Surface Appearance

Sean Bell  
Paul Upchurch  
Noah Snively  
Kavita Bala  
Cornell University

## Surface Reconstruction

Wednesday, 24 July, 2-3:30 pm

Session Chair:  
Richard Zhang, Simon Fraser University

### Screened Poisson-Surface Reconstruction

Michael Kazhdan  
The Johns Hopkins University

Hugues Hoppe  
Microsoft Research

### A Benchmark for Surface Reconstruction

Matthew Berger  
University of Utah

Joshua A. Levine  
Clemson University

Luis Gustavo Nonato  
Universidade de São Paulo

Gabriel Taubin  
Brown University

Claudio T. Silva  
Polytechnic Institute of New York University

### Dense Scene Reconstruction with Points of Interest

Qian-Yi Zhou  
Vladlen Koltun  
Stanford University

### Scalable Real-Time Volumetric Surface Reconstruction

Jiawen Chen  
Dennis Bautembach  
Shahram Izadi  
Microsoft Research Cambridge

## Sounds & Solids

Wednesday, 24 July, 3:45-5:35 pm

Session Chair: Paul Kry, McGill University

### Wave-Based Sound Propagation in Large Open Scenes Using an Equivalent-Source Formulation

Ravish Mehra  
University of North Carolina at Chapel Hill

Nikunj Raghuvanshi  
Microsoft Research

Lakulish Antani  
Anish Chandak  
Sean Curtis  
Dinesh Manocha  
University of North Carolina at Chapel Hill

### Example-Guided Physically Based Modal Sound Synthesis

Zhimin Ren  
Hengchin Yeh  
Ming C. Lin  
University of North Carolina at Chapel Hill

### Eulerian-on-Lagrangian Simulation

Ye Fan  
Joshua Litven  
David Levin  
Dinesh Pai  
The University of British Columbia

### Radial View Based Culling for Continuous Self-Collision Detection of Skeletal Models

Sai-Keung Wong  
Wen-Chieh Lin  
Chun-Hung Hung  
Yi-Jheng Huang  
Lii Shing-Yeu  
National Chiao Tung University

### Real Time Dynamic Fracture With Volumetric Approximate Convex Decompositions

Matthias Mueller-Fischer  
Nuttapong Chentanez  
Tae-Yong Kim  
NVIDIA Corporation

**Artistic Rendering & Stylization**

Wednesday, 24 July, 3:45-5:35 pm

Session Chair: Wilmot Li, Adobe Systems

**Painting by Feature: Texture Boundaries for Example-Based Image Creation**Michal Lukac  
Jakub Fiser  
Czech Technical University in PragueJean-Charles Bazin  
ETH ZürichOndrej Jamriska  
Czech Technical University in PragueAlexander Sorkine-Hornung  
Disney Research ZürichDaniel Sykora  
Czech Technical University in Prague**RealBrush: Painting With Examples of Physical Media**Jingwan Lu  
Princeton UniversityConnelly Barnes  
Adobe Systems IncorporatedStephen DiVerdi  
Google Inc., Adobe Systems IncorporatedAdam Finkelstein  
Princeton University**Depicting Stylized Materials With Vector Shade Trees**Jorge Lopez-Moreno  
Stefan Popov  
Adrien Bousseau  
REVES/INRIA Sophia-AntipolisManeesh Agrawala  
University of California, BerkeleyGeorge Drettakis  
REVES/INRIA Sophia-Antipolis**Stylizing Animation By Example**Pierre Bénard  
University of TorontoForrester Cole  
Michael Kass  
Pixar Animation StudiosIgor Mordatch  
University of WashingtonJames Hegarty  
Stanford UniversityMartin Sebastian Senn  
Kurt Fleischer  
Davide Pesare  
Pixar Animation StudiosKatherine Breeden  
Stanford University**Opacity Optimization for 3D Line Fields**Tobias Günther  
Christian Roesel  
Holger Theisel  
Otto-von-Guericke-Universität Magdeburg**Structures, Faces & Building**

Wednesday, 24 July, 3:45-5:35 pm

Session Chair:

Li-Yi Wei, The University of Hong Kong

**Layered Analysis of Irregular Façades via Symmetry Maximization**Hao Zhang  
Simon Fraser UniversityKai Xu  
National University of Defense Technology,  
Shenzhen Institutes of Advanced TechnologyWei Jiang  
National University of Defense TechnologyJinjie Lin  
Shenzhen Institute of Advanced TechnologyDaniel Cohen-Or  
Tel Aviv UniversityBaoquan Chen  
Shenzhen Institutes of Advanced Technology**Procedural Façade Variations From Single Layout**Fan Bao  
Arizona State UniversityMichael Schwarz  
Arizona State University, Cornell UniversityPeter Wonka  
Arizona State University, King Abdullah  
University of Science and Technology**Generating and Exploring Good Building Layouts**Fan Bao  
Arizona State UniversityDongming Yan  
King Abdullah. University of Science and  
TechnologyNiloy Mitra  
King Abdullah. University of Science and  
Technology, University College LondonPeter Wonka  
Arizona State University, King Abdullah.  
University of Science and Technology**Sketch2Scene: Sketch-Based Co-Retrieval and Co-Placement of 3D Models**Kun Xu  
Kang Chen  
Tsinghua UniversityHongbo Fu  
City University of Hong KongWei-Lun Sun  
Shi-Min Hu  
Tsinghua University**O-Snap: Optimization-Based Snapping for Modeling Architecture**Murat Arikan  
Technische Universität WienMichael Schwärzler  
Zentrum für Virtual Reality und  
Visualisierung Forschungs-GmbHSimon Flöry  
Michael Wimmer  
Technische Universität WienStefan Malerhofer  
Zentrum für Virtual Reality und  
Visualisierung Forschungs-GmbH**Thursday, 25 July****Skinning & Deformation**

Thursday, 25 July, 9-10:30 am

Session Chair: Joseph Teran,  
University of California, Los Angeles**Two-Layer Sparse Compression of Dense-Weight Blend Skinning**Bin Le  
Zhigang Deng  
University of Houston**Implicit Skinning: Real-Time Skin Deformation With Contact Modeling**Rodolphe Vaillant  
Loïc Barthe  
Université de ToulouseGael Guennebaud  
INRIAMarie-Paule Cani  
Grenoble Universités, INRIA GrenobleBrian Wyvill  
University of BathDamien Rohmer  
École supérieure de chimie physique  
électronique de Lyon, INRIAOlivier Gourmel  
Mathias Paulin  
Université de Toulouse**\*Cages: A Multi-Level, Multi-Cage Based System for Mesh Deformation**Francisco González García  
Teresa Paradinas  
Narcis Coll  
Gustavo Patow  
Universitat de Girona

**Cubic Mean Value Coordinates**

Xianying Li  
Tsinghua University

Tao Ju  
Washington University in St. Louis

Shi-Min Hu  
Tsinghua University

**Sampling**

Thursday, 25 July, 9-10:30 am

Session Chair: Philip Dutré, KU Leuven

**Line-Segment Sampling With Blue-Noise Properties**

Xin Sun  
Microsoft Research Asia

Kun Zhou  
Zhejiang University

Jie Guo  
Nanjing University, Institute of Software,  
Chinese Academy of Sciences

Guofu Xie  
Jingui Pan  
Nanjing University

Wencheng Wang  
Nanjing University, Institute of Software,  
Chinese Academy of Sciences

Baining Guo  
Microsoft Research Asia

**Blue-Noise Sampling With Controlled Aliasing**

Designing blue-noise sampling patterns by directly specifying their power spectra and studying under what conditions such patterns are realizable, and how they can be constructed in practice.

Daniel Heck  
Thomas Schlömer  
Oliver Deussen  
Universität Konstanz

**Gap Processing for Adaptive Maximal Poisson-Disk Sampling**

Dong-Ming Yan  
Peter Wonka  
King Abdullah University of Science and Technology

**Fourier Analysis of Stochastic Sampling Strategies for Assessing Bias and Variance in Integration**

Kartic Subr  
Jan Kautz  
University College London

**Surface Modeling**

Thursday, 25 July, 10:45 am-12:15 pm

Session Chair: Alyn Rockwood,  
InterNext Graphics Institute

**Toric Degenerations of Bézier Patches**

Luis David Garcia-Puente  
Sam Houston State University

Frank Sottile  
Texas A&M University

Chungang Zhu  
Dalian University of Technology

**A Unified Interpolary Subdivision Scheme for Quadrilateral Meshes**

Chongyang Deng  
Hangzhou Dianzi University

Weiyin Ma  
City University of Hong Kong

**A Gradient-Based Implicit Blend**

Olivier Gourmel  
Loic Barthe  
IRIT, Université de Toulouse, CNRS, France

Marie-Paule Cani  
Laboratoire Jean Kuntzmann, Grenoble  
Universités, CNRS, INRIA Grenoble, France

Brian Wyvill  
University of Victoria

Adrien Bernhardt  
Laboratoire Jean Kuntzmann, Grenoble  
Universités, CNRS, INRIA Grenoble, France

Mathias Paulin  
IRIT, Université de Toulouse, France

Herbert Grasberger  
University of Victoria

**Precomputed Rendering**

Thursday, 25 July, 10:45 am-12:15 pm

Session Chair: Peter-Pike Sloan,  
Activision

**Path-Space Manipulation of Physically-Based Light Transport**

Thorsten-Walther Schmidt  
Jan Novák  
Johannes Meng  
Anton Kaplanyan  
Tim Reiner  
Karlsruher Institut für Technologie

Derek Nowrouzezahrai  
Université de Montréal

Carsten Dachsbacher  
Karlsruher Institut für Technologie

**Interactive Albedo Editing in Path-Traced Volumetric Materials**

Milos Hasan  
Autodesk Inc.

Ravi Ramamoorthi  
University of California, Berkeley

**Global Illumination With Radiance Regression Functions**

Peiran Ren  
Tsinghua University

Jiaping Wang  
Minmin Gong  
Steve Lin  
Xin Tong  
Microsoft Research Asia

Baining Guo  
Microsoft Research Asia and  
Tsinghua University

**Modular Flux Transfer: Efficient Rendering of High-Resolution Volumes with Repeated Structures**

Shuang Zhao  
Cornell University

Milos Hasan  
Autodesk Inc.

Ravi Ramamoorthi  
University of California, Berkeley

Kavita Bala  
Cornell University

**Display Hardware**

Thursday, 25 July, 10:45 am-12:15 pm

Session Chair: Frédo Durand,  
Massachusetts Institute of Technology,  
CSAIL

**Adaptive Image Synthesis for Compressive Displays**

Felix Heide  
The University of British Columbia

Gordon Wetzstein  
Ramesh Raskar  
MIT Media Lab

Wolfgang Heidrich  
The University of British Columbia

**Content-Adaptive Lenticular Prints**

James Tompkin  
Disney Research

Simon Heinzle  
Disney Research Zürich

Jan Kautz  
University College London

Wojciech Matusik  
Massachusetts Institute of Technology

**3D + 2D TV: 3D Displays With no Cohosting for Viewers Without Glasses**

Steven Scher  
Jing Liu  
Rajan Vaish  
University of California, Santa Cruz

Prabath Gunawardane  
Google

James Davis  
University of California, Santa Cruz

**AIREAL: Interactive Tactile Experiences in Free Air**

Rajinder Sodhi  
University of Illinois

Ivan Poupyrev  
Matthew Glisson  
Ali Israr  
Disney Research Pittsburgh,  
The Walt Disney Company

**3D Printing**

Thursday, 25 July, 2-3:30 pm

Session Chair: Bernd Bickel,  
Disney Research Zürich

**Spec2Fab: A Reducer-Tuner Model for Translating Specifications to 3D Prints**

Desai Chen  
David Levin  
Pitchaya Sitthi-Amorn  
Piotr Didyk  
Wojciech Matusik  
Massachusetts Institute of Technology CSAIL

**OpenFab: A Programmable Pipeline for Multi-Material Fabrication**

Kiril Vidimce  
Szu-Po Wang

Jonathan Ragan-Kelley  
Wojciech Matusik  
Massachusetts Institute of Technology CSAIL

**Worst-Case Structural Analysis**

Qingnan Zhou  
Julian Panetta  
Denis Zorin  
New York University

**InfraStructs: Fabricating Information Inside Physical Objects for Imaging in the Terahertz Region**

Karl Willis  
Carnegie Mellon University

Andrew Wilson  
Microsoft Research

**Hardware Rendering**

Thursday, 25 July, 2-3:30 pm

Session Chair: Diego Nehab,  
Instituto Nacional de Matemática Pura e Aplicada

**A Hardware Unit for Fast SAH-Optimised BVH Construction**

Michael Doyle  
Colin Fowler  
Michael Manzke  
Trinity College Dublin

**Cardinality-Constrained Texture Filtering**

Josiah Manson  
Scott Schaefer  
Texas A&M University

**Analytic Displacement Mapping Using Hardware Tessellation**

Matthias Nießner  
Friedrich-Alexander-Universität  
Erlangen-Nürnberg

Charles Loop  
Microsoft Research

**A Sort-Based Deferred Shading Architecture for Decoupled Sampling**

Petrik Clarberg  
Robert Toth  
Jacob Munkberg  
Intel Corporation

**Laplacians, Light Field & Layouts**

Thursday, 25 July, 2-3:30 pm

Session Chair: Andrew Nealen,  
Polytechnic Institute of New York University

**Efficient Preconditioning of Laplacian Matrices for Computer Graphics**

Dilip Krishnan  
New York University

Richard Szeliski  
Microsoft Research

Raanan Fattal  
Hebrew University of Jerusalem

**Near-Invariant Blur for Depth and 2D Motion via Time-Varying Light Field Analysis**

Yosuke Bando  
Toshiba Corporation and MIT Media Lab

Henry Holtzman  
Ramesh Raskar  
MIT Media Lab

**Terrain Generation Using Procedural Models Based on Hydrology**

Jean-David Génevaux  
Eric Galin  
Eric Guérin  
Adrien Peytavie  
Laboratoire d'InfoRmatique en Image et Systèmes d'information

Bedrich Benes  
Purdue University

**Synthesis of Tiled Patterns Using Factor Graphs**

Yi-Ting Yeh  
Katherine Breeden  
Lingfeng Yang  
Matthew Fisher  
Pat Hanrahan  
Stanford University

**Appearance Fabrication**

Thursday, 25 July, 3:45-5:15 pm

Session Chair: Jan Kautz,  
University College London

**Fabricating BRDFs at High Spatial Resolution Using Wave Optics**

Anat Levin  
Daniel Glazner  
The Weizmann Institute of Science

Ying Xiong  
Harvard University

Frédo Durand  
William Freeman  
Wojciech Matusik  
Massachusetts Institute of Technology CSAIL

Todd Zickler  
Harvard University

**Bi-Scale Appearance Fabrication**

Yanxiang Lan  
Tsinghua University

Yue Dong  
Microsoft Research Asia

Fabio Pellacini  
Sapienza Università Di Roma,  
Dartmouth College

Xin Tong  
Microsoft Research Asia

**Fabricating Translucent Materials Using Continuous Pigment Mixtures**

Marios Papas  
ETH Zürich, Disney Research Zürich

Christian Regg  
Wojciech Jarosz  
Bernd Bickel  
Disney Research Zürich

Steve Marschner  
Cornell University

Philip Jackson  
Walt Disney Imagineering

Wojciech Matusik  
Massachusetts Institute of Technology CSAIL

Markus Gross  
ETH Zürich, Disney Research Zürich

# Exhibitor Tech Talks

F S E+ E Ex #siggraph #techtalks

Comprehensive summaries of the latest technologies in computer graphics and interactive techniques. SIGGRAPH 2013 exhibitors demonstrate software, hardware, and systems; answer questions; and host one-on-one conversations about how their applications improve professional and technical performance.

## Tuesday, 23 July

### zSpace

Tuesday, 23 July, 9:45-10:45 am

#### zSpace: A Revolutionary Way to Experience 3D Content

Concise summary of how you can use this new integrated system for visualizing and interacting with 3D content in your application.

### Advanced Micro Devices, Inc.

Tuesday, 23 July, 11:15 am-12:15 pm

#### Real-Time ACES Decoding and AMD FirePro GPU-Enabled RRT/ODT Processing at 4K

Interactive decoding enables real-time adjustment in scene-referred linear light of color balance, contrast, and effective exposure of high-dynamic-range ACES. Efficient coding/decoding using floating-point provides extra precision to support these features.

### Unity Technologies

Tuesday, 23 July, 12:45-1:45 pm

### Imagination Technologies

Tuesday, 23 July, 2:15-3:15 pm

#### Accelerating Look Development With Real-Time, Interactive Ray Traced Viewports

Imagination Technologies recently launched the Caustic Visualizer ray traced viewport plugins for Autodesk 3ds Max and Maya. When coupled with the Caustic Series2 ray tracing accelerator boards, these plugins bring real-time, interactive ray tracing to even the earliest stages of modeling and lighting pipelines. Artists using 3ds Max and Maya will learn how this solution can help them make better-informed creative choices in both modeling and lighting pipelines. This saves cost by reducing unnecessary and time-consuming preview renders of characters and backgrounds, compared to working with traditional OpenGL or Direct3D viewports.

### SiliconArts

Tuesday, 23 July, 3:45-4:45 pm

#### SiliconArts RayCore®: Real-Time Ray Tracing GPU for Mobile and Embedded Applications

Meet the world's first and fastest real-time ray tracing technology-enabled mobile GPU, a fully hardwired system that runs immersive and interactive 3D content in mobile and embedded applications.

## Wednesday, 24 July

### Unity Technologies

Wednesday, 24 July, 9:45-10:45 am

### Advanced Micro Devices, Inc.

Wednesday, 24 July, 11:15 am-12:15 pm

#### FirePro Technologies for Visual Computing

Visual Computing is the combination of two key assets from AMD; Compute and Graphics. Visual Computing needs numerous specific features in graphics and compute in order to become a new experience in Digital Content Creation, Multimedia, or Visual Simulation. AMD FirePro Technology provides these key features, delivering the best experience in Visual Computing.

### Unity Technologies

Wednesday, 24 July, 12:45-1:45 pm

### Imagination Technologies

Wednesday, 24 July, 2:15-3:15 pm

#### The Architecture of High-End Mobile Graphics Hardware

The first half of this talk highlights the key aspects of PowerVR GPUs, including information on the new PowerVR Series6 architecture - the architecture behind high-end mobile devices set to ship in the next 6-12 months. It provides an overview of how the hardware works and compares Series6 against PowerVR Series5/5XT and conventional GPU solutions. The second half concentrates on the dos and don'ts of graphics on PowerVR hardware, detailing performance-analysis tools and crucial rules for getting great performance on PowerVR hardware.

### Web3D Consortium

Wednesday, 24 July, 3:45-4:40 pm

#### X3D - Your Solution for Real-Time, Interactive, Mobile 3D Graphics

3D graphics enters a new realm. The Web3D community of content and application developers showcase their innovative 3D applications. Mobile devices running HTML5 browsers display interactive 3D objects merged into real-time video. X3D, with its declarative approach and API bindings 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 in the mobile, augmented-reality, geolocation, CAD, and medical markets. Come see the latest real-world interactive 3D applications.



# Exhibitor Sessions (As of 10 July)

**F S E+ E Ex** #siggraph #exhibits

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

## Intel Exhibitor Sessions Room 201

### Tuesday, 23 July

9-10 am

From Research to Production, How AVSM and AOIT Made Their Way Into Games

10:45-11:45 am

Fast Volumetric Shadows Using Epipolar Sampling and 1D Min-Max Binary Trees

12:15-1:45 pm

Faster, Better Pixels on the Go and in the Cloud with OpenCL\* on Intel® Architecture

2-3 pm

Faster Video Creation With Higher Productivity Using Intel® Developer Tools and OpenCL\*

3:15-4:15 pm

Journey of Pixels in Adobe Photoshop on Intel HD Graphics

4:30-5:30 pm

Performance Tuning Applications for Intel GEN Graphics for Linux and Android

### Wednesday, 24 July

9-10 am

Natural User Interaction with Perceptual Computing

10:45-11:45 am

Natural User Interaction with Perceptual Computing

The Intel Science and Technology Center (ISTC) for Visual Computing

2-3 pm

Advantages of Multi-core CPUs vs. GPUs for Volumetric Ray Casting

3:15-4:15 pm

High-Performance Computing, Analysis and Visualization with Xeon and Xeon Phi on TACC Stampede

4:30-5:30 pm

From Virtual To Reality – How High Fidelity Visualization Based on Autodesk Rapid RT Technology is Accelerating Product Design Decisions

### Thursday, 25 July

9-10 am

New Flexible High Efficient Intel Iris/Iris Pro Quick Sync Video

10:45-11:45 am

Bring out the Best in Pixels: Video Pipe in Intel Graphics Processor

12:15-1:45 am

ISPC: a SPMD Compiler for Xeon Phi & CPU – Tutorial

## NVIDIA Exhibitor Sessions Room 211 AB

### Monday, 22 July

9-10 am

Multi-GPU Programming for Visual Computing

10:30-11:30 am

Seamless Compute and OpenGL Graphics Development in Nsight Visual Studio

Noon-1 pm

The Future of Visual Computing - OpenGL 4.3 on ARM

1:30-2:30 pm

NVIDIA IndeX – Enabling Interactive and Scalable Visualization for Large Data

3-4 pm

GPU Ray Tracing and Advanced Rendering Solutions

4:30-5:30 pm

Building Ray Tracing Applications With OptiX

### Tuesday, 23 July

9-10 am

High Performance Graphics for 4K and Ultra High Resolution Displays

10:30-11:30 am

GPU Programming for Video and Image Processing Applications

Noon-1 pm

NVIDIA TEGRA: Attacking Mobile Entertainment with Sword and SHIELD

1:30-2:30 pm

Developing Next Generation Human Machine Interfaces (HMI)

3-4 pm

CUDA Best Practices

4:30-5:30 pm

State of the Art of Virtualized Graphics

## NVIDIA Nsight Visual Studio Edition Labs Exhibitor Sessions Room 205 A

### Tuesday, 23 July

9:30-10:30 am

Learn How to Debug OpenGL 4.2 with NVIDIA® Nsight™ Visual Studio Edition 3.1

11 am-Noon

Learn How to Profile OpenGL 4.2 with NVIDIA® Nsight™ Visual Studio Edition 3.1

1:30-2:30 pm

Learn How to Debug OpenGL 4.2 with NVIDIA® Nsight™ Visual Studio Edition 3.1

3-4 pm

Learn How to Profile OpenGL 4.2 with NVIDIA® Nsight™ Visual Studio Edition 3.1

4:30-5:30 pm

Learn How to Debug OpenGL 4.2 with NVIDIA® Nsight™ Visual Studio Edition 3.1

### Wednesday, 24 July

9:30-10:30 am

Learn How to Profile OpenGL 4.2 with NVIDIA® Nsight™ Visual Studio Edition 3.1

11 am-Noon

Learn How to Debug OpenGL 4.2 with NVIDIA® Nsight™ Visual Studio Edition 3.1

1:30-2:30 pm

Learn How to Profile OpenGL 4.2 with NVIDIA® Nsight™ Visual Studio Edition 3.1

3-4 pm

Learn How to Debug OpenGL 4.2 with NVIDIA® Nsight™ Visual Studio Edition 3.1

4:30-5:30 pm

Learn How to Profile OpenGL 4.2 with NVIDIA® Nsight™ Visual Studio Edition 3.1

## Shotgun User Group Exhibitor Session Room 213 A

Tuesday, 23 July 2-3:30 pm

Shotgun User Group

Wednesday, 24 July 2-3:30 pm

Shotgun Pipeline User Group (Tank)

# Exhibitor List (As of 24 May)

**F S E+ E Ex** #siggraph #exhibits

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

## Exhibits Fast Forward

Monday, 22 July, 3:45-5:15 pm

A sneak peak of the products and announcements that companies plan to make during the Exhibition in a fast paced, entertaining session prior to the Exhibition opening.

3D Consortium	CyberGlove Systems	IO Industries Inc.
3D3 Solutions	DePaul University College of Computing and Digital Media	Isotropix
3Dconnexion	Design Innovate Inc.	Jasper
3dMD	Digia Norway AS	Joe Alter, Inc.
5th Kind	DigiPen Institute of Technology	JourneyEd
Academy of Art University	Digiteyezer	Khronos Group
ACUTE3D	Dimensional Imaging	Kobold Charakteranimation
Addison-Wesley	Double Summit LLC	Konrad Group
Advanced Micro Devices, Inc.	Eizo Inc.	Korea Creative Content Agency (KOCCA)
American Express OPEN	EnvisionTEC	Legend 3D
Animation Magazine, Inc.	Epson America Inc.	Lemire Industries DBA Happy Feet
Arc Productions	Esri	Leonar3do International Inc.
ARM	Exocortex	Lightcraft Technology
ASC-American Cinematographer	Faceshift AG	LightWorks
Avere Systems	Faceware Technologies	Luxion, Inc.
Awe Company Ltd.	FARO Technologies, Inc.	Massive Software
Axceleon Inc.	Flixel Photos Inc.	MAXON
Beijing Enochview Digital Art Co., Ltd.	ForgeFX Simulators	MCOR Technologies Ltd.
Beijing Noitom Technology Ltd.	Fusion-io	Motion Analysis Corporation
Blender Foundation	FXGear, Inc.	Mr. X
British Columbia, Canada Delegation	Green Forest Animation Studio	MyPlanet Digital
BOXX Technologies, Inc.	Hitachi Data Systems	NEC Display Solutions Ltd.
BZP Pro	IATSE	New York University School of Continuing and Professional Studies (SCPS)
Canon U.S.A. Inc.	IdN magazine	NewTek/Lightwave
Cap Digital	IEEE Computer Society	Next Limit Technologies
Carnegie Mellon Entertainment Technology Center	Imagination Technologies	NorPix Inc.
cebas Visual Technology Inc.	Imagineer Systems Ltd.	NVIDIA Corporation
Christie Digital Systems	Infinite Z	Ontario Canada Delegation
Cinema Suite Inc.	Integrated Media Technologies	OpenNI
Computer Graphics World	IntegrityWare, Inc.	Optis SAS
ConceptShare	Intel Corporation	OptiTrack
CRC Press - Focal Press	Intellane Co., Ltd.	Panasas

Peer 1 Hosting  
 PipelineFX, LLC  
 Pixar Animation Studios  
 Pixologic, Inc.  
 PNY Technologies  
 Point Grey Research, Inc.  
 Pond5, Inc.  
 Prefixa International  
 Purdue University  
 QUALCOMM Incorporated  
 Quebec Film and Television  
 Council – ActionMtl  
 Reallusion Inc.  
 Renderlife.com  
 Ringling College of Art and Design  
 Rochester Institute of Technology –  
 School of Film and Animation  
 Rocket Science VFX  
 Sandboxr  
 SCAD  
 Shapeways  
 Shotgun Software, Inc.  
 Side Effects Software  
 Siliconarts, Inc.  
 Sketchfab Inc.  
 Smith Micro Software  
 Source Graphics  
 SpeedTree  
 Spheron VR AG  
 Springer  
 Steyer Associates, Inc.  
 Stratasys 3D Printers &  
 Production Systems  
 Synaptop  
 Tandent Vision Science, Inc.  
 TechViz  
 The3DShop.com  
 The CGAL Project  
 The Foundry Visionmongers  
 The University of the Arts

Thinkbox Software Inc.  
 Toei Co., Ltd.  
 Toon Boom Animation Inc.  
 Topaz Labs  
 Unity Technologies  
 VanArts  
 Vancouver Animation School  
 Vancouver Film School  
 VanGogh Imaging  
 Verold.com  
 Vicon  
 Voices.com  
 Wacom Technology  
 WD  
 Web3D Consortium  
 WorldViz  
 XYZ RGB  
 ZoomRP.com

## Job Fair Participants

**Animal Logic**  
 Sydney, New South Wales Australia

**Apple, Inc.**  
 Cupertino, California USA

**Blizzard Entertainment**  
 Irvine, California USA

**Canon U.S.A., Inc.**  
 Melville, New York USA

**CreativeHeads.net**  
 Hermosa Beach, California USA

**Double Negative Visual Effects**  
 London, United Kingdom

**Esri**  
 Redlands, California USA

**Gnomon School of VFX / The  
 Gnomon Workshop**  
 Hollywood, California USA

**IGT**  
 Las Vegas, Nevada USA

**Intel Corporation**  
 Santa Clara, California USA

**LAIKA, Inc.**  
 Hillsboro, Oregon USA

**Method Studios**  
 Santa Monica, California USA

**OLM Digital, Inc.**  
 Tokyo, Japan

**Sony Picture Imageworks**  
 Culver City, California USA

# General Information

## Age Requirement

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

## Airport Shuttle Bus Discounts

SIGGRAPH 2013 has partnered with SuperShuttle to offer affordable transportation to and from the John Wayne Airport (SNA) and the Los Angeles International Airport (LAX).

### To/From SNA

Shared Ride Van:  
\$9 per passenger, one way  
(up to 9 passengers)

Town Car Service (to SNA):  
\$68 per sedan (up to 4 passengers)

Town Car Service (from SNA):  
\$75 per sedan (up to 4 passengers)

### To/From LAX

Shared Ride Van:  
\$14 per passenger, one way (up to 9 passengers)

Town Car Service (to LAX):  
\$102 per sedan (up to 4 passengers)

Town Car Service (from LAX):  
\$108 per sedan (up to 4 passengers)

These discounted rates are valid from five days before the conference to five days after it closes.

If you book your shuttle reservation through the SIGGRAPH 2013 web site, you earn miles on American Airlines, United Airlines, Delta, and Frontier Airlines.

Book by phone at 800.258.3826 (toll free) or +1.310.222.5500, extension 4. To receive the discount, you must mention the SIGGRAPH 2013 discount code: **PK7AU**

## Anaheim Convention Center

800 West Katella Avenue  
Anaheim, California 92802 USA

### Accessibility

The convention center is handicap accessible. If you have special needs or requirements, please call Conference Management at: +1.312.673.5868

### Food Services

A variety of food truck vendors and concessions are available throughout the convention center and outdoor plaza space.

### Internet Access

Free wireless access is available for SIGGRAPH 2013 in all conference locations within the Anaheim Convention Center [except in the Exhibit Hall].

### Parking

+1.714.765.8950  
SIGGRAPH 2013 attendees can park at the Anaheim Convention Center parking lot. Parking is \$12.

### Luggage and Coat Check

Luggage and coat-check services (\$2 for coat or small handbag and \$3 for luggage or large items) are available at the Anaheim Convention Center from Sunday, 21 July through Thursday, 25 July.

## 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 2013 speakers and award winners. To suggest books, CDs, or DVDs that should be available in the bookstore, contact:

Breakpoint Books  
[hemsath@msn.com](mailto:hemsath@msn.com)

## Camera and Recording Policies

No cameras or recording devices are permitted at SIGGRAPH 2013. Abuse of this policy will result in the loss of the individual's registration credentials.

SIGGRAPH 2013 employs a professional photographer and reserves the right to use all images this photographer takes during the conference for publication and promotion of future ACM SIGGRAPH events.

## Hotel Reservations

Visit the SIGGRAPH 2013 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/s2013](http://www.siggraph.org/s2013)

Or contact:

onPeak  
SIGGRAPH 2013 Travel Partner  
+1.800.631.5557  
+1.312.527.7300  
[siggraph@onpeak.com](mailto:siggraph@onpeak.com)

SIGGRAPH 2013 has negotiated discount rates for hotels in Anaheim. These discounts are available to SIGGRAPH 2013 attendees only. Please make your hotel reservation by 17 June. Reservations made after 17 June are based on availability only and rates may increase.

## Hotel-Convention Center Shuttle Bus Service

All SIGGRAPH 2013 conference hotels are within walking distance of the Anaheim Convention Center, therefore SIGGRAPH 2013 will not be providing daily shuttle service.

# Technical Materials

## Full Conference DVD-ROM

(\$75 Member/\$115 Non-Member)

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

## Conference Proceedings

Printed Conference Proceedings - ACM TOG 32(4) - are available from ACM.  
Send email to [acmhelp@acm.org](mailto:acmhelp@acm.org) to inquire about availability and pricing.

## *Leonardo, the Journal of the International Society of the Arts, Sciences and Technology (ISAST)* (Special Issue)

(\$17 Member/\$25 Non-Member)

This publication contains the permanent record of the juried Art Gallery content, including Art Papers.

To order these materials after the conference, contact:

ACM Member Services  
800.342.6626 (Continental US and Canada)  
+1.212.626.0500 (International and New York Metro area)  
+1.212.944.1318 fax  
[acmhelp@acm.org](mailto:acmhelp@acm.org)

## SIGGRAPH Encore On-Demand Video

SIGGRAPH Encore On-Demand includes more than 1,500 sessions recorded at SIGGRAPH conferences dating back to 2003. The 2013 conference session recordings will be available on DVD-ROM and online at SIGGRAPH Encore On-Demand.

Please note, the on-demand content will go online shortly after the conference, while the DVD-ROM will be shipped to you in approximately 8 to 10 weeks. For more information and access to other SIGGRAPH Encore products, please visit:

<http://encore.siggraph.org>

# Registration Fee Information

## Conference Registration Categories

- F** Full Conference Access
- S** Select Conference Access
- E+** Exhibits Plus
- E** Exhibits Only

One-Day registration includes one day admission to all conference programs and events and the Exhibition (Tuesday–Thursday). Does not include reception ticket or Full Conference DVD-ROM.

## New Registration Categories

For SIGGRAPH 2013, registration categories have been revised to simplify the registration process, clarify the programs available in each category, and enhance the value of the conference for each attendee.

	<b>F</b> Full Conference Access	Full Conference One-Day	<b>S</b> Select Conference Access	Select Conference One-Day	<b>E+</b> Exhibits Plus	<b>E</b> Exhibits Only
<b>Member:</b>						
On or before 31 May	\$895	\$325	\$295	\$125	\$125	\$45
On or before 28 June	\$1070	\$375	\$325	\$150		
At SIGGRAPH 2013	\$1170	\$425	\$350	\$175		
<b>Non Member:</b>						
On or before 31 May	\$1045	\$375	\$350	\$150	\$150	\$45
On or before 28 June	\$1195	\$425	\$375	\$175		
At SIGGRAPH 2013	\$1320	\$475	\$400	\$200		
<b>Student:</b>						
On or before 31 May	\$395	\$175	\$250	\$95	\$95	\$45
On or before 28 June	\$445	\$200	\$275	\$125		
At SIGGRAPH 2013	\$495	\$225	\$300	\$145		
Add the SIGGRAPH Business Symposium at the rate of:	\$175					
Art Gallery	X	X	X	X	X	
Awards Presentation (Monday)	X	O	X	O		
Birds of a Feather	X	X	X	X		
Computer Animation Festival - Daytime Select	X	X	X	X		
Computer Animation Festival - Electronic Theater	X	O	X	O		
Courses	X	X				
Dailies (Wednesday)	X	O	X	O		
Emerging Technologies	X	X	X	X	X	
Exhibition (Tuesday - Thursday)	X	X	X	X	X	X
Exhibitor Tech Talks	X	X	X	X	X	X
FastForward - Technical Papers (Sunday)	X	O	X	O	X	
Fast Forward - Exhibits (Monday)	X	X	X	X	X	X
International Resources	X	X	X	X		
Job Fair (Tuesday - Thursday)	X	X	X	X	X	X
Keynote Session (Monday)	X	O	X	O		
Panels	X	X				
Papers - Art (Tuesday)	X	O				
Papers - Technical	X	X				
Posters	X	X	X	X		
Production Sessions	X	X	X	X		
Reception* (Monday)	X					
Real-Time Live! (Tuesday)	X	O	X	O		
SIGGRAPH Mobile (Wednesday)	X	O				
Studio	X	X	X	X	X	
Talks	X	X				
Full Conference DVD	X					

X= Included in registration

O= Included if one day badge is purchased for that event day.

Note: 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 2013 Merchandise Pickup Center.

\* Reception Ticket: To be admitted to the Reception, you must have a ticket. Your registration badge does not provide access.

### Refund and Cancellation Deadline

Cancellation requests for refunds must be made in writing and received on or before Friday, 28 June. No refunds will be issue after this date. There is a refund processing fee of \$US75. Exhibits Only registrations are not refundable.



# SIGGRAPH 2013 Conference Committee

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

## SIGGRAPH 2013 Conference Chair

Mk Haley  
Disney Research

## ACM SIGGRAPH Conference Chief Staff Executive

Gregg H. Talley  
Talley Management Group, Inc.

## SIGGRAPH 2013 Conference Manager

Angela Anderson  
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Duke University

## Art Papers Chair

Tad Hirsch  
University of Washington

## Audio/Visual Support

Freeman Audio Visual Solutions

## Business Symposium

Evan Hirsch  
Engine Co. 4

## Computer Animation Festival Director

Jason RM Smith

## Conference Administration

Talley Management Group, Inc.

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SmithBucklin Corporation

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## Dailies Chair

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Side Effects Software Inc.

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Chesapeake Arts Center

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New Jersey Institute of Technology

## Emerging Technologies Chair

Dylan Moore

## Exhibition Management

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## Real-Time Live! Chair

Abraham Wiley  
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## Registration

Convention Data Services

## SIGGRAPH 2014 Conference Chair

David Shreiner  
ARM, Inc.

## SIGGRAPH Mobile Chair

Lars Erik Holmquist  
Yahoo! Labs

## Student Volunteers Program Chair

Gracie Arenas-Strittmatter  
Electronic Arts Tiburon

## Studio Chair

Patricia Clark

## Technical Papers Chair

Marc Alexa  
Technische Universität Berlin

## Travel Agent

onPeak

## Web Programming

The OPAL Group

## Co-Located Events

Presented in cooperation with ACM SIGGRAPH, these small symposia are related to important aspects of computer graphics and interactive techniques.

**For registration information:**

[s2013.siggraph.org/attendees/co-located-events](http://s2013.siggraph.org/attendees/co-located-events)

**ACM SIGGRAPH/Eurographics Symposium on Computer Animation 2013**

<http://sca2013.cs.tamu.edu/previous.html>

**19-21 July**

**Sheraton Park Hotel**

**Digital Production Symposium 2013 (DigiPro2013)**

<http://olm.co.jp/digipro2013/>

**20 July**

**Disney's Grand Californian Hotel & Spa**

**Expressive 2013 (CAe + NPar + SBIM)**

<http://www.cl.cam.ac.uk/conference/expressive-2013/>

**19-21 July**

**Hilton Anaheim**

**High-Performance Graphics 2013**

<http://highperformancegraphics.org/>

**19-21 July**

**Hilton Anaheim**

**SUI'13 ACM Symposium on Spatial User Interaction**

<http://sui.ict.usc.edu/>

**20-21 July**

**USC Institute for Creative Technologies**