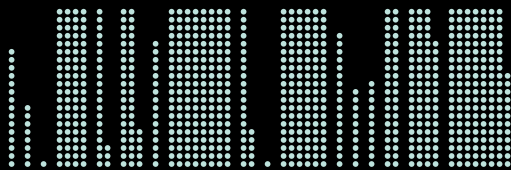# Advance **Program**

SIGGRAPH2013
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

Table of Contents

Recently added updates as of 28 May:

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
F S ACM SIGGRAPH Award Presentations		10:45-11:30 am			
F S ACM SIGGRAPH Award Talks		2-3:30 pm			
ACM Student Research Competition Final Presentation					2-3:30 pm
F S E+ Ex 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
F Art Papers			9 am-12:15 pm		
F S Ex Birds of a Feather	Throughout the week				
Business Symposium (Additional fee required)	8:30 am-6 pm				
F S Computer Animation Festival Electronic Theater		6-8 pm	6-8 pm	6-8 pm	10:45 am-12:30 pm
F S Computer Animation Festival Daytime Selects		9 am-5 pm	9 am-5 pm	9 am-5 pm	
F 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
F S Dailies				6-8 pm	
F S E+ Ex 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
F S E+ E Ex Exhibition			9:30 am-6 pm	9:30 am-6 pm	9:30 am-3:30 pm
F S E+ E Ex Exhibitor Tech Talks			9:30 am-6 pm	9:30 am-6 pm	9:30 am-3:30 pm
F S E+ E Ex Exhibits Fast Forward		3:45-5:15 pm			
F 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
F S E+ E Ex Job Fair			9:30 am-6 pm	9:30 am-6 pm	9:30 am-3:30 pm
F S Ex Keynote Session		11:30 am-1 pm			
F Panels			3:45-5:15 pm		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	
F S 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 pm 3:45-5:15 pm
F S Real-Time Live!			5:30-7 pm		
F Reception		8-10 pm			
F SIGGRAPH Mobile				9 am-5:15 pm	
F S E+ Ex Studio	noon-5:30 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-5:30 pm	9 am-1 pm
F Talks		9-10:30 am	2-3:30 pm	9 am-12:15 pm	9 am-5:35 pm
F Technical Papers		9 am-5:55 pm	9 am-5:35 pm	9 am-5:35 pm	9 am-5:15 pm
F S 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.

Your **brain** will be **delighted**.
Both sides.

Intellectually engaging

Creatively challenging

Culturally edifying

Big fun

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

17 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 #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+ 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.

F S #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.

F S E+ Ex #siggraph #studio

Studio

Learn, experiment, and create in this collaborative hands-on working environment. Try out a wide range of new techniques and media with help from experienced hands. 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.

F S #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	8:30 am-6 pm
Tuesday, 23 July	8:30 am-6 pm
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	9 am-5:30 pm
Tuesday, 23 July	9 am-5:30 pm
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 50.)

9-10 am
BOF: Cross-disciplinary Education – Co-Sponsored by the SIGGRAPH Education Committee & Leonardo Education and Art Forum (LEAF)

9-10:30 am
BOF: Using New Media Technologies to Augment the Experience of Watching Performative Art

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

10-11 am
BOF: Visualization for Science and Engineering Education

11 am-Noon
BOF: The ACME Network's ACME Animation Online Mentoring Community

Noon-1 pm
BOF: IVRC (International Collegiate Virtual Reality Contest)

Noon-2 pm
BOF: Studio View of Demo Reels

1:30-3:30 pm
BOF: LA ACM SIGGRAPH Chapter Social

2-2:30 pm
BOF: Blender Foundation–Community Meeting

2-3 pm
BOF: SEAD: Innovation Thinking

2-3:30 pm
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: Digital Art Community, ACM-SIGGRAPH

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: Graphics on the Go

Talks: Getting Riggy With It

4-5 pm
BOF: ASIFA-Hollywood Animation Educators Forum: What is the State of Online Animation Instruction Today?

4:45-5:30 pm
Emerging Technologies Talks

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

9-10:30 am

SIGGRAPH Mobile Workshop: Make Mobile Apps Quickly

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

10:45-11:30 am

ACM SIGGRAPH Award Presentations

11 am-Noon

BOF: SIGGRAPH Education Committee - Undergraduate Research Alliance

11:30 am-1 pm

Keynote Session

Noon-1 pm

BOF: Integrated Help: Bringing Information to Artists at the Time of Need to Reduce Onboarding and Time-On-Task

12:30-1:30 pm

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

1-2 pm

BOF: Open Source in Graphics Education

1-3 pm

BOF: Creative Professionals in Government

2-3 pm

BOF: SCENE, Novel Representations for Digital Scenes

BOF: The Khronos Group: Not-For-Profit Open Standards Group

2-3:15 pm

Studio Talks:

– London 2012 - Olympic and Paralypic Opening and Closing Ceremonies - Audience Pixel Content

– 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)

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

3:15-3:30 pm

Dailies Preview

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 Tooning 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

4:45-5:30 pm

Emerging Technologies Talks

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

9-10:30 am

Art Papers: Early Pioneers of Electronic Art

Computer Animation Festival 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

9:30-11 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

10:45 am-12:15 pm

Art Papers: Hybrid Media, Contemporary Practice

Computer Animation Festival Production Session: Sony Pictures Imageworks Presents: Take a Journey Down the Yellow Brick Road

Computer Animation Festival 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

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.

12:15-1:15 pm

Poster Sessions

12:30-2:30 pm

BOF: ACM SIGGRAPH Carto BOF

12:45-1:45 pm

Exhibitor Tech Talk: Unity Technology

1-2:30 pm

BOF: Khronos KITE BOF

1-2:30 pm

BOF: Kinect Scanning Users

2-3:30 pm

BOF: Volume Rendering and Medical Visualization Using X3D

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

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—The Architecture of High-End Mobile Graphics Hardware and Accelerating Look Development With Real-Time, Interactive Ray Traced Viewports

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

3:30-5 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

3:45-5:35 pm

Technical Papers: Data-Driven Animation

Technical Papers: Design & Authoring

Technical Papers: Video & Warping

4-5:30 pm

BOF: Renderfarming

4-6 pm

BOF: ACCAD/OHIO STATE ALUMNI

4:45-5:30 pm

Emerging Technologies Talks

5:30-7 pm

BOF: Dynamic Simulation in Production

Computer Animation Festival: Real-Time Live!

6-8 pm

Computer Animation Festival: Electronic Theater

Wednesday, 24 July

9-10:30 am

Art Talks I

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 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 am-6 pm

Exhibition

Job Fair

9:45-10:45 am

Exhibitor Tech Talk: Unity

10-11 am

BOF: OpenScenegraph

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

Computer Animation Festival 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

11:15 am-12:15 pm

Exhibitor Tech Talk: Advanced Micro Devices, Inc.

11:30 am-1 pm

BOF: Augmented and Mixed Reality

12:15-1:15 pm

Poster Sessions

12:45-1:45 pm

Exhibitor Tech Talk: Unity

1-2:30 pm

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

BOF: Leonardo Community Meeting

2-3 pm

BOF: COLLADA

2-3:30 pm

BOF: Computer Graphics for Simulation

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

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

2:30-4:30 pm

BOF: Christians in Computer Animation

3-4 pm

BOF: OpenCL

3-5 pm

BOF: Motion Graphics

BOF: Managing Remote Creative Projects–Online Collaboration

3:45-4:30 pm

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

3:45-5:15 pm

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

4-5 pm

BOF: Heterogeneous Systems Architecture Foundation

BOF: WebGL

4:45-5:30 pm

Emerging Technologies Talks

5-6 pm

BOF: OpenGL ES

5:30-6:30 pm

BOF: OpenSubdiv BOF

5:30-7:30 pm

BOF: Clemson Digital Production Arts Reunion

6-7 pm

BOF: OpenGL

6-8 pm

Computer Animation Festival: Electronic Theater

Dailies

6:30-9 pm

BOF: Purdue University Birds of a Feather

Thursday, 25 July

9-10:30 am

Course: A Practical Guide to Art/Science Collaborations

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

Studio Talks:
– Acting for Performance Capture
– Tower of the Dragon

Talks: Face the Facts

Technical Papers: Sampling

Technical Papers: Skinning & Deformation

9 am-12:15 pm

Course: Physically Based Shading in Theory and Practice

9 am-5:15 pm

Geek Bar

9:30 am-3:30 pm

Exhibition

International Center

Job Fair

10:45 am-12:15 pm

Computer Animation Festival 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

Computer Animation Festival: Electronic Theater

12:30-1 pm

BOF: FINE - Freeview Immersive Networked Experience

12:45-2 pm

Computer Animation Festival Production Session: Walt Disney Animation and Pixar Animation Presents: Scare School 101: The Making of "Monsters University"

1-2:30 pm

BOF: Khronos Chapters

2-3:30 pm

ACM Student Research Competition Final Presentation

Technical Papers: 3D Printing

Technical Papers: Hardware Rendering

Technical Papers: Laplacians, Light Field & Layouts

2-5:15 pm

Course: Rendering Massive Virtual Worlds

3:45-5:15 pm

Talks: A Corps of Cores, of Course!

Talks: Movie Sampler

Technical Papers: Appearance Fabrication

3:45-5:35 pm

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

The MIT Press   LEONARDO
                  THE INTERNATIONAL SOCIETY FOR THE
                  ARTS, SCIENCES AND TECHNOLOGY

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

F S #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

The Digital Production Pipeline

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

Darin Grant
Method Studios

Kim Libreri
LucasFilm

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

Jeff Lait
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 Johanson
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

Michal Valient
Guerrilla Games

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

Zap Andersson
Autodesk

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

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

Emerging Technologies presents innovative technologies and applications in several fields, from displays and input devices to collaborative environments and robotics.

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
Disney Research Pittsburgh

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

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
Takuji 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
Disney Research Pittsburgh

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

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 Ponnam
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 E+ #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

Industrial Light & Magic Presents: 'Cancel the Apocalypse' – 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 will discuss the wide-ranging scope of Industrial Light & Magic's effects work on Guillermo del Toro's science fiction epic "Pacific Rim." The artists will 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

Hal Hickel

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 27, 2013 film, "Frozen". Attendees will 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.

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 17 October 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 sculpts;

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.

Speakers

Georgina Hayns
Creative Supervisor, Puppet Fabrication

Brian McLean
Director of Rapid Prototype

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 anime, 3DCG and live action films. The showcase focuses on how the anime spirit of OLM Digital is put into various visual forms. The brand-new Pac-Man animated TV series, which is 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

Moto Sakakibara, CEO and Creative Director
Sprite Animation Studios

Ken Anjyo, R&D supervisor
OLM Digital

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 will 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.

Walt Disney Animation and Pixar Animation Presents: Scare School 101: The Making of "Monsters University"
Thursday, 25 July, 12:45-2 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.

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

Red Ball - Performing With iPads

PUSH Physical Theatre, a Rochester-based group, added iPads to their traditional tools of magic, mime, and movement in the performance of Red Ball.

Marla Schweppe
Rochester Institute of Technology

Darren Stevenson
PUSH Physical Theatre

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

Graphics on the Go
Sunday, 21 July, 3:45-5:15 pm

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

Gil Irizarry
Conoa

Make Mobile Apps Quickly
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
Kihwan Kim
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, 2-3:30 pm

London 2012 - Olympic and Paralypic Opening and Closing Ceremonies - Audience Pixel Content

Ed Cookson
Crystal CG International

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

Hisashi Sato
Hiroshi Suzuki
Haruo Hayami
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

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).

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 Suton
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
Joshibi 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

Face Off

Attendees create laser scans of their faces using CNC fabrication technologies.

David Celento
DigiFabLab

Fight Our ShadowRobot

A digital workshop that offers enjoyable paper-craft activities.

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

Sketch Corner

A collaborative project among artists, models, and designers from Southern California that takes an innovative approach to figure drawing by combining live models, digital technology, and social media into interactive artist workshops for the Studio.

Casey Kwock
Dr. Sketchy's Anti-Art School

Kelly Castillo
Rothick Art Haus

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

Virtual Cinematography Beyond Big-Studio Production

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

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 Bisceglio
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 Havaldar
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 Kaefer
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!: Contraint-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 University

Michael Cohen
Microsoft Research Redmond

Style and Abstraction in Portrait Sketching

Itamar Berger
Ariel Shamir
Interdisciplinary Cente Herzliya

Moshe Mahler
Disney Research Pittsburgh

Elizabeth Carter
Carnegie Mellon University

Jessica Hodgins
Carnegie Mellon University,
Disney Research Pittsburgh

Topology-Driven Vectorization of Clean Line Drawings

Gioacchino Noris
Alexander Hornung
Robert W. Sumner
Disney Research Zürich

Maryann Simmons
Walt Disney Animation Studios

Markus Gross
Disney Research Zürich and ETH Zürich

Interpreting Concept Sketches

Tianjia Shao
Tsinghua University

Wilmot Li
Adobe Research

Kun Zhou
Zhejiang University

Weiwei Xu
Hangzhou Normal University

Baining Guo
Microsoft Research Asia

Niloy Mitra
University College London

Stereoscopic 3D Line Drawing

Yongjin Kim
Pohang University of Science and Technology

Yunjin Lee
Ajou University

Henry Kang
University of Missouri-St. Louis

Seungyong 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 College

James O'Brien
University of California, Berkeley

Hany Farid
Dartmouth College

Gloss Perception in Painterly and Cartoon Rendering

Adrien Bousseau
INRIA

James P. O'Shea
University of California, Berkeley

Frédo Durand
Massachusetts Institute of Technology CSAIL

Ravi 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 Informatik

Christian Richardt
REVES/INRIA Sophia-Antipolis

Emily Cooper
University of California, Berkeley

Gaurav Chaurasia
REVES/INRIA Sophia Antipolis

Martin Banks
University of California, Berkeley

George Drettakis
REVES/INRIA Sophia-Antipolis

Understanding the Role of Phase Function in Translucent Appearance

Ioannis Gkioulekas
Harvard School of Engineering
and Applied Sciences

Bei Xiao
Massachusetts Institute of Technology

Shuang Zhao
Cornell University

Edward H. Adelson
Massachusetts Institute of Technology

Todd Zickler
Harvard School of Engineering
and Applied Sciences

Kavita 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 Berlin

Keenan Crane
California Institute of Technology

Ulrich Pinkall
Technische Universität Berlin

Peter Schröder
California Institute of Technology

Geodesics in Heat: A New Approach to Computing Distance Based on Heat Flow

Keenan Crane
California Institute of Technology

Clarisse Weischedel
Max Wardetzky
University of Göttingen

Weighted Averages on Surfaces

Daniele Panozzo
ETH Zürich

Ilya Baran
Belmont Technology Incorporated, Adobe
Research, Disney Research Zürich

Olga 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_0 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 Zürich

Sylvain Lefebvre
INRIA

Olga Sorkine-Hornung
ETH Zürich

Computational Design of Actuated Deformable Characters

Melina Skouras
ETH Zürich

Bernhard Thomaszewski
Stelian Coros
Bernd Bickel
Disney Research Zürich

Markus Gross
Disney Research Zürich, ETH Zürich

Computational Design of Mechanical Characters

Stelian Coros
Bernhard Thomaszewski
Gioacchino Noris
Disney Research Zürich

Shinjiro Sueda
Moira Forberg
Disney Research

Robert Sumner
Disney Research Zürich

Wojciech Matusik
Massachusetts Institute of Technology CSAIL

Bernd 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, Berkele

Akash Garg
Danny Kaufman
Eitan Grinspun
Columbia University

Maneesh Agrawala
University of California, Berkeley

Data-Driven Animation
Tuesday, 23 July, 3:45-5:35 pm

Session Chair:
Jinxiang Chai, Texas A&M University

Non-Polynomial Galerkin Projection on Deforming Meshes

Matt Stanton
Yu Sheng
Carnegie Mellon University

Martin Wicke
Otherlab

Federico Perazzi
Amos Yuen
Srinivasa Narasimhan
Adrien Treuille
Carnegie Mellon University

Near-Exhaustive Precomputation of Secondary Cloth Effects

Doyub Kim
Carnegie Mellon University

Woojong Koh
Rahul Narain
University of California, Berkeley

Kayvon Fatahalian
Adrien Treuille
Carnegie Mellon University

James 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 Hill

Jason Sewall
Intel Corporation

Ming Lin
University of North Carolina at Chapel Hill

Dynamic-Element Textures

Chongyang Ma
The University of British Columbia, Tsinghua University

Li-Yi Wei
The University of Hong Kong, Microsoft Research

Sylvain Lefebvre
INRIA

Xin 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 Asia

Hao Pan
The University of Hong Kong

John Snyder
Microsoft Research

Wenping Wang
The University of Hong Kong

Baining Guo
Microsoft Research Asia

On the Equilibrium of Simplicial Masonry Structures

Fernando de Goes
California Institute of Technology

Pierre Alliez
INRIA Sophia Antipolis - Méditerranée

Houman Owhadi
Mathieu Desbrun
California Institute of Technology

Reciprocal Frame Structures Made Easy

Chi-Wing Fu*
Peng Song*
Goswami Prashant
Jianmin Zheng
Nanyang Technological University

Niloy Mitra
University College London

Daniel 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 Universitet

Henrik 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 Research

Miika Aittala
Aalto University, NVIDIA Research

Frédo Durand
Massachusetts Institute of Technology CSAIL

Timo Aila
NVIDIA Research

Axis-Aligned Filtering for Interactive Physically-Based Diffuse Indirect Lighting

Soham Uday Mehta
Brandon Wang
Ravi Ramamoorthi
University of California, Berkeley

Frédo 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 Zürich

Alexander Sorkine-Hornung
Disney Research Zürich

Olga Sorkine-Hornung
ETH Zürich

Integer-Grid Maps for Reliable Quad Meshing

David Bommes
INRIA Sophia Antipolis-Méditerranée

Marcel Campen
Hans-Christian Ebke
RWTH Aachen University

Pierre Alliez
INRIA Sophia Antipolis-Méditerranée

Leif Kobbelt
RWTH Aachen University

Particle-Based Anisotropic Surface Meshing

Zichun Zhong
Xiaohu Guo
University of Texas at Dallas

Wenping Wang
The University of Hong Kong

Bruno Lévy
INRIA Nancy-Grand Est

Feng Sun
The University of Hong Kong

Yang Liu
NVIDIA Corporation

Weihua Mao
University of Texas Southwestern
Medical Center at Dallas

Anisotropic Delaunay Meshes of Surfaces

Jean-Daniel Boissonnat
INRIA Sophia-Antipolis

Kan-Le Shi
Tsinghua University

Jane Tournois
GeometryFactory

Mariette 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 University

Tomas 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 Université

Cyril Soler
INRIA Rhône-Alpes

Kartic Subr
University College London

Nicolas Holzschuch
INRIA Rhône-Alpes

Frédo 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 Angeles

Lawrence Chai
Walt Disney Animation Studios

Joseph Teran
University of California, Los Angeles

Andrew Selle
Walt Disney Animation Studios

Highly Adaptive Liquid Simulations on Tetrahedral Meshes

Ryoichi Ando
Kyushu University

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

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

Imagination Technologies
Tuesday, 23 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.

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

Advanced Micro Devices, Inc.
Wednesday, 24 July, 11:15 am-12:15 pm

Unity
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

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

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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.

NVIDIA Exhibitor Sessions
Sunday, 21 July and Monday, 22 July
Room 211 AB

Explore the impact of GPUs on state-of-the-art interactive graphics, simulation and rendering. Join NVIDIA for engaging talks and technical deep dives covering everything from advances in GPU-accelerated ray tracing to new developer tools. Get insight into today's most exciting applications—and a glimpse into the next generation of groundbreaking advancements.

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

3D3 Solutions

3Dconnexion

3dMD

5th Kind

Academy of Art University

ACUTE3D

Addison-Wesley

Advanced Micro Devices, Inc.

American Express OPEN

Animation Magazine, Inc.

Arc Productions

ARM

ASC-American Cinematographer

Avere Systems

Awe Company Ltd.

Axceleon Inc.

Beijing Enochview Digital Art Co., Ltd.

Beijing Noitom Technology Ltd.

Blender Foundation

British Columbia, Canada Delegation

BOXX Technologies, Inc.

BZP Pro

Canon U.S.A. Inc.

Cap Digital

Carnegie Mellon Entertainment Technology Center

cebas Visual Technology Inc.

Christie Digital Systems

Cinema Suite Inc.

Computer Graphics World

ConceptShare

CRC Press - Focal Press

CyberGlove Systems

DePaul University College of Computing and Digital Media

Design Innovate Inc.

Digia Norway AS

DigiPen Institute of Technology

Digiteyezer

Dimensional Imaging

Double Summit LLC

Eizo Inc.

EnvisionTEC

Epson America Inc.

Esri

Exocortex

Faceshift AG

Faceware Technologies

FARO Technologies, Inc.

Flixel Photos Inc.

ForgeFX Simulators

Fusion-io

FXGear, Inc.

Green Forest Animation Studio

Hitachi Data Systems

IATSE

IdN magazine

IEEE Computer Society

Imagination Technologies

Imagineer Systems Ltd.

Infinite Z

Integrated Media Technologies

IntegrityWare, Inc.

Intel Corporation

Intellane Co., Ltd.

IO Industries Inc.

Isotropix

Jasper

Joe Alter, Inc.

JourneyEd

Khronos Group

Kobold Charakteranimation

Konrad Group

Korea Creative Content Agency (KOCCA)

Legend 3D

Lemire Industries DBA Happy Feet

Leonar3do International Inc.

Lightcraft Technology

LightWorks

Luxion, Inc.

Massive Software

MAXON

MCOR Technologies Ltd.

Motion Analysis Corporation

Mr. X

MyPlanet Digital

NEC Display Solutions Ltd.

New York University School of Continuing and Professional Studies (SCPS)

NewTek/Lightwave

Next Limit Technologies

NorPix Inc.

NVIDIA Corporation

Ontario Canada Delegation

OpenNI

Optis SAS

OptiTrack

Panasas

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).

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(up to 9 passengers)

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$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.

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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

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

Or contact:
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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 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:

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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.

	F Full Conference Access	Full Conference One-Day	S Select Conference Access	Select Conference One-Day	E+ Exhibits Plus	E Exhibits Only
Member:						
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		
Non Member:						
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		
Student:						
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
Fast Forward - 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
Talley Management Group, Inc.

Art Gallery Chair
Victoria Szabo
Duke University

Art Papers Chair
Tad Hirsch
University of Washington

Audio/Visual Support
AVW-TELAV Audio Visual Solutions

Business Symposium
Evan Hirsch
Engine Co. 4

Computer Animation Festival Director
Jason RM Smith

Conference Administration
Talley Management Group, Inc.

Conference Management/ Marketing and Media
SmithBucklin Corporation

Courses Chair
Paul S. Strauss
Google, Inc.

Dailies Chair
Mark Elendt
Side Effects Software Inc.

Donation Chair
Irene Colorado
Chesapeake Arts Center

Education Director
Glenn Goldman
New Jersey Institute of Technology

Emerging Technologies Chair
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Exhibition Management
Hall-Erickson, Inc.

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General Services
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General Submissions Chair
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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

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