Courses Fact Sheet

Chair: Yizhou Yu, The University of Hong Kong, Hong Kong
Conference: Tuesday 19 November – Friday 22 November
Exhibition: Wednesday 20 November – Friday 22 November

Fast Facts

- The SIGGRAPH Asia 2013 Courses program received a total of 20 submissions, of which four were from Asia, six from Europe and 10 from North America.
- A total of 12 submissions were accepted by the Courses Committee.
- The Courses Committee has also additionally invited six curated courses to participate in SIGGRAPH Asia 2013 to further enhance the depth and breadth of the program.
- The Courses program will see experts present a wide variety of topics in computer graphics and interactive techniques, with a special focus on user interface design and interactive technologies as well as Asian arts and large-scale visualization, all of which with content tailored to seasoned professionals and students.

A Quote from the SIGGRAPH Asia 2013 Courses Chair:

"This year's courses program at SIGGRAPH Asia covers a wide variety of topics in computer graphics and interactive technologies. In addition to offerings in core graphics areas, such as rendering, geometry processing and animation, it also aggressively pushes the boundaries of interactive technologies with courses ranging from user experience design and interactive virtual characters to responsive buildings made from smart materials. Many course presenters come from top industry organizations, such as Disney and Pixar, or prestigious institutions, such as Harvard, Princeton, Stanford University, and more."

SIGGRAPH Asia 2013 Courses Program Highlights

- **Physically Plausible Shading and Lighting on Monster's University and Beyond**
  Paul Kanyuk and Davide Pesare, Pixar Animation Studios

  In this invited course, Pixar will review the evolution of rendering technology and introduce the latest advancements in physically based shading and lighting. Pixar will cover how the theoretical framework for physically plausible rendering works, and how the lights in their system operate. This course will also review how shading is done at Pixar, from techniques for pattern generation, to how shaders and coshaders interact with the physically plausible lighting system. Topics such as proceduralism, geometry aware detail, paint systems, and texture synthesis will also be discussed.

- **Cross-Cultural User Experience Design**
  Aaron Marcus, Aaron Marcus and Associates, Inc.

  Participants in this course will learn practical principles and techniques useful for analysis and design in relation to user experiences across desktop, web, mobile, game, and vehicle products/services. In this tutorial, attendees will learn: new terms and concepts to understand culture and dimensions of culture (e.g., power distance, individualism/collectivism, masculinity/femininity, uncertainty avoidance, and time orientation); how these example dimensions relate to the design of user-interface components (metaphors, mental models, navigation, interaction, and appearance); how additional culture dimensions, models, and dimensions (e.g., persuasion, trust, intelligence, cognition) interact with basic culture-theory dimensions; practical trade-offs from studying several multi-national companies' Web efforts, best-of-breed set of culture dimensions derived from expert opinions, how mobile devices from Asia and the USA exhibit culture differences, how culture differences and similarities affect Web 2.0 and social networking Websites.

- **Interactive Virtual Characters**
  Danial Thalmann and Nadia Magnenat Thalmann, Nanyang Technological University

  In this invited course, an in-depth explanation will be provided on how to create Interactive Virtual Characters and enable them to communicate and react with real humans. First, a survey of existing gestures and facial animation and sound recognition methods will be presented, and then decision processes based on personality-mood-emotion model of the Virtual Human will be described.

- **Structure-Aware Shape Processing**
  Niloy Mitra, University College London
  Michael Wand, MPI Informatik
  Hao (Richard) Zhang, Simon Fraser University
  Daniel Cohen-Or, Tel Aviv University
  Vladimir Kim, Princeton University
  Qi-Xing Huang, Stanford University

  This course will focus on how shape structure deals with arrangement and relations between parts Discussions on the recent advances that go beyond local geometry processing to analyze and process shapes at a high level will take place during this tutorial-styled session. Explanations about the key principles underlying common models of structure, their implementation in terms of mathematical formalism and algorithms will also take place during this course.

- **Computational Manga and Anime**
  Tien-Tsin Wong, The Chinese University of Hong Kong
  Takeo Igarashi, University of Tokyo
  Ying-Qing Xu and Danqing Shi, Tsinghua University

  In this invited course, the latest computational methods in assisting manga and anime artists' production will be introduced. Besides the computational aspects a wish list from the artist's point of view will also be provided, i.e. what kind of computer technologies an artist would prefer to use in

their creation process and recent technologies developed in graphics that facilitates or even inspires content creation.

- **GPU-Based Large-Scale Visualization**
  Markus Hadwiger, King Abdullah University of Science and Technology
  Jens Krueger, University of Duisburg-Essen
  Johanna Beyer, Harvard University
  Stefan Bruckner, University of Bergen

  This invited course will offer an overview of modern techniques for interactive and scalable visualization of large-scale image and volume data on GPUs via display-aware multi-resolution algorithms and on-demand streaming of data. The course consists of two major parts: An introductory part that progresses from fundamentals to modern techniques , and a more advanced part that discusses details of ray-guided volume rendering, novel data structures for display-aware visualization and processing, and the remote visualization of large online data collections. Recent GPU data structures and advanced multi-resolution representations, virtual texturing approaches, and out-of-core techniques will also be discussed.

- **Computing with Matter**
  Andrzej Zarzycki and Martina Decker, New Jersey Institute of Technology

  This course will explore the intersection of microcontroller-based physical computing with emergent material technologies. The presenters take a step further beyond the current electronic paradigm and will discuss the impact of smart materials on the electronically dominated world of computing. Various ways in which performative materials can respond in an environment that is controlled by, and interfaced with the digital realm will also be examined. Participants will be introduced to a range of nanotech-enabled emergent and smart materials that can respond to changes in their environment. They will also learn principles of feedback-based interactions that are essential for the realization of adaptive spaces.

Full information about the Courses program can be found on
http://sa2013.siggraph.org/en/attendees/courses.html.

For more information about SIGGRAPH Asia 2013 program updates, please visit http://sa2013.siggraph.org.