

Emerging Technologies Fact Sheet

Chair: Mark Billinghurst, Human Interface Technology Laboratory New Zealand

Conference: Monday 12 December – Thursday 15 December

Exhibition: Tuesday 13 December – Thursday 15 December

Fast Facts

- The Emerging Technologies program will showcase a wide range of new and interactive technologies from all over the world, with submissions from 13 countries, including Japan, Singapore, Italy and France, among others.
- Some of the institutions taking part in the Emerging Technologies program include the *École polytechnique fédérale de Lausanne*, *Keio-NUS CUTE CENTER*, *Osaka University* and the *University of Tokyo*.
- SIGGRAPH Asia 2011 received a total of 46 submissions. Out of these, 25 pieces were accepted and will be on display at SIGGRAPH Asia 2011.
- Close to 70 percent of the accepted pieces on display are from Asia Pacific, with first-time participants coming from Taiwan, Italy and New Zealand.

A Quote from the SIGGRAPH Asia 2011 Emerging Technologies Chair:

“The high caliber of submissions we received this year made the selection process rather challenging for the Emerging Technologies jury. In contrast to purely interactive graphics, we saw an increase in submissions for input and display devices, such as haptic and tactile feedback, polychrome paper and robotics. This ties in nicely with the focus of this year’s Emerging Technologies program. With “Play” as a theme, we were in fact looking towards the use of novel technologies to encourage new forms of play.

The Emerging Technologies program has always been the window to the future of interactive experiences and at SIGGRAPH Asia 2011, attendees will be greeted with interactive and inspirational new technologies as well as the creators behind these innovations. I really believe that the Emerging Technologies program will be an essential and complimentary part of the SIGGRAPH Asia experience, and, for many attendees, the most inspirational.”

SIGGRAPH Asia 2011 Emerging Technologies Program highlights include:

- **Polychrome Paper Computing**
Kohei Tsuj, Akira Wakita, Keio University

Polychrome Paper Computing is a project that enables dynamic color change on paper without losing the thin, soft character of paper. Pictures are printed using thermochromic ink, and flexible heating elements are placed under the paper. When the heat is turned on, the ink is influenced by the temperature and changes color, altering the printed image. This technology could be applied in interactive pictorial art, multi-narrative storytelling, and instructional media.

- **360-Degree Fog Projection Interactive Display**

*Asuka Yagi, Masataka Imura, **University of Osaka***

The 360-Degree Fog Projection Interactive Display presents a three dimensional view of an object to observers as they walk around a fog display. Depending on the observer's position, a different outlook can be viewed. The virtual object appears to be floating in mid-air and many people can see it at the same time. Observers can also interact with the object using finger-tracking, and the technology could have application in engineering, education and interactive entertainment.

- **An Interactive Augmented Reality Coloring Book**

*Adrian Clark, **University of Canterbury***

The Interactive Augmented Reality Coloring Book allows users to create their own three-dimensional Augmented Reality (AR) experience by modifying pages from an ordinary coloring book, and then viewing their work through an AR display. Participants will be provided with blank pages from a coloring book, and coloring pencils that they can use to color the pages with. The AR application will turn completed artwork into three dimensional virtual images that can pop out of pages.

- **Influencia: Living Life with Sentient Machines**

*David McLellan, **London College of Communication***

In an enclosed arena, a dozen small color-coded autonomous robots coexist and communicate with participants. Through sensors and programmed behavior, the robots sense and respond to the presence of people within the arena. This installation allows participants to interact with the robots and control them. This technology has applications in social robotics and human robot collaborations.

- **Kinect-Based Facial Animation**

*Thibaut Weise, Soen Bouaziz, Hao Li, Mark Pauly, **École polytechnique fédérale de Lausanne***

This project demonstrates Kinect-based Facial Animation software that enables any user to control the facial expressions of a digital character in real time using the commercially available Microsoft Kinect 3D sensor. Attendees will have the opportunity to animate a set of CG characters in real-time using their own facial expressions. The technology shows how a low-cost real time facial animation system could be developed.

- **The Octagon**

*Goeff Wyvill, **University of Otago***

The Octagon is a shared installation where up to four users can collaboratively create a shared three dimensional virtual sculpture. A user will be able to see and interact with the other three users, as they add and delete elements to and from their changing virtual sculpture. What is novel is the way in which gestures in the two dimensional space of the screen are interpreted to create three dimensional virtual objects. The technology could be applied to future online collaborative virtual environments and educational experiences.