

NATIONAL UNIVERSITY OF SINGAPORE

School of Computing

C S S E M I N A R

Title: **Siggraph Asia 2014 Half Day Course on Many-light Rendering**

Speaker: Mr Ola Olsson
 Department of Computer Science and Engineering
 Chalmers University of Technology

 Mr Markus Billeter
 Department of Computer Science and Engineering
 Chalmers University of Technology

Date/Time: 8 December 2014, Monday, 10:00 AM to 12:00 PM

Venue: SR@LT19

Chaired by: Dr Yin Kang Kang, Sung Kah Kay Assistant Professor, School of Computing
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Abstract:

Using many lights in real-time applications has been an important goal for many years. The games industry in particular has strived to increase the number of lights to provide enhanced visual quality and realism. Today, high-end games often make use of hundreds of lights in each frame, and this is likely to be pushed further in the future. The ability to efficiently manage and shade large numbers of lights brings many possibilities, apart from simply allowing light to be cast from many dynamic objects. In addition, it can support visualizing global illumination solutions, or enable detailed artistic light direction. Thus, efficient real-time shading with many lights, represents a potential for solving many of the problems facing the development of next generation high-end games. To achieve the level of performance needed to make this possible, the way which light management and shading is performed has undergone dramatically development in recent years. Both industry and academia has invested great effort pursuing this goal, which has resulted in a large number of new and sometimes competing techniques. This course presents an in-depth exploration of this topic, starting with background and leading up to state of the art research, including recent results on supporting shadows. The course combines production experience from game developers with the latest research into efficient many-light algorithms for both desktop and mobile hardware.

Biodata:

Ola Olsson is a recently graduated PhD from Chalmers University of Technology in

Gothenburg, Sweden. As a member of the Computer Graphics group, his research focussed on algorithms for managing and shading thousands of lights in real time, resulting in several publications on Tiled and Clustered Shading, most recently describing how to add support for shadows. He has given several well-attended talks about his research at SIGGRAPH and other developer gatherings. Before becoming a PhD student, Ola was a games programmer for around 10 years with roles ranging from game-play programmer on 'Ty the Tasmanian Tiger', to lead rendering programmer on 'Race Pro'.

Markus Billeter recently completed his PhD at the Chalmers University of Technology, where he participated in research focusing on real-time rendering and parallel GPU algorithms. His work in real-time rendering includes methods considering participating media and development of the clustered shading method. Prior to this, he studied first physics and then complex adaptive systems, where he holds an MSc degree. In late 2012 and early 2013, Markus interned in the Visual Computing team at the Bosch Research and Technology Center (Palo Alto), where he developed a multi-platform rendering system also targeting mobile devices.