

ACM SIGGRAPH Announces 2011 Technical Award Winners

ACM SIGGRAPH will present its 2011 awards during the Keynote session on Monday, August 8, at 11:00 am in Vancouver. Technical awardees are: Jim Kajiya, Steven Anson Coons Award; Rick Szeliski, Computer Graphics Achievement Award and Olga Sorkine, Significant New Researcher. The technical awardees, along with Charles Csuri, recipient of the Award for Lifetime Achievement in Digital Art, will give their talks on Monday, August 8, 2011 at 2:00 pm.



Computer Graphics Achievement Award

The recipient of the 2011 Computer Graphics Achievement Award, Richard Szeliski is recognized for his pioneering contributions at the intersection of computer graphics and computer vision, particularly his work in image-based modeling and rendering. His work has significantly advanced our ability to capture the world in photographs and video and has shown how these advances enable a wide variety of new applications.

Szeliski has spent decades pursuing image-based rendering, computational photography, video scene analysis, and the use of computer vision to build 3D models from images. He has published two books and well over 100 research papers in computer vision, computer graphics, and medical imaging. He currently leads the Interactive Visual Media Group at Microsoft Research, where he has worked since 1995. He also holds an Affiliate Professor appointment at the University of Washington. He has taught courses in computer vision at both the University of Washington and Stanford, and has advised numerous graduate students. He received a Ph.D. from Carnegie Mellon University in 1988. Prior to Microsoft, he worked at Bell-Northern Research, Schlumberger, SRI International, and Digital's Cambridge Research Laboratory.

A hallmark of Szeliski's work is the insight that it is often not necessary to solve the entire computer vision problem of reconstructing a full 3D model from imagery; for many applications it is sufficient to re-render the input imagery using a simpler proxy model. In a world where image (and video) capture and distribution has become increasingly easy, this insight means that high-quality computer graphics experiences can be delivered without high-fidelity 3D models. Szeliski and his collaborators have developed several new representations that leverage this insight and consequently changed the way computer graphics researchers think about capturing the world.

Layered depth images showed that incorporating just one extra channel per pixel (depth) leads to efficient re-rendering of imagery from nearby camera views. His work on the Lumigraph went towards the other extreme and showed that it is enough to sample the light emanating in all directions from an object in order to synthesize new views of the object.

Szeliski has also worked to develop practical new applications supported by cutting edge research. Algorithms for image stitching now allow people to capture hundreds of overlapping images of a scene, and then fully-automatically create a seamless panorama over which a viewer can pan and zoom interactively. Here, the challenges are to perform feature matching for image alignment and seamless blending of a large, unorganized set of photographs. He has also done pioneering work in other areas of computational photography, including merging images with different exposures and flash and non-flash images, as well as extending these approaches to the temporal domain by aligning, blending, and looping video clips and sequences.

In the Photo Tourism work, collections of photos taken of a scene by different photographers at different times can be combined to allow people to virtually tour the location by flying from one photograph to another. Again, the challenge is to find common feature points in a large, unorganized set of photographs, but in this case, where the camera parameters are very different in each photo. Surprisingly, this kind of input data can lead to an accurate cloud of points in 3D, which serves as a proxy model for locating and transitioning between photos.

Beyond graphics and computational photography, Szeliski is widely known for his work in computer vision, ranging from basic research into stereo matching to helping to move the field forward through the creation of many benchmark studies.

Throughout his research career, Szeliski has combined a deep understanding of the mathematical underpinnings of image capture and rendering with an encyclopedic knowledge of available methods and brought these to bear in new and creative applications at the intersection of computer graphics and computer vision.