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Microsoft Research News & Highlights

SIGGRAPH 2005: Microsoft Research Advancing State of the Art in Computer Graphics

By Rob Knies

Featuring 16 paper presentations: almost one-sixth of the total selected, and a particularly prolific complement of studies from its Asia lab, Microsoft Research was a key player during SIGGRAPH 2005, the 32nd International Conference on Computer Graphics and Interactive Techniques, which ran from July 31 through Aug. 4 at the Los Angeles Convention Center.

George Lucas, world-renowned director, producer, and screenwriter, provided the Aug. 1 keynote address for SIGGRAPH, the world's leading computer-graphics conference.

Hugues Hoppe, a Microsoft Research senior researcher who in 2004 was named the recipient of the Computer Graphics Achievement Award, served as chair for the Aug. 2 session on "meshes," a method for representing the underlying geometry of three-dimensional images.

Nine of the 16 Microsoft Research papers accepted for presentation during SIGGRAPH 2005 came from Microsoft Research Asia. Eleven of the 16 represented collaborations with universities from around the world, including Zhejiang University, the University of Oslo, Technion (the Israel Institute of Technology), Harvard University, the University of Washington, Tsinghua University, Yale University, Nankai University, the Hong Kong University of Science and Technology, the University of Massachusetts Amherst, National Taiwan University, the Chinese University of Hong Kong, the Chinese Academy of Sciences' Institute of Computing Technology, and the California Institute of Technology.

Papers presented during SIGGRAPH 2005 that included participation by Microsoft Research:

- **Large Mesh Deformation Using the Volumetric Graph Laplacian:** Kun Zhou (Microsoft Research Asia), Jin Huang (Zhejiang University), John Snyder (Microsoft Research), Xinguo Liu (Microsoft Research Asia), Hujun Bao (Zhejiang University), Baining Guo (Microsoft Research Asia), Harry Shum (Microsoft Research Asia). Session: Mesh Manipulation, Aug. 1, 10:30 a.m.-12:15 p.m.
- **Fast Exact and Approximate Geodesics on Meshes:** Vitaly Surazhsky (University of Oslo and Technion), Tatiana Surazhsky (University of Oslo and Technion), Danil Kirsanov (Harvard University), Steven J. Gortler (Harvard University), Hugues Hoppe (Microsoft Research). Session: Meshes I, Aug. 1, 3:45-5:30 p.m.
- **Interactive Video Cutout:** Jue Wang (University of Washington), Pravin Bhat (University of Washington), Alex Colburn (Microsoft Research), Maneesh Agrawala (Microsoft Research), Michael F. Cohen (Microsoft Research). Session: Video & Image Matting, Aug. 1, 3:45-5:30 p.m.
- **Video Object Cut and Paste:** Yin Li (Microsoft Research Asia), Jian Sun (Microsoft Research Asia), Harry Shum (Microsoft Research Asia). Session: Video & Image Matting, Aug. 1, 3:45-5:30 p.m.
- **Real-Time Rendering of Plant Leaves:** Lifeng Wang (Microsoft Research Asia), Wenle Wang (Tsinghua University), Julie Dorsey (Yale University), Xu Yang (Nankai University), Baining Guo (Microsoft Research Asia), Harry Shum (Microsoft Research Asia). Session: Plants, Aug. 2, 10:30 a.m.-12:15 p.m.
- **Parallel Controllable Texture Synthesis:** Sylvain Lefebvre (Microsoft Research), Hugues Hoppe (Microsoft Research). Session: Texture Synthesis, Aug. 2, 1:45-3:30 p.m.
- **Modeling Hair from Multiple Views:** Yichen Wei (Hong Kong University of Science and Technology), Eyal Ofek (Microsoft Research Asia), Long Quan (Hong Kong University of Science and Technology), Harry Shum (Microsoft Research Asia). Session: Capturing Reality II, Aug. 2, 3:45-5:30 p.m.
- **Panoramic Video Textures:** Aseem Agarwala (University of Washington), Ke Colin Zheng (University of Washington), Chris Pal (University of Massachusetts Amherst), Maneesh Agrawala (Microsoft Research), Michael F. Cohen (Microsoft Research), Brian Curless (University of Washington), David H. Salesin

- (University of Washington and Microsoft Research), Richard Szeliski (Microsoft Research). Session: Capturing Reality II, Aug. 2, 3:45-5:30 p.m.
- **Animating Pictures with Stochastic Motion Textures:** Yung-Yu Chuang (National Taiwan University), Daniel B. Goldman (University of Washington), Ke Colin Zheng (University of Washington), Brian Curless (University of Washington), David H. Salesin (University of Washington and Microsoft Research), Richard Szeliski (Microsoft Research). Session: Image Processing, Aug. 3, 8:30-10:15 a.m.
 - **Image Completion with Structure Propagation:** Jian Sun (Microsoft Research Asia), Lu Yuan (Tsinghua University), Jiaya Jia (Chinese University of Hong Kong), Harry Shum (Microsoft Research Asia). Session: Image Processing, Aug. 3, 8:30-10:15 a.m.
 - **Resolution-Independent Curve Rendering Using Programmable Graphics Hardware:** Charles Loop (Microsoft Research), Jim Blinn (Microsoft Research). Session: Geometry on GPUs, Aug. 4, 8:30-10:15 a.m.
 - **Modeling and Rendering of Quasi-Homogeneous Materials:** Xin Tong (Microsoft Research Asia), Jiaping Wang (Institute of Computing Technology, Chinese Academy of Sciences), Steve Lin (Microsoft Research Asia), Baining Guo (Microsoft Research Asia), Harry Shum (Microsoft Research Asia). Session: Transparency & Translucency, Aug. 4, 8:30-10:15 a.m.
 - **Visual Simulation of Weathering by Gamma-Ton Tracing:** Yanyun Chen (Microsoft Research Asia), Lin Xia (Zhejiang University), Tien Tsin Wong (Chinese University of Hong Kong), Xin Tong (Microsoft Research Asia), Hujun Bao (Zhejiang University), Baining Guo (Microsoft Research Asia), Harry Shum (Microsoft Research Asia). Session: Appearance & Illumination, Aug. 4, 10:30 a.m.-12:15 p.m.
 - **TextureMontage: Seamless Texturing of Arbitrary Surfaces from Multiple Images:** Kun Zhou (Microsoft Research Asia), Xi Wang (Microsoft Research Asia), Yiyong Tong (California Institute of Technology), Mathieu Desbrun (California Institute of Technology), Baining Guo (Microsoft Research Asia), Harry Shum (Microsoft Research Asia). Session: Shape & Texture, Aug. 4, 1:45-3:30 p.m.
 - **Precomputed Shadow Fields for Dynamic Scenes:** Kun Zhou (Microsoft Research Asia), Yaohua Hu (Microsoft Research Asia), Steve Lin (Microsoft Research Asia), Baining Guo (Microsoft Research Asia), Harry Shum (Microsoft Research Asia). Session: Precomputed Light Transport, Aug. 4, 3:45-5:30 p.m.
 - **Local, Deformable Precomputed Radiance Transfer:** Peter-Pike Sloan (Microsoft), Ben Luna (Microsoft), John Snyder (Microsoft Research). Session: Precomputed Light Transport, Aug. 4, 3:45-5:30 p.m.