Hua Yang

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EDUCATION

University of North Carolina at Chapel Hill
Ph.D. in Computer Science, Expected June 2008.

University of North Carolina at Chapel Hill
M.S. in Computer Science, May 2004.

Institute of Automation, Chinese Academy of Science (Beijing, China)
M.S. in Artificial Intelligence and Pattern Recognition, July 2001.

Huazhong University of Science and Technology (Wuhan, China)
B.E. in Electronics and Information Engineering, July 1998.

EXPERIENCE

Computer Science Department, UNC Chapel Hill **2001 – Present**
Research Assistant

Medical Augmented Reality for Liver RFA.
--Design and develop the system.
--Develop 3D visualization techniques that provide the physician with guidance for multi-ablation on large tumors.
--Coordinate the collaboration between medical and technical team members.

Ultrasound-Guided Breast Biopsy.
--Develop the system.
--Port the entire system from SGI/Unix to PC/Windows (more than 200 files and 2MB of source code).
--Develop an algorithm on real-time occlusion detection between real and virtual objects.

Remote 3D Medical Consultation
--Develop the 3D reconstruction and rendering modules of the system.
--Develop a real-time appearance-based camera self-tracking algorithm.
--Develop a real-time illumination insensitive model-based 3D objects tracking algorithm.

Electronic Books
--Implement real-time 3D reconstruction using structured light.
--Implement real-time dense stereo reconstruction using graphics hardware.

Teaching
--COMP 116: Introduction to Scientific Programming, Undergraduate course, Computer Science department, University of North Carolina at Chapel Hill, Summer Session II 2007

Institute of Automation, Chinese Academy of Sciences, Beijing, China **1998 – 2001**
Research Assistant

Medical Image Processing and Analysis
--Develop a medical image segmentation algorithm using a Gaussian-Mixture model.
--Co-develop a Marching-Cube based fast isosurface extraction algorithm.

PC Based Virtual Endoscopy
--Develop an octree-based view-dependent progressive mesh technique for fast rendering of large datasets.

Neusoft Group Ltd. (Beijing Office), Beijing, China **1999 – 2000**
Software Engineer

3D Medical Image Processing and Analysis System
--Design and develop the GUI and 2D visualization module of the system.

HONORS& AWARDS

3D Medical Image Processing and Analyzing System was awarded the *Asian Top-10 CT Scientific and Technological Advances* by Journal of Computerized Tomography Theory and Application, 1999.

The excellent student scholarship of Chinese Academy of Science, 1999.

University Scholarship for Outstanding Academic Study, Huazhong Univ. of Science and Technology, 1995 – 1998.

PUBLICATION

Hua Yang, Marc Pollefeys, Greg Welch and Jan-Michael Frahm, "Appearance-Based Subspace Clustering for 3D Motion Segmentation", Submitted to *IEEE Conference on Computer Vision and Pattern Recognition,* 2008

Henry Fuchs, Andrei State, Hua Yang, Tabitha Peck, Sang Woo Lee, Michael Rosenthal, Anna Bulysheva and Charles Burke, "Optimizing a Head-Tracked Stereo Display System to Guide Hepatic Tumor Ablation", *Proceedings of Medicine Meets Virtual Reality (MMVR)* Long Beach, CA, Jan, 2008.

Hua Yang, Marc Pollefeys, Greg Welch, Jan-Michael Frahm and Adrian Ilie, "Differential Camera Tracking through Sampling and Linearizing the Appearance Manifold", *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, June 2007.

Hua Yang, Greg Welch and Marc Pollefeys. "Illumination Insensitive Model-Based 3D Ob ject Tracking and Texture Refinement". *Proceedings of the Third International Symposium on 3D Data Processing, Visualization and Transmission*, June, 2006.

Greg Welch, Vincent Noel, Hua Yang, Andrei State, Adrian Ilie, Ruigang Yang, Marc Pollefeys, and Henry Fuchs. "GPU-Based View Synthesis Using an Orbital Reconstruction Frustum". *Proceedings of the 2006 Workshop on Edge Computing Using New Commodity Architectures (EDGE 2006),* May 2006.

Greg Welch, Henry Fuchs, Bruce Cairns, Ketan Mayer-Patel, Diane H. Sonnenwald, Ruigang Yang , Andrei State, Herman Towles, Adrian Ilie, Michael Noland, Vincent Noel, and Hua Yang. "Improving, Expanding and Extending 3D Telepresence". *Proceedings of the 2005 International Workshop on Advanced Information Processing for Ubiquitous Networks*, December 2005.

Hua Yang and Greg Welch. "Model-Based 3D Object Tracking Using an Extended-Extended Kalman Filter and Graphics Rendered Measurements," *Proceedings of 1st Computer Vision for Interactive and Intelligent Environments (CV4IIE) workshop*, November 2005.

Ruigang Yang, Marc Pollefeys, Hua Yang, and Greg Welch. "A Unified Approach to Real-Time, Multi-Resolution, Multi-Baseline 2D View Synthesis and 3D Depth Estimation using Commodity Graphics Hardware," *International Journal of Image and Graphics*, 4(4): 1-25 2004.

Greg Welch, Ruigang Yang, Bruce Cairns, M.D., Herman Towles, Andrei State, Adrian Ilie, Sascha Becker, Dan Russo, Jesse Funaro, Diane Sonnenwald, Ketan Mayer-Patel, B. Danette Allen, Hua Yang, Eugene Freid, M.D., Andy van Dam, and Henry Fuchs. "3D Telepresence for Off-Line Surgical Training and On-Line Remote Consultation." *Proceedings of ICAT CREST Symposium on Telecommunication, Teleimmersion, and Telexistence*, December 2004.

Andrei State, Kurtis Keller, Michael Rosenthal, Hua Yang, Jeremy Ackerman and Henry Fuchs. "Stereo Imagery from the UNC Augmented Reality System for Breast Biopsy Guidance." *Proceedings of Medicine Meets Virtual Reality (MMVR)* Newport Beach, CA, Jan, 2003.

Huiguang He, Jie Tian, Mingchang Zhao, Hua Yang. "A New Fast Surface Generation and its Application in Medical Image", *Proceedings of the international conference on Visualization, Image Processing and Imaging (VIIP2001)*, pp. 411-416 , Marbella, Spain, 2001.

Hua Yang, Jie Tian, "A New Medical Image Segmentation Algorithm Based on Gaussian-Mixture Model", *Proceedings of Optics and Optoelectronics Inspection and Control: Techniques, Applications and Instruments*, Vol. 4224, pp.40-44, Beijing, 2000.

COMPUTER SKILLS

Programming Languages:	C, C++, Matlab, Java, Fortran, HTML, SQL.
Operating System:	UNIX, Windows.
Graphical &Vision Programming:	OpenGL, GLUT, CG, OpenCV.
High Performance Computing:	MPI, OpenMP.

REFERENCES

Dr. Greg Welch
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