

# Xinqing Guo

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## Education

- Ph.D. Candidate in Computer and Information Sciences, Aug. 2011 - present  
University of Delaware, Newark, DE 19716  
Advisor: Dr. Jingyi Yu  
GPA: 3.95
- M.S. in Electrical and Computer Engineering, July 2011  
University of Delaware, Newark, DE 19716  
Advisor: Dr. Takashi Buma
- B.S. in Electrical Engineering, June 2008  
Southeast University, Nanjing, Jiangsu 210096, P.R. China

## Awards

- University Dissertation Fellowship, University of Delaware, 2014-2015
- Zhang Guiping Scholarship, Southeast University, China, 2006
- Outstanding Student Award, Southeast University, China, 2005-2008

## Research Interest

Computational Photography, Computer Graphics and Computer Vision

## Experience

*Research Assistant*, Graphics and Imaging Laboratory, University of Delaware, Newark, DE Jan. 2012 - present

- *Light Field Rendering*, Jan. 2013 - present  
Developed approaches for high resolution light field acquisition and reconstruction and light field panorama. Explored the possibility of using light field camera as a barcode scanner for extended depth of field. Currently working on coupling camera array system with depth sensor for real time high quality rendering, with application on augmented reality and virtual reality. The results have been published in premiere conferences (*ICCV '13, ECCVW LF4CV '14, TVCG '15*)
- *Mobile Multi-Flash Photography*, Aug. 2012 - May 2013  
Developed a novel solution to integrate multi-flash system with mobile devices; Implement the system on iOS platform; Thoroughly discussed the design of the system, the flash-camera synchronization unit and the image processing techniques for image registration, depth edge extraction and edge preserving smoothing; Demonstrated mobile multi-flash system on a number of mobile imaging applications, including occlusion detection, image thumbnailing and image abstraction. The results have been published in conference (*SPIE Electronic Imaging, Digital Photography X '14*).

- *Immersive Surgery Training System*, Jan. 2012 - Nov. 2012  
Developed a novel portable immersive surgical training system that is capable of acquiring and displaying high fidelity 3D reconstructions of actual surgical procedures; Exploited using a set of Microsoft Kinect sensors to simultaneously recover the participants, the surgical environment, and the surgical scene itself; Developed a space-time navigator to allow the trainees to witness and explore a prior procedure as if they were there. The results have been published in conference (*MMVR '13 and '14*).

*Research Intern*, Robert Bosch Research North America, Palo Alto, CA Jun. 2014 - Dec. 2014

- Developed an interactive optical see-through augmented reality (AR) system with head-mounted display for autonomous driving.
- Mentor: Dr. Liu Ren, Dr. Yu Sheng, Dr. Yen-Lin Chen

*Research Intern*, Automation and Control Solutions (ACS) at Honeywell, Minneapolis, MN Jun. 2013 - Aug. 2013

- Focused on the theory and applications of light field imaging; Designed and implemented fast rendering algorithms for light field imaging to extend the depth of field of Honeywell products.
- Mentor: Dr. Scott McCloskey

*Teaching Assistant*, University of Delaware, Newark, DE

- CISC 260: Machine Organization and Assembly Language
- CISC 360: Computer Architecture

*Research Assistant*, Optics and Ultrasonics Laboratory, University of Delaware, Newark, DE

- *High Frequency Ultrasound Biomicroscopy*, Sept. 2008 - July 2011  
Developed an optoacoustic technology to detect high frequency ultrasound waves for high resolution biomedical imaging; Designed and tested ultrasound sensors using different material for sensitivity maximization. Thoroughly discussed the capability for large scale parallel read-out. The results have been published in conference (*IEEE IUS '10 and '11*).

## Publications

- **Xinqing Guo\***, Zhan Yu\*, Sing Bing Kang, Haiting Lin and Jingyi Yu. “Enhancing Light Fields through Ray-Space Stitching”, in *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 2015
- **Xinqing Guo**, Haiting Lin, Zhan Yu and Scott McCloskey. “Barcode Imaging using a Light Field Camera”, in Proceeding of *the European Conference on Computer Vision Workshop on Light Fields for Computer Vision (ECCVW LF4CV)*, 2014
- Yang Yang, **Xinqing Guo**, Zhan Yu and Jingyi Yu. “An Immersive Surgery Training System with Live Streaming Capability”, in Proceeding of *Medical Meets Virtual Reality (MMVR)*, 2014
- **Xinqing Guo**, Zhan Yu and Jingyi Yu. “Mobile Multi-Flash Photography”. in Proceeding of *SPIE Electronic Imaging, Digital Photography X*, 2014
- Zhan Yu, **Xinqing Guo**, Habin Ling, Andrew Lumsdaine and Jingyi Yu. “Line Assisted Light Field Triangulation and Stereo Matching”. in Proceeding of *IEEE International Conference on Computer Vision (ICCV)*, 2013
- **Xinqing Guo**, David Lopez, Zhan Yu, Karl Steiner, Kenneth Barner, Thomas Bauer and Jingyi Yu. “A Portable Immersive Surgery Training System Using RGB-D Sensors”. in Proceedings of *Medical Meets Virtual Reality (MMVR)*, 2013
- Ya Shu, **Xinqing Guo**, Mengyang Liu and Takashi Buma. “One-dimensional optoacoustic receive array employing chirped excitation and GPU-based beamforming”, in Proceedings of *IEEE Ultrasonics Symposium (IUS)*, 2011

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\* These authors contributed to the work equally.

- Ya Shu, **Xinqing Guo**, Mengyang Liu and Takashi Buma. “One-dimensional Optoacoustic Receive Array Employing Parallel Detection and Video-rate Acquisition”. in Proceedings of *IEEE Ultrasonics Symposium (IUS)*, 2010
- **Xinqing Guo**, Matthew Churgin, Takashi Buma. “Optoacoustic Sensor based on Self-assembled Arrays of Polystyrene Microspheres”. in Proceedings of *IEEE Ultrasonics Symposium (IUS)*, 2008

## Patents

- Light Field Based Barcode Scanner, United States Patent, with Scott McCloskey, 2014
- 3D Light Field Imaging, United States Patent (Pending), with Zhan Yu and Jingyi Yu, 2014
- Portable 3D Reconstruction System Using Microsoft Kinect Sensors/3D Space-Time Navigator to Interactively Display Data Generated on Portable 3D Acquisition System, United States Patent (Pending), with Luis Lopez, Zhan Yu, Karl Steiner, Kenneth Barner, Thomas Bauer and Jingyi Yu, 2013

## Hardware and Software Skills

- Computer Programming: C, C++, Objective-C, C#, Java, HTML/CSS, Matlab and VHDL
- Interfaces and Architectures: OpenGL, OpenCV, CUDA
- Operating Systems: Microsoft Windows, Apple OS X, Linux, Solaris, and other UNIX variants