

# Yu Ji

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## CONTACT INFORMATION

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## EDUCATION

**University of Delaware**, Newark, DE USA

*Ph.D. Candidate* in Computer Science

**Jan 2011 - present**

- Advisor: Dr. Jingyi Yu

**Nanyang Technological University**, Singapore

*MSc.* in Computer Engineering

**Aug 2009 - Dec 2010**

- Master Thesis: 3D Mesh Editing Using Manifold Harmonics
- Advisor: Dr. Ying He

**Huazhong University of Science and Technology**, Wuhan China

*B.Eng.* in Electronics and Information Engineering

**Sep 2005 - Jun 2009**

## HONORS AND AWARDS

**Frank A. Pehrson Graduate Student Achievement Award**, University of Delaware, 2015

**Graduate Student Excellence Award**, University of Delaware, 2014

**Professional Development Award**, University of Delaware, 2013, 2014

**CVPR 2013 Travel Grant**, the IEEE Computer Society PAMI Technical Committee, 2013

**Honorable Graduation**, Huazhong University of Science and Technology, 2009

**Excellent Undergraduate Student Award**, Huazhong University of Science and Technology, 2008

## ACADEMIC EXPERIENCE

**Graphics & Imaging Laboratory**, University of Delaware, Newark, DE USA

*Research Assistant*

**Jan 2011 - present**

Work on several projects related to computer vision and computational photography:

- **Acquisition and 3D Reconstruction of the “Invisibles”**

Acquire and reconstruct dynamic invisible objects, i.e., gas flows, fluid and ambient occlusion, using novel computational photography devices, such as camera array (Publication [11]), Bokode (Publication [10]), and light field probes (Publication [1][8]).

- **XSlit camera-based imaging**

Construct the hardware of a real XSlit camera prototype using cylindrical lenses and study using the XSlit camera for various vision tasks, such as scene recognition (Publication [4][9]), stereo (Publication [7]), and depth-from-defocus (Publication [2][3]).

- **Image-precondition to facilitate impaired vision**

Developed an image preconditioning scheme to improve the viewing experience of people with myopia/hypopia; developed an image-based method to estimate the visual aberration functions; developed a novel image preconditioning scheme that accounts for non-linear projector/display responses; extended the solution to mobile platforms (Publication [5]).

- **Saliency Detection on Light Fields**

Utilized the unique refocusing capability of commercial plenoptic camera to acquire focusness, depths and objectness cues; designed a tailored algorithm for saliency detection on light field images (Publication [6]).

- **Hybrid sensors for low light imaging**

Construct a hybrid camera array (multi-resolution, multi-speed and multi-spectrum) and use it to improve the image quality under low light conditions (deblurring/denosing).

**Geometric Modeling Group**, Nanyang Technological University, Singapore

*Completed the Master Thesis on manifold harmonics.*

**Mar 2010 - Aug 2010**

- **3D Mesh Editing using Manifold Harmonics**

Implement fast 3D shape and texture smoothing/sharpening in frequency domain using manifold harmonics.

**Image Processing Laboratory**, Huazhong University of Science and Technology, Wuhan China

*Undergraduate Research Assistant*

**Jul 2008 - Jun 2009**

- **Texture segmentation and classification using wavelet analysis**

INDUSTRIAL  
EXPERIENCE

**Epson Research & Development**, San Jose, CA USA

*Research Intern*

**Jun 2013 - Aug 2013**

- Mentor: Dr. Yuanyuan Ding & Dr. Jing Xiao.

- Worked on object detection & localization techniques and developed a real-time system for detecting pedestrian and automobile.

PUBLICATIONS

[1] Wei Yang<sup>†</sup>, **Yu Ji**<sup>†</sup>, Sing Bing Kang and Jingyi Yu. “Ambient Occlusion via Compressive Visibility Estimation”. Accepted by *the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2015.

[2] **Yu Ji**, Jinwei Ye and Jingyi Yu. “Depth Reconstruction from the Defocus Effect of an XSlit Camera”. Accepted by *Computational Optical Sensing and Imaging (COSI)*, *Optical Society of America*, 2015.

[3] Jinwei Ye, **Yu Ji**, Wei Yang and Jingyi Yu. “Depth-of-Field Analysis and Coded Aperture Imaging on XSlit Cameras”. To appear in *the European Conference on Computer Vision (ECCV)*, 2014. Oral Presentation. [Acceptance Rate: 2.63%]

[4] Wei Yang, **Yu Ji**, Jinwei Ye, S. Susan Young and Jingyi Yu. “Coplanar Common Points in Non-Centric Cameras”. To appear in *the European Conference on Computer Vision (ECCV)*, 2014. [Acceptance Rate: 25.06%]

[5] **Yu Ji**, Jinwei Ye, Sing Bing Kang and Jingyi Yu. “Image Pre-compensation: Balancing Contrast and Ringing”. To appear in *the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2014. [Acceptance Rate: 29.88%]

[6] Nianyi Li, Jinwei Ye, **Yu Ji**, Haibin Ling and Jingyi Yu. “Saliency Detection on Light Fields”. To appear in *the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2014. [Acceptance Rate: 29.88%]

[7] Jinwei Ye, **Yu Ji** and Jingyi Yu. “A Rotational Stereo Model Based on XSlit Imaging”. *in the International Conference on Computer Vision (ICCV)*, 2013. Oral Presentation. [Acceptance Rate: 2.52%]

[8] **Yu Ji**, Jinwei Ye and Jingyi Yu. “Reconstructing Gas Flows Using Light Paths Approximation”. To appear in *the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2013. Oral Presentation. [Acceptance Rate: 3.2%]

[9] Jinwei Ye, **Yu Ji** and Jingyi Yu. “Manhattan Scene Understanding Via XSlit Imaging”. To appear in *the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2013. [Acceptance Rate: 25.2%]

[10] Jinwei Ye<sup>†</sup>, **Yu Ji**<sup>†</sup>, Feng Li and Jingyi Yu. “Angular Domain Reconstruction of Dynamic 3D Fluid Surfaces”. *in the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2012. [Acceptance Rate: 24%]

[11] Yuanyuan Ding, Feng Li, **Yu Ji** and Jingyi Yu. “Dynamic 3D Fluid Surface Acquisition Using a Camera Array”. *in the International Conference on Computer Vision (ICCV)*, 2011. [Acceptance Rate: 20.5%]

† co-first author

PATENT

A Real-time Object Capture System, United States Patent 62048887, September 2014.

3-D Light Field Camera, United States Patent 61920074, December 2013.

An XSlit Camera for 3D Scene Reconstruction, United States Patent 61886161, October 2013.

TECHNICAL SKILLS

- Programming Languages: Matlab, C/C++, Java, HTML/CSS.
- Applications: Pov-Ray, OpenCV, OpenGL, L<sup>A</sup>T<sub>E</sub>X, Photoshop, Illustrator, 3Ds Max.
- Operating Systems: Unix/Linux, Windows.
- Mobile Programming Platform: Android.