Yu Ji

CONTACT INFORMATION

DGene, Inc
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EDUCATION

University of Delaware, Newark, DE USA

Ph.D. in Computer Science **Jan 2011 - Dec 2015**

- Ph.D. Thesis: Coded Light Source for Recovering "Invisible" Phenomena
- 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

INDUSTRIAL EXPERIENCE

DGene Lab, Baton Rouge, LA USA

Chief Scientist **Jan 2018 - Present**

- Lead a research & development group. Develop and build algorithm and system for high precision 3D human Reconstruction.

DGene (Plex-VR), Santa Clara, CA USA

Principal Scientist **Apr 2017 - Dec 2017**

- Worked on computational photography and 3D Reconstruction. Develop and build a 3D capture dome for high precision human 3D reconstruction.

VIA Technologies, Inc., Fremont, CA USA *Principal R&D Engineer* **Jan 2016 - Mar 2017**

- Worked on 3D reconstruction and developed a rendering engine for Virtual Reality devices.

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.

Academic Experience

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

Research Assistant **Jan 2011 - present**

- **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, Bokode, and light field probes.

- **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, stereo (Publication [7]), and depth-from-defocus.

- **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 abberation functions; developed a novel image preconditioning scheme that accounts for non-linear projector/display responses; extended the solution to mobile platforms.

- **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.

- **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 (debluring/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**

Publications

Journals

[J1] Mingyuan Zhou, Yuqi Ding, **Yu Ji**, Jingyi Yu, and Jinwei Ye. "Shape and Reflectance Reconstruction Using Concentric Multi-Spectral Light Field", accepted by *the International Conference on Computational Photography (ICCP)*, and *IEEE Transactions on Pattern Analysis and Machine Intelligence, SI:ICCP (PAMI)*, 2020.

[J2] Wei Yang, Yingliang Zhang, Jinwei Ye, **Yu Ji**, Mingyuan Zhou, Zhong Li and Jingyi Yu. "Structure from Motion on XSlit Cameras", accepted by *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2019.

[J3] Jinwei Ye, **Yu Ji**, Mingyuan Zhou, Sing Bing Kang and Jingyi Yu. "Content Aware Image Pre-Compensation", accepted by *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2018.

[J4] Nianyi Li, Jinwei Ye, **Yu Ji**, Haibin Ling and Jingyi Yu. "Saliency Detection on Light Field", accepted by *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2016.

Conferences

[C1] Yuqi Ding, **Yu Ji**, Mingyuan Zhou, Sing Bing Kang and Jinwei Ye. "Polarimetric Helmholtz Stereopsis", *in the International Conference on Computer Vision (ICCV)*, 2013. Oral Presentation.

[C2] Zhong Li, **Yu Ji**, Jingyi Yu, and Jinwei Ye. "3D Fluid Flow Reconstruction Using Compact Light Field PIV", accepted by the *the European Conference on Computer Vision (ECCV)*, 2020.

[C3] Zhang Chen, Anpei Chen, Guli Zhang, Chengyuan Wang, **Yu Ji**, Kyros Kutulakos, and Jingyi Yu. "A Neural Rendering Framework for Free-Viewpoint Relighting", accepted by *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020.

[C4] Zhang Chen, **Yu Ji**, Mingyuan Zhou, Singbing Kang, and Jingyi Yu. "3D Face Reconstruction using Color Photometric Stereo with Uncalibrated Near Point Lights", accepted by *the International Conference on Computational Photography (ICCP)*, 2020.

[C5] Jie Lu, **Yu Ji**, Jingyi Yu, and Jinwei Ye. "Mirror Surface Reconstruction Using Polarization Field", in Proceedings of *the International Conference on Computational Photography (ICCP)*, 2019.

[C6] Shi Jin, Ruiyang Liu, **Yu Ji**, Jinwei Ye and Jingyi Yu. "Learning to Dodge A Bullet: Concyclic View Morphing via Deep Learning", in Proceedings of *the European Conference on Computer Vision (ECCV)*, 2018.

[C7] Zhong Li, **Yu Ji**, Wei Yang, Jinwei Ye and Jingyi Yu. "Robust 3D Human Motion Reconstruction Via Dynamic Template Construction", in Proceedings of *the International Conference on 3D Vision (3DV)*, 2017.

[C8] Wei Yang†, **Yu Ji**†, 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.

[C9] **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.

[C10] 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%]

[C11] 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%]

[C12] **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%]

[C13] 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%]

[C14] 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%]

[C15] **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%]

[C16] 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%]

[C17] Jinwei Ye†, **Yu Ji**†, 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%]

[C18] 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, LaTeX, Photoshop, Illustrator, 3Ds Max.
- Operating Systems: Unix/Linux, Windows.
- Mobile Programming Platform: Android.