

## Jingyi Yu

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Dept. of Computer and Information Sciences  
Dept. of Electrical and Computer Engineering  
Program of Biomedical Engineering  
University of Delaware

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## Education

Ph.D., Electrical Engineering and Computer Science, August, 2005

*General Linear Cameras: Theory and Applications*

Advisor: Prof. Leonard McMillan

Massachusetts Institute of Technology, Cambridge, MA 02139

M.S., Electrical Engineering and Computer Science, February, 2003

Massachusetts Institute of Technology, Cambridge, MA 02139

B.S., Applied Mathematics/Computer Science, June, 2000, with Honor

California Institute of Technology, Pasadena, CA 91125

## Positions Held

2010 – present Associate Professor, University of Delaware  
Department of Computer and Information Sciences  
Department of Electrical and Computer Engineering  
Adjunct Faculty: Center for Bioinformatics and Computational Biology  
Adjunct Faculty: Biomedical Engineering Program

2005 – present Director of the Graphics & Imaging Laboratory (GILab), University of Delaware

2005 –2010 Assistant Professor, University of Delaware  
Department of Computer and Information Sciences

## Research Interest

My research focuses on the theoretical foundation on computational imaging and the development of next-generation computational sensors for computer vision, robotics, medical imaging, and digital media. I have extensively collaborated with groups from INRIA, MSR & MSRA, ETH, and UNC. My work has been supported by *the National Science Foundation, the Air Force Office of Scientific Research, the Army Research Office, and the National Institute of Health.*

- Next-Generation Computational Cameras and Displays: Camera models are fundamental to computer vision and graphics. The classical pinhole camera model has long served as the workhorse of 3D imaging applications. My research aims to develop new imaging systems and algorithms beyond pinhole optics to more effectively acquire, represent, analyze, and utilize the 3D imagery data. For example, I have developed multi-perspective imaging systems (CVPR '08, ICCV '09, CVPR '12), crossed-slit imaging theory and applications (CVPR '05, '11, '13, ICCV '13), coded aperture/shutter/flash cameras (ECCV '10, CVPR '11, TPAMI '12), light field camera and camera array (ICCV '11, CVPR '12, ICCV '13), catadiotropic cameras and projectors (CVPR '09, '11), and hybrid sensors (CVPR '08, ICCV '11) to overcome the limitations on speed, focus, field-of-view, perspective, dynamic range, etc., in commodity cameras and projectors.

- **Ray/Line Differential Geometry:** The key tool that I have used for designing computational cameras is a novel ray differential geometry framework (ECCV '04). This new theory is explicitly developed to characterize geometric ray structures (CVPR '08) and to correlate surface differential geometry with ray geometry (CVPR '09). In addition to camera designs, I have applied this theory to solve a broad range of traditionally challenging problems in computer graphics including effective line-art illustrations (SIGGRAPH Asia '08), high-order surface models (SGP '07, CGF '10), caustics rendering (PG '08), dynamic depth-of-field (CGF '10), hair rendering (I3D '12), etc.
- **Reconstructing Transparent Phenomenon:** Faithfully acquiring invisible or transparent objects such as 3D fluid wavefronts or gas density can greatly benefit fluid mechanics, oceanography, and computer animation. My focus is to develop non-intrusive solutions by coupling computational cameras with new computer vision algorithms. For example, we have constructed a light field camera array (ICCV '11) along with a new shape-from-distortion framework for reconstructing fast evolving fluid wavefronts (CVPR '08, CVPR '09, '12, '13). Along with a new fluid-dynamics based optical flow technique, our solution can further predict fluid motions and verify fluid dynamics models (CVPR '10).
- **Privacy-Preserving Surveillance:** Video surveillance in public spaces has increased dramatically in recent history. So has concern about the potential for abuse and the general loss of privacy. We explore new solutions on the acquisition front: we aim to design computational cameras that will produce features that are recognizable at the category level but not at the object level, i.e., the acquired imagery data can be recognized by computer but not by human. The two solutions we have developed thus far are extracting occlusion contours to hide the identity information (ISVC '10) and applying strategic convolutional blurs (TPAMI '12) to achieve multi-level identity obscuring (ICCV '11).
- **Biomedical Imaging and Bioinformatics:** My computational camera work also finds it uses in biomedical imaging and bioinformatics. For example, we have developed a multi-flash endoscope to robustly extract tumor contours (CG&A '05, MICCAI '07) and we are currently designing a multi-resolution, multi-focus microscope based on the light field camera (CVPR '12, '13). In the field of bioinformatics, my focus is to apply visual analytics techniques to systematically tackle gene functions and complex regulatory processes. For example, we have combined image processing and machine learning to archive and retrieve biomedical documents on protein-protein interactions (BIBM '11, '12).

## Awards

- 2013 College of Engineering Outstanding Junior Faculty Award
- 2010 Air Force Young Investigator Award (AFOSR YIP)
- 2009 NSF Career Award
- 2009 University of Delaware Research Foundation Grant Recipient
- 2007 Exemplary Use of Technology in Teaching Award, University of Delaware
- 2006 College of Arts and Sciences Transformation Grant Recipient
- 2000 Caltech Graduation with Honor, California Institute of Technology
- 2000 Caltech Moore Fellowship, California Institute of Technology
- 1999 Zeigler Memorial Award, California Institute of Technology
- 1999 Merit Scholarship, California Institute of Technology

## Research Grants

*Total amount awarded as lead PI: \$2.9M.*

- \*National Science Foundation, “Head-Activated Interface Using Off-the-shelf Mobile Platforms”, Co-PI. PI: Kenneth Barner; September 1, 2013 – August 31, 2016, \$496,020.

- \*Army Research Lab, “Evaluations and Comparisons of Visible-Light Face Detection Algorithms for Infrared Facial Imagery”, Sole PI; September 1, 2012 – May 31, 2013, \$49,999.
- \*National Science Foundation, “Contour-Assisted Visual Inference: Systems, Algorithms, and Applications”, PI at UD; with Haibin Ling (PI at Temple University); NSF IIS; September 1, 2012 – August 31, 2015, \$469,359.
- \*Delaware IDeA Network of Biomedical Research Excellence (INBRE), National Institute of Health, “ISurg: A Next-generation Immersive Surgical Simulation System”, Sole PI; March 1, 2012 – February 28, 2013, \$214,247.
- \*National Science Foundation, “Differential Ray Geometry for Surface Modeling and Reconstruction”, Sole PI; NSF IIS; September 1, 2010 – August 31, 2013, \$370,940.
- \*Air Force Office of Scientific Research (AFOSR) Young Investigator Award (YIP), “Building a Hybrid Camera Array for Tracking and Reconstruction under Low Light”, Sole PI; May 1, 2010 – April 30, 2013, \$367,231.
- National Science Foundation CAREER Award, “Beyond Perspective Cameras: Multi-perspective Imaging, Reconstruction, Rendering, and Projection”, Sole PI, NSF IIS; April 1, 2009 – March 31, 2014, \$400,000.
- University of Delaware Research Foundation, “Building a Portable Acquisition System for Capturing Rich Appearance Data”, Sole PI; June 1, 2009 – May 31, 2011, \$35,000.
- National Science Foundation, “3D Fluid Surface Reconstruction Using A Multi-Camera System”, PI; with P. Guyenne (Co-PI); NSF MCS; September 1, 2006 – August 31, 2010, \$499,430 (my portion \$328,683).
- University of Delaware College of Arts and Sciences Dean’s Transformation Grant, “Building An Immersive, Interactive Display for Smith Hall”, Co-PI; with C. Rasmussen (PI) and L. Winn (Co-PI); June 12, 2006 – June 30, 2008, \$25,000.

## Publications

Over 80 publications including 33 papers published at premiere conferences CVPR, ICCV, ECCV, I3D and SIGGRAPH. For conference publications, Acceptance Rate (AR) refers to the percentage of submissions that get accepted and appear as full papers in the proceedings.

## Books/Book Chapters

- B.1. \*Jingyi Yu, *Multi-sensor Fusion for Motion Deblurring*, to appear in *Motion Deblurring: Theory, Algorithms and Systems*, Rajagopalan A. N. and Rama Chellappa, Cambridge University Press, 2013.
- B.2. \*Jingyi Yu, *Reconstructing Invisible Objects*, to appear in *Lectures on Computer Vision*, Morgan and Claypool, 2013.

## Journals

- J.1. David Lopez, Jingyi Yu, Cecilia Arighi, Catalina Tudor, Manabu Torri, Hongzhan Huang, Vijay Shanker and Cathy Wu, *A Framework for Biomedical Figure Segmentation Towards Image-based Document Retrieval*, to appear in *BMC System Biology*, 2013.
- J.2. Feng Li, Christopher Thorpe, Zijia Li, Dave Saunders and Jingyi Yu, *A Co-Prime Blur Scheme for Data Security in Video Surveillance*, to appear in *IEEE Transaction on Pattern Analysis and Machine Intelligence (TPAMI)*, 2013.
- J.3. Jinwei Ye and Jingyi Yu, *Ray Geometry in Non-pinhole Cameras: A Survey*, in the *Visual Computer Journal (TVCI)*, 2013.

- J.4. Zhan Yu, Christopher Thorpe, Xuan Yu, Scott Grauer-Gray, Feng Li and Jingyi Yu, *Racking Focus and Tracking Focus on Live Video Streams*, in The Visual Computer Journal (TVCI), 2013.
- J.5. Yu-Wing Tai, Xiaogang Chen, Sunyeong Kim, Seon Joo Kim, Feng Li, Jie Yang, Jingyi Yu, Yasuyuki Matsushita and Michael Brown, *Image Deblurring Under Non-linear Camera Response Curves*, to appear in IEEE Transaction on Pattern Analysis and Machine Intelligence (TPAMI), 2013.
- J.6. Scott McCloskey, Yuanyuan Ding and Jingyi Yu, *Design and Estimation of Coded Exposure Point Spread Functions*, in IEEE Transaction on Pattern Analysis and Machine Intelligence (TPAMI), 34(10): 2071-2077, 2012.
- J.7. David Lopez, Yuanyuan Ding and Jingyi Yu, *Modeling Complex Unfoliated Trees from a Sparse Set of Images*, in Computer Graphics Forum: Special Issue of Pacific Graphics '10, pp. 2075-2082.
- J.8. Xuan Yu, Rui Wang and Jingyi Yu, *Real-time Depth-of-Field Rendering Via Dynamic Light Field Generation and Filtering*, in Computer Graphics Forum: Special Issue of Pacific Graphics '10, pp. 2099-2107.
- J.9. Feng Li, Jian Sun, Jue Wang and Jingyi Yu, *Dual Focus Stereo Imaging*, in SPIE Journal of Electronic Imaging, Volume 19, Number 4, 2010.
- J.10. Jingyi Yu, Leonard McMillan and Peter Sturm, *Multiperspective Modeling, Rendering, and Imaging*, in Computer Graphics Forum, Volume 29, Number 1, March 2010, pp. 227-246.
- J.11. Yuanjie Zheng, Sing-Bing Kang, Chandra Kambhampettu, Jingyi Yu and Steve Lin, *Single-Image Vignetting Correction*, in IEEE Transaction on Pattern Analysis and Machine Intelligence (TPAMI), 31(12): 2243-2256, 2009.
- J.12. Xuan Yu, Jingyi Yu and Leonard McMillan, *Towards Multiperspective Rasterization*, in Visual Computer: Special Issues of Computer Graphics International (CGI), 2009, Volume 25, Issue 5-7: 549-557.
- J.13. Yongjin Kim, Jingyi Yu, Xuan Yu and Seungyong Lee, *Line-art Illustration of Dynamic and Specular Surfaces*, in ACM Transaction on Graphics (Proceedings of ACM SIGGRAPH Asia), 2008.
- J.14. Xuan Yu, Rui Wang and Jingyi Yu, *Interactive Glossy Reflections Using GPU-based Ray Tracing with Adaptive LOD*, in Computer Graphics Forum 27(7) (Proceedings of Pacific Graphics '08), 2008: 1987-1996.
- J.15. Jingyi Yu, Yuanyuan Ding and Leonard McMillan, *Multiperspective Modeling and Rendering Using General Linear Cameras*, in Communications in Information and Systems, 2008, Volume 7, No.4: 359-384.
- J.16. Ramesh Raskar, Kar-han Tan, Rogerio Feris, J. Kobler, Jingyi Yu and Mathew Turk, *Harnessing Real-World Depth Edges with Multi-Flash Imaging*, in IEEE Computer Graphics and Applications (CG&A), 2005, Volume 25, No. 1:32-38.
- J.17. Adrian Ilie, Ramesh Raskar and Jingyi Yu, *Gradient Domain Context Enhancement Using Poisson Integration*, in International Journal on Pattern Recognition and Artificial Intelligence, 2005, Volume 19, No. 4: 533-549.
- J.18. Jingyi Yu, Leonard McMillan and Steven Gortler, *Surface Camera Light Field Rendering*, in International Journal on Image and Graphics (IJIG), 2004, Volume 4, No. 4: 605-626.
- J.19. Ramesh Raskar, Kar-han Tan, Rogerio Feris, Jingyi Yu and Mathew Turk, *Non-photorealistic Camera: Depth Edge Detection and Stylized Rendering Using Multi-Flash Imaging*, in ACM Transaction on Graphics (Proceedings of ACM SIGGRAPH), 2004, Volume 3, Issue 3: 679-688.

### **Premiere Conference Publications**

- C.1. Xuan Yu, Zhan Yu, Xiaogang Chen, and Jingyi Yu, *A Hybrid Image-CAD Based System for Modeling Realistic Hairstyles*, to appear in Proceedings of the ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (I3D), 2014, AR: 30%.

- C.2. Jinwei Ye, Yu Ji and Jingyi Yu, *A Rotational Stereo Model Based on XSlit Imaging*, to appear in Proceeding of the Thirteenth International Conference on Computer Vision (ICCV), 2013. Oral presentation, AR: 2.5%.
- C.3. Zhan Yu, Xinqing Guo, Haibing Lin, Andrew Lumsdaine and Jingyi Yu, *Line-Assisted Light Field Triangulation and Stereo Matching*, to appear in Proceeding of the Thirteenth International Conference on Computer Vision (ICCV), 2013. AR: 27%.
- C.4. Peng Jiang, Haibin Ling, Jingyi Yu and Jingliang Peng, *Salient Region Detection by UFO: Uniqueness, Focusness and Objectness*, to appear in Proceeding of the Thirteenth International Conference on Computer Vision (ICCV), 2013. AR: 27%.
- C.5. Jinwei Ye, Yu Ji and Jingyi Yu, *Manhattan Scene Understanding Via XSlit Imaging*, to appear in Proceeding of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2013. AR: 24%.
- C.6. Yu Ji, Jinwei Ye and Jingyi Yu, *Volumetric Gas Flow Reconstruction Via Light Path Estimation*, to appear in Proceeding of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2013. Oral presentation, AR: 3%.
- C.7. Xiaogang Chen, Sing Bing Kang, Jie Yang and Jingyi Yu, *Fast Patch-based Denoising Using Geodesic Path Approximation*, to appear in Proceeding of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2013. AR: 24%.
- C.8. David Lopez, Jingyi Yu, Catalina Tudor, Cecilia Arighi, Hongzhan Huang, K. Vijay-Shanker and Cathy Wu, *Robust Segmentation of Medical Figures Towards an Image-based Document Retrieval*, in Proceeding of the 2012 IEEE International Conference on Bioinformatics and Biomedicine (BIBM). AR: 20%.
- C.9. Xiaogang Chen, Feng Li, Jie Yang and Jingyi Yu, *A Theoretical Analysis of Camera Response Functions in Image Deblurring*, in Proceeding of the European Conference on Computer Vision (ECCV), 2012: 333-346. AR: 24%.
- C.10. Jinwei Ye, Yu Ji, Feng Li and Jingyi Yu, *Dynamic 3D Fluid Surface Reconstruction Using Angular Normal Sampling and Reconstruction*, in Proceeding of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2012: 310-317. AR: 24%.
- C.11. Zhan Yu, Jingyi Yu, Andrew Lumsdaine and Todor Georgiev, *An Analysis on Color Demosaicing in Plenoptic Cameras*, in Proceeding of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2012: 901-908. AR: 24%.
- C.12. Xuan Yu, Jason C. Yang, Justin Hensley, Takahiro Harada and Jingyi Yu, *A Framework for Rendering Complex Scattering Effects on Hair*, in Proceedings of ACM SIGGRAPH Symposium on Interactive 3D Graphics & Games (I3D), 2012: 111-118. AR: 35%.
- C.13. Yuanyuan Ding, Feng Li, Yu Ji and Jingyi Yu, *Dynamic 3D Fluid Surface Acquisition Using a Camera Array*, in Proceedings of the Twelfth International Conference on Computer Vision (ICCV), 2011: 2478-2485. AR: 23%.
- C.14. Feng Li, Zijia Li, David Saunders and Jingyi Yu, *A Theory of Co-prime Blurred Pairs*, in Proceedings of the Twelfth International Conference on Computer Vision (ICCV), 2011: 217-224. AR: 23%.
- C.15. Yi Wu, Haibin Ling, Jingyi Yu, Feng Li, Xue Mei and Erkang Cheng, *Blurred Target Tracking by Blur-driven Tracker*, in Proceedings of the Twelfth International Conference on Computer Vision (ICCV), 2011: 1100-1107. AR: 23%.
- C.16. Yuanyuan Ding, Jing Xiao and Jingyi Yu, *A Theory of Multi-perspective Defocusing*, in Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2011: 217-224. AR: 26%.
- C.17. Yuanyuan Ding, Jing Xiao and Jingyi Yu, *Importance Filtering for Image Retargeting*, in Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2011: 89-96. AR: 26%.

- C.18. Yuanyuan Ding, Scott McCloskey and Jingyi Yu, *Analysis of Motion Blur with a Flutter Shutter Camera for Non-Linear Motion*, in Proceedings of the Eleventh European Conference on Computer Vision (ECCV), 2010: 15-30. Oral presentation. AR: 4%.
- C.19. Feng Li, Liwei Xu, Philippe Guyenne and Jingyi Yu, *Recovering Fluid-type Motions Using Navier-Stokes Potential Flow*, in Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2010: 2448-2455. AR: 25%.
- C.20. Yuanyuan Ding, Jingyi Yu and Peter Sturm, *Multi-perspective Stereo Matching and Volumetric Reconstruction*, in Proceedings of the Twelfth International Conference on Computer Vision (ICCV), 2009: 1827-1834. AR: 23.2%.
- C.21. Yuanyuan Ding, Jing Xiao, Kar-Han Tan and Jingyi Yu, *Catadioptric Projectors*, in Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2009: 2528-2535. AR: 28%.
- C.22. Yuanyuan Ding, Jingyi Yu and Peter Sturm, *Recovering Specular Surfaces Using Curved Line Images*, in Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2009: 2326-2333. AR: 28%.
- C.23. Jingyi Yu, Leonard McMillan and Peter Sturm, *State of the Art Report: Multiperspective Modeling, Imaging, and Rendering*, in Proceedings of Eurographics, 2008. AR: 30%.
- C.24. Yuanyuan Ding and Jingyi Yu, *Recovering Shape Characteristics on Near-flat Specular Surfaces*, in Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2008: 1-8. AR: 32%.
- C.25. Yuanjie Zheng, Jingyi Yu, Steve Lin, Sing Bing Kang and Chandra Kambhamettu, *Single-Image Vignetting Correction Using Radial Gradient Symmetry*, in Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2008: 1-8. Oral presentation. AR: 4%.
- C.26. Feng Li, Jingyi Yu and Jinxiang Chai, *A Hybrid Camera for Motion Deblurring and DepthMap Super-Resolution*, in Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2008: 1-8. AR: 32%.
- C.27. Yuanjie Zheng, Chandra Kambhamettu, Jingyi Yu, Thomas Bauer and Karl Steiner, *FuzzyMatte: A Computationally Efficient Scheme for Interactive Matting*, in Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2008: 1-8. Oral presentations. AR: 4%.
- C.28. Yuanjie Zheng, Jingyi Yu, Chandra Kambhamettu, Sarah Englander, Mitchell D. Schnall and Dinggang Shen, *De-enhancing the Dynamic Contrast-Enhanced Breast MRI for Robust Registration*, in Proceedings of the 10<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), 2007: 933-941. AR: 35%.
- C.29. Jingdan Zhang, Leonard McMillan and Jingyi Yu, *Robust Tracking and Stereo Matching under Varying Illumination*, in Proceedings of IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR), 2006, Volume 1, Issue 17-22: 871-878. AR: 28%.
- C.30. Jingyi Yu and Leonard McMillan, *Multiperspective Projection and Collineation*, in Proceedings of International Conference on Computer Vision (ICCV), 2005, Volume 1: 580-587. AR: 20%.
- C.31. Jingyi Yu, Jason Yang and Leonard McMillan, *Real-Time Reflection Mapping with Parallax*, in Proceedings of the Symposium on Interactive 3D Graphics and Games (I3D), 2005: 133- 138. AR: 27%.
- C.32. Jingyi Yu and Leonard McMillan, *Analyzing Reflections via Multiperspective Imaging*, in Proceedings of IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR), 2005: 117-124. AR: 28%.
- C.33. Jingyi Yu and Leonard McMillan, *General Linear Cameras*, in the Eighth European Conference on Computer Vision (ECCV), 2004, Volume 2: 14-27. Oral presentation. AR: 7%.

## Other Refereed Conference/Workshop Publications

- C.34. Qiaosong Wang, Zhan Yu, Christopher Rasmussen and Jingyi Yu, *Stereo Vision based Depth of Field Rendering on a Mobile Device*, to appear in Proceedings of the IS&T/SPIE Conference on Electronic Imaging, 2014. AR: N/A.
- C.35. Xinqing Guo, Zhan Yu and Jingyi Yu, *Mobile Multi-flash Photography*, to appear in Proceedings of the IS&T/SPIE Conference on Electronic Imaging, 2014. AR: N/A.
- C.36. Yang Yang, Xinqing Guo, Zhan Yu, Karl Steiner, Kenneth Barner, Thomas Bauer and Jingyi Yu, *A real Time Immersive Surgical Training System using RGB-D Sensors*, to appear in Proceedings of 2014 Medicine Meets Virtual Reality (MMVR 2014). AR: N/A.
- C.37. David Lopez, Jingyi Yu, Cecilia Arighi, Manabu Torii, Vijay Shanker, Hongzhan Huang and Cathy Wu, *An Image-Text Approach for Extracting Experimental Evidence of Protein-Protein Interactions in Biomedical Literature*, to appear in ACM Conference on Bioinformatics, Computational Biology and Biomedical Informatics (BCB), 2013. AR: N/A.
- C.38. Zhan Yu, Jingyi Yu, Andrew Lumsdaine, and Todor Georgiev, *Plenoptic Depth Map in The Case of Occlusions*, in Proceedings of the SPIE, Volume 8667, Multimedia Content and Mobile Devices, 86671S, 2013. AR: N/A.
- C.39. Xinqing Guo, David Lopez, Zhan Yu and Jingyi Yu, *A Portable Immersive Surgery Training System Using RGB-D Sensors*, in 2013 Proceedings of Medicine Meets Virtual Reality (MMVR 2013): 161-167. AR: N/A.
- C.40. Rui Hu, Karl Steiner, Jingyi Yu and Ken Barner, *A Non-Photorealistic Surgery Simulation System*, in Proceedings of Medicine Meets Virtual Reality (MMVR 2012): 193-199. AR: N/A.
- C.41. Yi Wu, Jing Hu, Feng Li, Erkang Cheng, Jingyi Yu and Haibin Ling, *Kernel-based Motion-blurred Target Tracking*, in Proceedings of International Symposium on Visual Computing, 2011: 486-495. AR: 26%.
- C.42. David Lopez, Jingyi Yu, Cecilia Arighi, Hongzhan Huang, Hagit Shatkay and Cathy Wu, *An Automatic System for Extracting Figures and Captions in Biomedical PDF Documents*, short paper, in Proceedings of 2011 IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2011): 578-581. AR: N/A.
- C.43. Zhan Yu, Christopher Thorpe, Xuan Yu, Scott Grauer-Gray, Feng Li and Jingyi Yu, *Dynamic Depth-of-Field on Live Video Streams: A Stereo Solution*, in Proceedings of Computer Graphics International 2011. AR: 30%.
- C.44. David Lopez, Deepak Shantharaj, Lu Liu, Harsh Bais and Jingyi Yu, *Image-based Root Modeling and Reconstruction*, in Proceedings of Computer Graphics International 2011. AR: 30%.
- C.45. Jin Sun, Christopher Thorpe, Nianhua Xie, Jingyi Yu and Haibin Ling, *Object Category Classification Using Occluding Contours*, in Proceedings of International Symposium on Visual Computing, 2010: 296-305. AR: 26%.
- C.46. Kevin Kreiser and Jingyi Yu, *Real-time Projector Depixelation for Videos*, in Proceedings of Computer Graphics International (CGI 2008). AR: 36%.
- C.47. Xuan Yu, Feng Li and Jingyi Yu, *Image-space Curvature and Caustics*, in Proceedings of the 15<sup>th</sup> Pacific Conference on Computer Graphics and Applications 2007 (PG), 2007: 181-188. AR: 22%.
- C.48. Jingyi Yu, Xiaotian Yin, Xianfeng Gu, Leonard McMillan and Steven Gortler, *Focal Surfaces of Discrete Geometry*, in Proceedings of the Fifth Eurographics Symposium on Geometry Processing (SGP), 2007, Volume 257: 23-32, Barcelona, Spain. AR: 28%.
- C.49. Yuanyuan Ding and Jingyi Yu, *Multiperspective Distortion Correction via Collineation*, in Proceedings of Asian Conference on Computer Vision (ACCV), 2007, Volume 4843: 95-105. AR: 32%.

- C.50. Yuanjie Zheng, Karl Steiner, Thomas Bauer, Jingyi Yu, Dinggang Shen and Chandra Kambhamettu, *Lung Nodule Growth Analysis from 3D CT Data Using a Coupled Segmentation and Registration Framework*, in Proceedings of ICCV Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA), 2007: 1-8. AR: 40%.
- C.51. Yuanyuan Ding and Jingyi Yu, *Epsilon Stereo Pairs*, in Proceedings of the British Machine Vision Conference (BMVC), 2007. AR: 38%.
- C.52. Adrian Ilie, Ramesh Raskar and Jingyi Yu, *Gradient Domain Context Enhancement for Fixed Cameras*, in Proceedings of Asian Conference on Computer Vision (ACCV), 2004: 27-30. AR: 13%.
- C.53. Ramesh Raskar, Adrian Ilie and Jingyi Yu, *Image Fusion for Context Enhancement*, in Proceedings of the 3<sup>rd</sup> International Symposium on Non-photorealistic Animation and Rendering (NPAR), 2004: 85-94. AR: 22%.
- C.54. Jingyi Yu and Leonard McMillan, *A Framework for Multiperspective Rendering*, in Proceedings of Eurographics Symposium on Rendering (EGSR), 2004: 61-68. AR: 40%.
- C.55. Jason Stewart, Jingyi Yu, Steven J. Gortler and Leonard McMillan, *A New Reconstruction Filter for Undersampled Light Fields*, in Proceedings of Eurographics Symposium on Rendering (EGSR), 2003: 150-156. AR: 37%.
- C.56. Jingyi Yu, Leonard McMillan and Steven Gortler, *Scam Light Field Rendering*, in Proceedings of Pacific Graphics, 2002: 137-144. AR: 24%.

### Sketches and Tutorials

- C.57. Jingyi Yu, *Reconstructing the Invisibles*, Tutorial at the IEEE Conference on Computer Vision and Pattern Recognition, 2013.
- C.58. Jingyi Yu and Srikumar Ramalingam, *Multi-perspective Imaging, Reconstruction and Rendering*, Tutorial at IEEE Conference on Computer Vision and Pattern Recognition, 2010.
- C.59. Jingyi Yu, *Multi-perspective Modeling, Rendering, and Imaging*, Tutorial at ACM SIGGRAPH ASIA, 2008.
- C.60. Jingyi Yu, Xiaotian Yin, Xianfeng Gu, Leonard McMillan and Steven Gortler, *Geometric Modeling Using Focal Surfaces*, in ACM SIGGRAPH Technical Sketch, 2007.
- C.61. Ramesh Raskar, Jingyi Yu and Adrian Ilie, *A Non-Photorealistic Camera: Detecting Silhouettes with Multi-flash*, in SIGGRAPH Technical Sketches, 2003.

### Cover Page Credit

- Images from [J.13] were chosen to be the cover page of the Proceedings of SIGGRAPH Asia 2008.
- Images from [C.48] appeared on the cover page of the Proceedings of Symposium on Geometry Processing (SGP) 2007.
- Images from [J.19] appeared on the cover page of the Proceedings of SIGGRAPH 2004.
- Images from [C.54] appeared on the cover page of the Proceedings of Eurographics Symposium on Rendering (EGSR) 2004.

### Patents

- A 3D Light Field Camera, United States Patent Application 61920074. Filed in 2014.
- Light Field Quilting Software, United States Copyright, Case #1016472119. Filed in 2013.
- A Portable Immersive Surgery Training System Using RGB-D Sensors, United States Patent Application 61893352. Filed in 2013.

- An XSlit Camera for 3D Scene Reconstruction, United States Patent Application 61886161. Filed in 2013.
- Reducing Texture Details in Images, United States Patent 7,102,638.
- Enhancing Low Quality Images of Naturally Illuminated Scenes, United States Patent 7,103,227.
- Stylized Imaging Using Variable Controlled Illumination, United States Patent 7,218,792.
- Detecting Silhouette Edges in Images, United States Patent 7,206,449.

## **Professional Activities**

### **Associate Editor**

- Journal of Machine Vision and Applications (MVA)
- The Visual Computers Journal (TVCI)

### **Conference/Workshop Organizer**

- Technology Chair, IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2014)
- Industry Chair, International Conference on Computational Photography (ICCP 2014)
- Area Chair and Session Chair, International Conference on Computer Vision (ICCV 2011)
- Program Co-Chair, the 11<sup>th</sup> Workshop on Omnidirectional Vision, Camera Networks and Non-classical Cameras (OMNIVIS 2011) in conjunction with ICCV 2011.
- General Chair, IEEE Workshop on Projector-Camera Systems (PROCAMS 2009) in conjunction with CVPR 2009

### **Program Committee Member**

- ACM SIGGRAPH Interactive 3D Graphics, 2011, 2012, 2013
- International Conference on Computational Photography, 2013
- ACM Multimedia, 2010
- IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2008, 2009, 2010, 2011, 2012
- The Pacific Conference on Computer Graphics and Applications (PG), 2009, 2010, 2011, 2012, 2013
- Shape Modeling International (SMI), 2008, 2009, 2010
- The International Conference on Computer Graphics, Imaging, and Visualization (CGIV), 2009
- Computer Animation and Social Agents (CASA), 2008
- International Conference on Computer Vision (ICCV), 2007, 2009
- European Conference on Computer Vision (ECCV), 2006, 2010, 2012
- Asian Conference on Computer Vision (ACCV), 2006
- Computer Graphics International (CGI), 2006

### **Journal/Conference Reviewer**

- ACM SIGGRAPH, 2004 – present
- ACM SIGGRAPH ASIA, 2007- present
- ACM Transaction on Graphics (TOG)
- IEEE Transaction on Visualization and Computer Graphics (TVCG)
- IEEE Transaction on Pattern Analysis and Machine Intelligence (TPAMI)

- IEEE Computer Graphics and Applications (CG&A)
- Eurographics (Computer Graphics Forum)
- Graphical Models (GM)

### **Grant Review Panelist**

- National Science Foundation, 2007, 2008, 2009, 2010, 2011, 2013
- Research Grants Council of Hong Kong, 2010, 2011, 2012

### **University Services**

- Chair, Graduate Recruiting/Admission Committee, 2012 – 2013
- Graduate Program Committee, 2006 – 2007, 2008 – 2009
- Graduate Recruiting/Admission Committee, 2005 – 2006, 2007 – 2008, 2010 – 2011
- SIGVisGraphics seminar coordinator in several different years
- CIS Distinguished Lecture Series coordinator, 2007 - 2011

### **Research Supervision**

#### Past and Current Ph.D. Students

- Yuanyuan Ding, *Understanding Multi-perspective Distortions: Theory and Applications*. Ph.D., 2010. Now at EPSON R&D, CA.
- Feng Li, *Building a Hybrid Camera Array for Low Light Imaging*. Ph.D., 2011. Now at QUALCOMM, San Diego, CA.
- Xuan Yu, *A Framework for Modeling and Rendering Realistic Hair*. Ph.D., 2012. Now at QUALCOMM, San Diego, CA.
- David Lopez, *A Figure-based System for Extracting, Archiving, and Retrieving Protein-Protein Interaction (PPI) Evidence from Biomedical Literature*. Ph.D., 2013. Now at Advanced Micro Devices (AMD), San Jose, CA.
- Jinwei Ye, *Ray Geometry in Multi-perspective Cameras: A Case Study of XSlit Cameras*. Ph.D., 2013. Now at the Army Research Lab, Adelphi, MD.
- Zhan Yu, *Improving Spatial, Angular, and Temporal Resolutions in Light Field Imaging*. Ph.D., 2013. Now at Adobe, San Jose, CA.
- Yu Ji, June 2010 – present, current research topic: 3D reconstruction of invisible objects.
- Xinqing Guo, June 2011 – present, current research topic: light field cameras.
- Can Chen, June 2012 – present, current research topic: light field imaging for object reconstruction.
- Yang Yang, June 2013 – present, current research topic: immersive surgical training.
- Wei Yang, August 2013 – present, current research topic: multi-perspective imaging.
- Nianyi Li, August 2013 – present, current research topic: medical image statistics.

#### Past and Current PostDoc Supervision

- David Lopez, January 2013 – June 2013.
- Haiting Lin, July 2013 - present.

#### Past MS Students

- Miao Tang, M.S., 2012. Now at Chase, Wilmington, DE.

- Christopher Thorpe, M.S., 2011. Now at ER Technologies, Inc, Newark, DE.
- Yuqi Wang, M.S., 2010. Now at the Center for Bioinformatics and Computational Biology, Newark, DE
- Kevin Kreiser, M.S., 2009. Now at MapQuest, NJ.

#### Undergraduate Students Research Project Supervision

- Eric Enslem: Building a Mirror Array for Light Field Acquisition (2010)
- Michael Bartusiak: Image-based Urban Modeling (2010)
- Robert Keller: Interactive Projection (2007, 2008). Now at Vanguard, NY.

#### Past and Current Visiting Scholars

- Tao Yang (Associate Professor at Northwestern Polytechnical University, China): Light Field Imaging, 2013 – present.
- Jing Li (Associate Professor at Xi'An Jiaotong University, China): Tracking and Recognition, 2013 – present.
- Hongrui Wang (Ph.D. student at Northwestern Polytechnical University, China): Light Field Imaging, 2013 – 2014.
- Qing Wang (Professor at Northwestern Polytechnical University, China): Practical Light Field Photography Techniques, 2012.
- Xiaogang Chen (Ph.D. student at Shanghai Jiaotong University, Shanghai, China): Analysis on the Camera Response Functions in Image Deblurring, 2011 – 2012.

#### PhD Committee Member

- Yan Lu (CIS, 2013, expected)
- Henry Arguello (ECE, 2013)
- Rohith Mv (CIS, 2013)
- Gowri Somanath (CIS, 2013)
- Changyin Zhou (Columbia University, 2012)
- Gayathri Mahalingam (CIS, 2012)
- Rui Hu (ECE, 2012)
- Jinglun Gao (ECE, 2012)
- Liwei Xu (Mathematics, 2009)
- Geng Gan (ECE, 2009)
- Thommen Korah (CIS, 2008)

#### **Awards Obtained by Students**

- Quantum Leap Innovations Graduate Student Excellence Award, by Jinwei Ye, 2013
- Graduate Scholarship, the Grace Hopper Celebration of Women in Computing, by Miao Tang, 2010
- Graduate Dissertation Fellowship, by Yuanyuan Ding, 2010
- Quantum Leap Innovations Graduate Student Excellence Award, by Feng Li, 2010
- University Graduate Fellowship, by Xuan Yu, 2009
- Quantum Leap Innovations Graduate Student Excellence Award, by Yuanyuan Ding, 2009
- Best Poster Runner-up, UD Computer Science Research Day, by Yuanyuan Ding, 2009

## Teaching

### University of Delaware

2005 – present

- CISC 320 Introduction to Algorithms (S09)
- CISC 849 Advanced Computer Graphics (F08)
- CISC 829 Computational Geometry/Advanced Computational Photography (S08, S10, F12)
- CISC 849 Computational Photography and Videos (F05, F06, F07, S09, S12)
- CISC 440/640 Computer Graphics (S06, F06, S07, F07, S10, F10, S11, S13)

### Massachusetts Institute of Technology

*Graduate Teaching Assistant*

2004 – 2005

- *6.837 Computer Graphics*
- *6.001 Structure and Interpretation of Computer Programs*

### California Institute of Technology

*Undergraduate Teaching Assistant*

1999 – 2000

- *CS 171 Computer Graphics*
- *AMA 95 Introductory Methods of Applied Mathematics*
- *EE126 Information Theory*

## Teaching Awards

- 2011 Nominee, University of Delaware Excellence in Teaching Award
- 2007 Exemplary Use of Technology in Teaching Award, University of Delaware

## Invited Presentations

- Department of Electrical Engineering, Shanghai Jiaotong University. “Computational Imaging for Scene Understanding”. Host: Jie Yang, Shanghai, China, August 2013.
- Department of Computer Science, Tsinghua University. “Computational Photography for Fun and Profit”. Host: Qionghai Dai, Beijing, China, July 2013.
- Microsoft Research Asia, “Light Field Imaging: Past, Present, and Future.” Host: Yi Ma, Beijing, China, July 2013.
- School of Computer Science, University of Massachusetts, Amherst. “Computational Imaging for Scene Understanding”. Host: Rui Wang, Amherst, MA, April 2013.
- Department of Computer Science, New York University. “Multiperspective Photography.” Host: Rob Fergus, New York, NY, July 2012.
- Department of Computer Science, Tsinghua University. “Multiperspective Photography.” Host: Shi-Min Hu, Beijing, China, July 2012.
- Microsoft Research Asia, “Multiperspective Photography.” Host: Yi Ma, Beijing, China, July 2012.
- Department of Computer & Information Sciences, University of Pennsylvania. “Multiperspective Modeling, Rendering, Reconstruction, and Visualization.” Host: Kostas Daniilidis, Philadelphia, PA, February 2012.
- Department of Computer Science, Columbia University. “Multiperspective Modeling, Rendering, Reconstruction, and Visualization.” Host: Shree Nayar, NY, NY, September 2011.
- Department of Computer Science, Cornell University. “Multiperspective Modeling, Rendering, Reconstruction, and Visualization.” Host: Kavita Bala, Ithaca, NY, October 2011.
- Department of Computer Science, Ecole Normal Superior. “Multiperspective Modeling, Rendering, and Imaging.” Host: Jean Ponce, Paris, France, September, 2010
- Department of Computer Science, Tufts University. “Multiperspective Modeling, Rendering, and Imaging.” Host: Diane Souvaine, Cambridge, MA, March 2009
- Department of EECS, MIT. “Multiperspective Modeling, Rendering, and Imaging.” Host: Fredo Durand, Cambridge, MA, March 2009
- Department of Computer Science, Drexel University. “Image-space Caustics and Curvatures.” Host: Ko Nishino, Philadelphia, PA, February, 2009
- Thomson R&D Center. “Computational Photography and Videos.” Host: Izzat Izzat, Trenton, NJ, November, 2008
- Delaware Biology Institute, University of Delaware. “Computational Photography for Bio-Imagery.” Host: Janine Sherrier, November, 2008
- Department of Computer Science, SUNY Stony Brooks. “Image-space Caustics and Curvatures.” Host: Hong Qin, Stony Brook, NY, November, 2007
- Department of Computer Science, University of Kentucky. “Image-space Caustics and Curvatures.” Host: Ruigang Yang, Louisville, KY, October, 2007
- Army Research Lab. “New Perspectives on Cameras.” Host: Dale Shires, Aberdeen, MD, July, 2006
- Siemens Corporate Research.. “New Perspectives on Cameras.” Host: Shaohua Zhou, Trenton, NJ, December, 2005

- Department of EECS, UC Berkeley. “General Linear Cameras: Theory and Applications”. Host: Hao Zhang, Berkeley, CA, August, 2005
- Adobe System. “New Perspectives on Cameras.” Host: Todor Georgev, San Jose, CA, August 2005
- Department of Computer Science, Drexel University. “New Perspectives on Cameras.” Host: Dave Breen, Philadelphia, PA, November, 2005
- Department of Computer Science, University of Delaware. “New Perspectives on Cameras.” March, 2005. I gave the same faculty candidate talk at the University of Texas at Dallas, Virginia Tech, George Mason University and the University of Central Florida in March 2005.