

# Feng Li

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## Education

Ph.D. in Computer Science, University of Delaware, Newark, DE. Fall 2011.

*Dissertation:* A Hybrid Camera System for Low-light Imaging.

*Committee:* Jingyi Yu (chair), Chandra Kambhampettu, Christopher Rasmussen, and Rob Fergus.

M.E. in Electrical Engineering, Shanghai Jiao Tong University, Shanghai, China. Mar 2006.

*Thesis:* Improvement on Multi-view Face Detection Algorithms.

*Advisor:* Lixiu Yao and Jie Yang.

B.E. in Electrical Engineering, Fuzhou University, Fujian, China. Jul 2003.

## Honors & Awards

*Outstanding Reviewer Award*, CVPR 2013, Portland, Oregon, Jun 2013.

*Doctoral Consortium Travel Award*, CVPR 2011, Colorado Springs, CO, Jun 2011.

*Quantum Leap Innovations Graduate Student Excellence Award*, University of Delaware, May 2010.

*Professional Development Award*, University of Delaware, 2008, 2010.

*Honorable Graduation*, Fuzhou University, China, Jul 2003.

## Professional Experience

*Technical Lead/Computer Vision Engineer*, Apple, Cupertino, CA. 08/2018–present.

- Work on iPhone related camera feature development.
- Intern: Jia Xue, Rutgers University, 2019 summer.

*Technical Lead/Research Scientist*, Light, Palo Alto, CA. 12/2014–08/2018.

- Lead depth estimation related R&D and software development, including multi-view stereo estimation, occlusion handling, shallow depth-of-field rendering, image matting, and depth related imaging editing for Light L16 camera and Nokia 9 PureView 5 camera array.
- Lead machine learning full cycle product development (infrastructure, training, and model deployment for all supported platforms) of computational imaging applications.
- Code optimization using SIMD/NEON intrinsics and GLSL, and Android App and QT GUI tools development.
- Intern mentored: Huaijin (George) Chen, Rice University, 2018 spring.

*Senior Algorithm Engineer*, Qualcomm, San Diego, CA. 06/2013–12/2014.

- Algorithm design and evaluation of pipeline processing modules: smart sharpening, skin-tone noise reduction, edge-aware up-scaling, and companding for multi-tier Qualcomm Snapdragon cameras.
- Fixed point implementations and hardware Visio designs of the above camera ISP modules.

*Research Scientist, Adjunct*, Mitsubishi Electric Research Labs (MERL), Cambridge, MA. 11/11-06/13

- Defocus measurement based on kurtosis analysis and harmonic variance, and a unified Laplacian spectrum based image segmentation approach for fore/background segmentation, defocus segmentation, human detection refinement, and etc..
- Biomechanical model based 4D Thoracic CT simulation (with Finite Element analysis) for examining patient lung deformation induced by respiratory motion, given only one 3DCT scan.
- Designed a 3D regression algorithm for tracking lung tumors (during radiation therapy) on orthogonal X-ray video sequences with a biomechanical human breathing constraint.

*Research Intern*, Mitsubishi Electric Research Labs (MERL), Cambridge, MA. 06/2011–08/2011.

- Implemented and compared the performance of several state-of-the-art tracking algorithms on 2D orthogonal X-ray video sequences.

*Research Intern*, Thomson Corporate Research (Technicolor), Princeton, NJ. 02/2009–05/2009.

- Developed software packages of camera calibration, rectification, and depth estimation for a 3DTV content acquisition system.
- Fatigue analysis of 3DTV video streams by sparse disparity computation.

*Research Intern*, Microsoft Research Asia, Beijing. 07/2008–10/2008.

- Designed a dual focus stereo imaging technique which takes a defocused stereo pair as input for low-light imaging, automatic defocus matting, and multifocus photomontage.

*Technical Marketing Engineer*, Intel Asia-Pacific Research & Development Ltd.. 04/2006–07/2006.

- Supported nationwide i-cafe customers for Intel Platform Administration Technology products.
- Led software testing for Intel *Slick Mountain* project, a hardware-based VOIP solution.

*Software Engineering Intern*, Intel China Software Center, Shanghai. 09/2005–03/2006.

- Assisted business customers in tuning parallel programs on Itanium/Xeon clusters.

## Publications

### *Journal Papers*

1. **Feng Li** and Fatih Porikli, *Biomechanical Model based 4DCT Simulation*, Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization, 2014.
2. **Feng Li** and Fatih Porikli, *Tracking Lung Tumors in Orthogonal X-Rays*, Computational and Mathematical Methods in Medicine, in special issue “Biomedical Signal and Image Processing for Clinical Decision Support Systems”, 2013.
3. Christopher Thorpe, **Feng Li**, Zijia Li, Zhan Yu, David Saunders, and Jingyi Yu, *A Coprime Blur Scheme for Data Security in Video Surveillance*, IEEE TPAMI, 2013.
4. Yu-Wing Tai, Xiaogang Chen, Sunyeong Kim, Seon Joo Kim, **Feng Li**, Jie Yang, Jingyi Yu, Yasuyuki Matsushita, and Michael S. Brown, *Nonlinear Camera Response Functions and Image Deblurring: Theoretical Analysis and Practice*, IEEE TPAMI, Feb. 2013.
5. Zhan Yu, Christopher Thorpe, Xuan Yu, Scott Grauer-Gray, **Feng Li**, and Jingyi Yu, *Racking focus and tracking focus on live video streams: a stereo solution*, The Visual Computer, Feb. 2013.
6. **Feng Li**, Jian Sun, Jue Wang, and Jingyi Yu, *Dual Focus Stereo Imaging*, SPIE Journal of Electronic Imaging, Vol. 19, No. 4, 2010.
7. Chunhua Du, Jie Yang, Qiang Wu, and **Feng Li**, *Integrating Affinity Propagation Clustering Method with Linear Discriminant Analysis for Face Recognition*, SPIE Optical Engineering, 46(11), 2007.

8. Xinliang Ge, Jie Yang, **Feng Li**, and Huahua Wang, *Statistical Model-Based Face Pose Estimation*, Transaction of Tianjin University, 13(2), 2007.
9. Xinliang Ge, Jie Yang, Zhonglong Zheng, and **Feng Li**, *Multi-view Based Face Chin Contour Extraction*, ELSEVIER Engineering Applications of Artificial Intelligence, 19(5), 2006.
10. **Feng Li**, Lixiu Yao, Jie Yang, and Xinliang Ge, *Face Detection in Color Images with Complex Environments*, Journal of Shanghai Jiao Tong University, 40(5), 2006.

### Conference Papers

11. **Feng Li** and Fatih Porikli, *Enforcing Point-wise Priors on Binary Segmentation*, BMVC 2015.
12. **Feng Li** and Fatih Porikli, *Biomechanical Simulation of Lung Deformation from One CT Scan*, Bio-Imaging and Visualization for Patient-Customized Simulations - MICCAI 2013 Workshop, SPRINGER "Lecture Notes in Computational Vision and Biomechanics", Volume 13, pp 15-28, 2014.
13. **Feng Li** and Fatih Porikli, *Harmonic Variance: A Novel Measure for In-focus Segmentation*, BMVC 2013.
14. Xiaogang Chen, **Feng Li**, Jie Yang, and Jingyi Yu, *An Theoretical Analysis of Camera Response Functions in Image Deblurring*, ECCV 2012.
15. Jinwei Ye, Yu Ji, **Feng Li**, and Jingyi Yu, *Angular Domain Reconstruction of Dynamic 3D Fluid Surfaces*, CVPR 2012.
16. **Feng Li**, Zijia Li, David Saunders, and Jingyi Yu, *A Theory of Coprime Blurred Pairs*, ICCV 2011.
17. Yuanyuan Ding, **Feng Li**, Yu Ji, and Jingyi Yu, *Dynamic Fluid Surface Acquisition Using a Camera Array*, ICCV 2011.
18. Yi Wu, Haibin Ling, Jingyi Yu, **Feng Li**, Xue Mei, and Erkang Cheng, *Blurred Target Tracking by Blur-driven Tracker*, ICCV 2011.
19. Yi Wu, Jing Hu, **Feng Li**, Erkang Cheng, Jingyi Yu, and Haibin Ling, *Kernel-based Motion-blurred Target Tracking*, International Symposium on Visual Computing (ISVC) 2011.
20. 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*, Computer Graphics International (CGI) 2011.
21. **Feng Li**, Liwei Xu, Philippe Guyenne, and Jingyi Yu, *Recovering Fluid-type Motions Using Navier-Stokes Potential Flow*, CVPR 2010.
22. **Feng Li**, Jingyi Yu, and Jinxiang Chai, *A Hybrid Camera for Motion Deblurring and Depth Map Super-Resolution*, CVPR 2008.
23. Xuan Yu, **Feng Li**, and Jingyi Yu, *Image-space Caustics and Curvatures*, Pacific Graphics 2007.

### Patents

24. Rajiv Laroia, Fan Sai Kuok, Jannie Lai, Jared Torres Calinisan, and **Feng Li**, *Methods and Apparatus for Receiving, Storing and/or Using Camera Settings and/or User Preference Information*, PCT 15/296,892.
25. Michael Tao, **Feng Li**, and YiChang Shih, *Methods and Apparatus for Taking into Consideration Possible Object Depth As Part Of A Composite Image Generation Process*, US Patent Application.
26. **Feng Li**, Shufei Fan, Shilpi Sahu, Min Li, Yunqiang Chen, and Xiaoyun Jiang, *Digital Zoom Methods and Systems*, US 14/631,588.

27. Fatih Porikli and **Feng Li**, *Method for Data Segmentation using Laplacian Graphs*, US 13/948,397.
28. Fatih Porikli and **Feng Li**, *A Biomechanical Model Based 4DCT Simulator*, US 13/765,757.
29. Fatih Porikli and **Feng Li**, *3D Object Tracking in Multiple 2D Sequences*, US 13/632,500.
30. Izzat Izzat and **Feng Li**, *Stereo-Image Quality and Disparity/Depth Indications*, US 13/515,605.
31. Lixiu Yao, Lei Tian, and **Feng Li**, *Face Detection in Color Images with Complex Environments*, CN1932847.

## Professional Activities

### *Reviewer for Journals:*

IEEE Transactions on Image Processing; IEEE Transactions on Circuits and Systems for Video Technology; IEEE Transactions on Visualization and Computer Graphics; Elsevier Neurocomputing; OSA Optics Express; Springer The Visual Computer; Springer Machine Vision and Applications; Computer Methods in Biomechanics and Biomedical Engineering; Imaging & Visualization; IET Image Processing.

### *Program Committee Member for Conferences:*

IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2011–15; IEEE Int'l Conf. on Computer Vision (ICCV), 2011, 2013; European Conf. on Computer Vision (ECCV), 2012; Int'l Conf. on Computing, Networking and Communications (ICNC), 2013.

### *Reviewer for Conferences:*

ACM SIGGRAPH 2011,2018; Pacific Graphics 2011,2013.

### *Invited Talks:*

- *Building a Hybrid Camera Array for Low Light Imaging*, Temple University, Philadelphia, 10/1/2010.

### *Professional Societies:*

- IEEE: member since 2008.

### *Participation at Conferences/Trainings:*

- Apple Worldwide Developers Conference (WWDC), 2019.
- IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2008, 2010–2012, 2015–2019.
- The @Scale Conference, Light.co Booth Exhibition, 2017.
- Video@Scale, Facebook MPK campus, 2016–2017.
- IPAM Workshop on Computational Photography and Intelligent Cameras, February, 2015.
- IEEE Int'l Conf. on Computational Photography (ICCP), 2013, 2014.
- Respiratory Motion Management for Radiation Therapy (MMRT) Peering Training, School of Medicine, Washington University in St. Louis, April 2013.
- 54th Annual Meeting, American Society for Radiation Oncology (ASTRO), October 2012.
- Embedded Vision Summit East, in conjunction with DESIGN East, September 2012.
- The State of the Art Techniques in IMRT, IGRT, SBRT, Proton and Brachytherapy Symposium, American Society for Radiation Oncology (ASTRO), May 2012.
- ACM Int'l Conf. on Computer Graphics and Interactive Techniques (SIGGRAPH), August 2007.