Yang Liu

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Education

Massachusetts Institute of Technology (MIT) CAMBRIDGE, MA USA
PhD student in Electrical Engineering and Computer Science (EECS) *2019 – present*
  Advisor: Prof. Frédo Durand.

Tsinghua University BEIJING, CHINA
Master of Engineering in Control Science and Engineering *2016 – 2019*
  Advisor: Prof. Qionghai Dai. I also worked with Prof. Jinli Suo.

Tsinghua University BEIJING, CHINA
Bachelor of Engineering in Automation *2012 – 2016*
  Thesis advisor: Prof. Qionghai Dai. GPA 92/100, ranking 3/136.

Research Interests

Computational Imaging & Photography: Imaging and sensing beyond human vision (in terms of dimensionality and visibility) by combining optical imaging systems with compressive sensing and machine learning techniques. Typical topics that I am currently enthusiastic about are high-throughput imaging and non-line-of-sight imaging.

Publications

Journal Articles (*Equal contributions)

4. Siming Zheng*, **Yang Liu***, Ziyi Meng, Mu Qiao, Zhishen Tong, Xiaoyu Yang, Shensheng Han, and Xin Yuan. Deep Plug-and-Play Priors for Spectral Snapshot Compressive Imaging. *Photonics Research* doi:10.1364/PRJ.411745 (2020).

3. **Yang Liu***, Xin Yuan*, Jinli Suo, David J. Brady, and Qionghai Dai. Rank Minimization for Snapshot Compressive Imaging. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, **41** (12), 2990–3006, doi:10.1109/TPAMI.2018.2873587 (2019).

2. **Yang Liu**, Jinli Suo, Yuanlong Zhang, and Qionghai Dai. Single-pixel Phase and Fluorescence Microscope. *Optics Express*, **26** (25), 32451–32462, doi:10.1364/OE.26.032451 (2018).

1. Yuwang Wang, **Yang Liu**, Jinli Suo, Guohai Situ, Chang Qiao, and Qionghai Dai. High Speed Computational Ghost Imaging via Spatial Sweeping. *Scientific Reports*, **7**, 45325, doi:10.1038/srep45325 (2017).

Conference Proceedings

3. Xin Yuan, **Yang Liu**, Jinli Suo, and Qionghai Dai. Plug-and-Play Algorithms for Large-scale Snapshot Compressive Imaging. in **Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) [Oral]**, 1447–1457, doi:10.1109/CVPR42600.2020.00152 (2020).

2. Xukang Wang, **Yang Liu**, Xiaofei Han, Jinli Suo, and Qionghai Dai. Snapshot Compressive Volumetric Light-sheet Microscopy. in *OSA Biophotonics Congress*, BODA, JW5A.5, doi: 10.1364/BODA.2019.JW5A.5 (2019).

1. **Yang Liu**, Jinli Suo, Yuanlong Zhang, and Qionghai Dai. Simultaneous Fluorescence and Quantitative Phase Microscopy with Single-pixel Detectors. in *Proc. SPIE 10503*, Quantitative Phase Imaging IV, 105032K, doi: 10.1117/12.2286757 (2018).

Honors and Awards

Honors: Outstanding Master's Thesis of Tsinghua University (2019), Outstanding Postgraduate of Tsinghua University and Automation Department (2019), Special Honor of Automation Department for Postgraduate Students (3/∼600, 2018), Outstanding Graduate of Beijing and Tsinghua University (2016).

Scholarships: MIT Stata Family Presidential Fellowship (2019), Jiang Nanxiang Scholarship (finalist of Top-10 Graduate Scholarship of Tsinghua University, 30/∼30,000, 2018), Samvo-Chan Shung Fai Scholarship (2014), National Endeavor Scholarship (2013 & 2015), Cyrus Tang Scholarship (2013, 2014 & 2015), and HAGE Scholarship (2013, 2014 & 2015).

Competitions: Second Prize in the 33-th Challenge Cup of Tsinghua University (2015), Honorable Mention in Mathematical Contest in Modeling (2015), and Second Prize in Contemporary Undergraduate Mathematical Contest in Modeling (2014).

Research Experience

CSAIL, Massachusetts Institute of Technology (MIT)   CAMBRIDGE, MA USA
Research Assistant   *Sep 2019 – present*
I work on imaging and sensing beyond human vision, specifically passive non-line-of-sight imaging and sensing with ubiquitous non-imaging devices.   Advisor: Prof. Frédo Durand.

Department of Automation, Tsinghua University   BEIJING, CHINA
Research Assistant   *Sep 2015 – Jul 2019*
At Broadband and Digital Media Laboratory, I emphasize on computational imaging combined with compressive sensing and machine learning techniques.   My current interests include high-throughput imaging, imaging through scattering media and single-pixel imaging.   Advisor: Prof. Qionghai Dai.

Chemical and Biological Engineering, University of British Columbia   VANCOUVER, BC CANADA
Research Intern   *Jun 2015 – Aug 2015*
At Data Analytics and Intelligent Systems Laboratory, I worked on estimation and optimal control of Li-ion batteries.   Advisors: Prof. Bhushan Gopaluni and Prof. Brian Wetton (UBC Math).

Teaching Experience

Digital and Computational Photography 6.815/6.865 lectured by Prof. Frédo Durand   MIT
Teaching Assistant   *Fall 2020*
Problem sets, online Q&A, and office hours [*virtual*].

Computer Language and Programming (using C) lectured by Prof. Jinli Suo   TSINGHUA UNIVERSITY
Teaching Assistant   *Fall 2018*
Deploy and maintain an online judge system, design problem sets, and review the solutions of midterm and final exams.

Skills

Programming Languages: MATLAB, Python, C/C++ (*proficient*), Java, R, and LabVIEW (*competent*).

Natural Languages: Chinese (*native*) and English.

Interests

Sports: Badminton, tennis, ping pong and running.

Hobbies: Reading, design and LATEXing.

References

Prof. Frédo Durand, Professor
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Prof. Jinli Suo, Associate Professor
Department of Automation, Tsinghua University, Beijing, China
jlsuo@tsinghua.edu.cn

Dr. Xin Yuan, Lead Researcher, Video Analysis and Coding
Nokia Bell Labs, Murray Hill, New Jersey, USA
xyuan@bell-labs.com

Prof. Guohai Situ, Professor
Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, Shanghai, China
ghsitu@siom.ac.cn