

# Yang Liu

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## Education

Massachusetts Institute of Technology (MIT)

PhD student in Electrical Engineering and Computer Science (EECS)

Advisor: Prof. Frédo Durand.

CAMBRIDGE, MA USA

2019 – present

Tsinghua University

Master of Engineering in Control Science and Engineering

Advisor: Prof. Qionghai Dai. I also worked with Prof. Jinli Suo.

BEIJING, CHINA

2016 – 2019

Tsinghua University

Bachelor of Engineering in Automation

Thesis advisor: Prof. Qionghai Dai. GPA 92/100, ranking 3/136.

BEIJING, CHINA

2012 – 2016

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## 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.

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## 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).
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## 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).

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## 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).

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## 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.

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## Skills

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

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

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## Interests

**Sports:** Badminton, tennis, ping pong and running.

**Hobbies:** Reading, design and  $\text{\LaTeX}$ ing.

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## References

Prof. [Frédo Durand](#), Professor

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[fredo@mit.edu](mailto:fredo@mit.edu)

Prof. [Qionghai Dai](#), Professor

Department of Automation, Tsinghua University, Beijing, China  
[qh Dai@tsinghua.edu.cn](mailto:qh Dai@tsinghua.edu.cn)

Prof. [Jinli Suo](#), Associate Professor

Department of Automation, Tsinghua University, Beijing, China  
[jlsuo@tsinghua.edu.cn](mailto: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](mailto: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](mailto:ghsitu@siom.ac.cn)