Yicheng Wu

Contact Information

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Research Interests

Computer Vision, Computational Photography, and Deep Learning

Education

Rice University, Houston, TX, USA

Ph.D., ECE / Applied Physics — May 2021

- Advisor: Ashok Veeraraghavan, Ph.D.
- GPA: 4.00/4.00

Beijing Normal University, Beijing, China

B.S., Physics — June 2015

- Ranking: 1/137

Working Experience

Snap Research — May 2021 to Present

- Manager: Shree K. Nayar
- Role: Research Scientist
- Topics: Computational Photography, Augmented Reality

Google Research — May 2020 to Nov 2020

- Advisors: Qiurui He, Tianfan Xue, Rahul Garg, Jiawen Chen, Jon Barron
- Role: Research Intern
- Project: Single-image lens flare removal

Microsoft Research — May 2017 to Aug 2017

- Advisor: Brian Guenter
- Role: Research Intern
- Project: Multi-user augmented reality applications with low latency and high rendering quality

Publications

1. Zhanghao Sun, Jian Wang, **Yicheng Wu**, Shree Nayar. "Seeing Far in the Dark with Patterned Flash." *European Conference on Computer Vision (ECCV)*, 2022
2. Zhanghao Sun, Yu Zhang, **Yicheng Wu**, Dong Huo, Yiming Qian, Jian Wang. "Structured Light with Redundancy Codes." *arXiv*, 2022
3. Fangzhou Mu, Jian Wang*, **Yicheng Wu***, Yin Li*. "3D Photo Stylization: Learning to Generate Stylized Novel Views from a Single Image." *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022 **(Oral)**
4. **Yicheng Wu**, Qiurui He, Tianfan Xue, Rahul Garg, Jiawen Chen, Ashok Veeraraghavan, Jonathan T. Barron. "How to Train Neural Networks for Flare Removal." *International Conference on Computer Vision (ICCV)*, 2021
5. **Yicheng Wu***, Shiyu Tan*, Shoou-I Yu, Ashok Veeraraghavan. "CodedStereo: Learned Phase Masks for Large Depth-of-field Stereo." *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021 **(Oral)**
6. Lingbo Jin, Yubo Tang, **Yicheng Wu**, Jackson B. Coole, Melody T. Tan, Xuan Zhao, Hawraa Badaoui, Jacob T. Robinson, Michelle D. Williams, Ann M. Gillenwater, Rebecca R. Richards-Kortum, Ashok Veeraraghavan. "Deep Learning Extended Depth-of-field Microscope for Fast and Slide-free Histology." *Proceedings of the National Academy of Sciences (PNAS)*, 2020

7. **Yicheng Wu**, Vivek Boominathan, Xuan Zhao, Jacob T. Robinson, Hiroshi Kawasaki, Aswin Sankaranarayanan, Ashok Veeraraghavan. "FreeCam3D: Snapshot structured light 3D with freely-moving cameras." *European Conference on Computer Vision (ECCV)*, 2020
8. **Yicheng Wu***, Fengqiang Li*, Florian Willomitzer, Ashok Veeraraghavan, Oliver Cossairt. "Wavefront sensing based depth sensor for macroscopic objects." *Computational Optical Sensing and Imaging (COSI)*, 2020 **(Oral)**
9. **Yicheng Wu***, Fengqiang Li*, Florian Willomitzer, Ashok Veeraraghavan, Oliver Cossairt. "WISHED: Wavefront imaging sensor with high resolution and depth ranging." *International Conference on Computational Photography (ICCP)*, 2020 **(Oral)**
10. **Yicheng Wu**, Vivek Boominathan, Huaijin Chen, Aswin Sankaranarayanan, Ashok Veeraraghavan. "PhaseCam3D – Learning phase masks for passive single view depth estimation." *International Conference on Computational Photography (ICCP)*, 2019 **(Oral, Best Poster Award)**
11. **Yicheng Wu**, Manoj Kumar Sharma, Ashok Veeraraghavan. "WISH: Wavefront imaging sensor with high resolution." *Nature Light: Science & Applications*, (2019)
12. Jason Holloway, **Yicheng Wu**, Manoj Kumar Sharma, Oliver Cossairt, Ashok Veeraraghavan. "SAVI: Synthetic apertures for long-range, subdiffraction-limited visible imaging using Fourier ptychography." *Science Advances*, (2017)
13. Xuan Liu, **Yicheng Wu**, Chengdong He, Yuzhuo Wang, Xiaojia Wu, Jing Zhou. "Two-dimensional invisibility anti-cloak structured by a homogeneous anisotropic medium." *Journal of Optical Technology*, (2016)
14. **Yicheng Wu**, Jialin Ma, Yi Yang, Ping Sun. "Improvements of measuring the width of Fraunhofer diffraction fringes using Fourier transform." *Optik-International Journal for Light and Electron Optics*, (2015)
15. **Yicheng Wu**, Chengdong He, Yuzhuo Wang, Xuan Liu, Jing Zhou. "Controlling the wave propagation through the medium designed by linear coordinate transformation." *European Journal of Physics*, (2014)

Patents

1. Passive and single-viewpoint 3d imaging system. US20200349729A1 (2020)
2. Wish: Wavefront imaging sensor with high resolution. US20200351454A1 (2020)
3. Synthetic apertures for long-range, sub-diffraction limited visible imaging using Fourier Ptychography. US20200150266A1 (2020)
4. Learning-based lens flare removal. Submitted

Teaching Experience

Teaching Assistant

- ELEC 549: Computational Photography — Fall 2017, 2019
- ELEC/COMP 447/546: Introduction to Computer Vision — Spring 2018, 2020

Awards

CVPR Doctoral Consortium — June 2021
Ken Kennedy Institute Oil & Gas HPC Conference Graduate Fellowship — Oct 2018
Robertson Finley Travel Award — Sep 2018
Top 10 Students (among all graduates at BNU, top 0.5%) — Jan 2015
National Fellowship — 2013, 2014, 2015

Skills

Python (TensorFlow, Pytorch, OpenCV), MATLAB, C++, C, C♯, Mathematica