Sizhuo Ma

sizhuoma@gmail.com

Research Interest

Computer Vision, Computational Imaging

Education

Dec. 2016 – Jan. 2022
Ph.D. of Computer Sciences, University of Wisconsin-Madison
Thesis: Resolving Motion with Single-Photon Cameras

Aug. 2014 – Dec. 2016
M.S. of Computer Sciences, University of Wisconsin-Madison
Gpa: 3.92/4.00

Sep. 2010 – July. 2014
B.S. of Computer Science and Engineering, Shanghai Jiao Tong University, China
Gpa: 90.3/100

Research Experience

Feb. 2022 – *Present*
Snap Research
Research Scientist, Computational Imaging Team

May. 2016 – Jan. 2022
WISION Lab, University of Wisconsin-Madison
Graduate Research Assistant
Advisor: Professor Mohit Gupta

- Develop novel solutions to motion-related computer vision problems (*e.g.*, scene flow, burst photography) with computational camera designs (*e.g.*, light field, structured light, single-photon cameras).

May. 2020 – Aug. 2020
Snap Research
Research Intern, Computational Imaging Team
Supervisor: Shree Nayar

Jan. 2016 – May. 2016
Living Environments Lab, University of Wisconsin-Madison
Graduate Research Assistant
Advisor: Professor Kevin Ponto

- Built prototypes for AR applications on mobile devices, using hardware/software platforms including Google Project Tango, Vuforia, and Unity.

Sep. 2012 – Jun. 2014
Visual Media and Data Management Lab, Shanghai Jiao Tong University
Undergraduate Research Assistant
Advisor: Professor Bin Sheng

- Implemented a real-time, monocular, dense SLAM system in C++ as a platform for AR applications.

Teaching Experience

Sep. 2015 – Jan. 2016
Teaching Assistant
CS301: Introduction to Data Programming (Python)
University of Wisconsin-Madison

Sep. 2014 – May. 2015
Teaching Assistant
CS302: Introduction to Programming (Java)
University of Wisconsin-Madison

Publications

2023 **Sizhuo Ma**, Jian Wang, Wenzheng Chen, Suman Banerjee, Mohit Gupta, Shree Nayar. FarQR: Location-Guided Scanning of Visual Codes from Long Distances. *International Conference on Mobile Computing and Networking (MobiCom 2023)* (To appear)

2023 Brevin Tilmon, Zhanghao Sun, Sanjeev Jagannatha Koppal, Yicheng Wu, Georgios Evangelidis, Ramzi Zahreddine, Gurunandan Krishnan, **Sizhuo Ma***, Jian Wang*. Energy-Efficient Adaptive 3D Sensing, *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2023)* (To appear)
*Co-corresponding author

2023 **Sizhuo Ma**, Paul Mos, Edoardo Charbon, Mohit Gupta. Burst Vision Using Single-Photon Cameras. *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV 2023)*

2022 Varun Sundar, **Sizhuo Ma**, Aswin Sankarnarayanan, Mohit Gupta. Single-Photon Structured Light. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2022)*

2020 **Sizhuo Ma**, Mohit Gupta. Inertial Safety from Structured Light. *European Conference on Computer Vision (ECCV 2020)*

2020 **Sizhuo Ma**, Shantanu Gupta, Arin C. Ulku, Claudio Bruschini, Edoardo Charbon, Mohit Gupta. Quanta Burst Photography. *SIGGRAPH 2020*

2019 **Sizhuo Ma**, Brandon M. Smith, Mohit Gupta. Differential Scene Flow from Light Field Gradients. *International Journal on Computer Vision (IJCV) Special Issue on Best Papers of ECCV 2018*

2018 **Sizhuo Ma**, Brandon M. Smith, Mohit Gupta. 3D Scene Flow from 4D Light Field Gradients. *European Conference on Computer Vision (ECCV 2018)* [**Oral presentation**]

Patent

Location-Guided Scanning of Visual Codes
Inventors: Sizhuo Ma, Jian Wang, Mohit Gupta, Shree K. Nayar, US 2022/0262089 A1

Systems, Methods, and Media for High Dynamic Range Quanta Burst Imaging
Inventors: Mohit Gupta, Sizhuo Ma, **Patent granted**, US Patent 11170549

Systems, Methods, and Media for Determining Object Motion in Three Dimensions from Light Field Image Data
Inventors: Mohit Gupta, Sizhuo Ma, Brandon Smith, **Patent granted**, US Patent 10706564

Honors and Awards

2022 Outstanding Graduate-Student Research Award, UW-Madison Computer Sciences Department
2020 Snap Research Fellowship
2012 Shanghai Municipal Scholarship
2011 – 2012 SJTU Academic Excellence Scholarship

SKILLS

Programming Languages:	Python, MATLAB, C, C++, Java, C#,
Operating Systems:	Windows, Linux, Android
Tools/Libraries:	OpenCV, PyTorch, CUDA, OpenGL, Unity, Blender
Languages:	English (Proficient), Chinese (Native), Japanese (JLPT N1)