Shangjie Xue

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Education

Massachusetts Institute of Technology (MIT), Cambridge, MA — Sept. 2018 - present

Candidate for *Master of Science* in *Nuclear Eng.* and *Electrical Eng. & Computer Sci.* (dual degree)

- Relevant Coursework: Introduction to Robotics, Applied Machine Learning, Advances in Computer Vision, Essential Numerical Methods, Nonlinear Optimization, Cognitive Robotics, Visual Navigation for Autonomous Vehicles, Underactuated Robotics, Robotic Manipulation

Peking University (PKU), Beijing, China — July 2018

Bachelor of Science in *Physics*

- Relevant Coursework: Data Structure and Algorithm, Group Theory, Methods of Mathematical Physics, Theoretical Mechanics, Optics, Quantum Mechanics, Statistical Physics, Quantum Statistical Physics, Computational Physics, Computational Thinking in Social Science

Experience

Research Assistant — Sept. 2019 - Present

Department of NSE, Massachusetts Institute of Technology — *Advisor: Lin-Wen Hu, Mingda Li*

- Research on machine learning-based approach for inverse problem and adaptive sampling for environmental radiation monitoring.

Research Intern — June 2020 - Dec. 2020

Uber ATG, San Francisco — *Supervisor: Raquel Urtasun, Shenlong Wang*

- Photorealistic image synthesis for self-driving car research.
- Shadow synthesis via image-based rendering and machine learning based illumination estimation.

Undergraduate Researcher — 2015 – 2018

School of Physics, Peking University — *Advisor: Yuan Li*

- Studies on disorder induced phase transition in Charge-Density-Wave system via neutron scattering;
- Studied on topological magnon in antiferromagnetic compounds via inelastic neutron scattering.

Visiting Student Researcher — Summer 2017

Department of Physics, Massachusetts Institute of Technology — *Supervisor: Riccardo Comin*

- Studied on mesoscopic charge order domain dynamics via X-ray photon correlation spectroscopy (XPCS).
- Studied on temperature dependence of the lattice dynamics in Charge-Density-Wave system via Raman spectroscopy .

Selected Publications

- Y. Chen* F. Rong*,S. Duggal* S. Wang, X. Yan, S. Manivasagam, **S. Xue**, E. Yumer, R. Urtasun†, GeoSim: Photorealistic Image Simulation with Geometry-Aware Compositionfor Self-Driving, **CVPR** 2021 (Oral), **arxiv:2101.06543**.
- L. Yue*, **S. Xue***, J. Li*, C. Mazzol, F. Zheng, L. Wang, J. Feng, S. B. Wilkins, R. Comin† and Y. Li†,"Distinction between pristine and disorder-perturbed charge density waves in $ZrTe_3$", **Nature Communications** 11, no. 1 (2020): 1-8.

- W. Yao*, C. Li*, L. Wang*, **S. Xue**, Y. Dan, K. Iida, K, Kamazawa, K. Li, C. Fang†, Y. Li†, "Topological spin excitations observed in a three-dimensional antiferromagnet", **Nature Physics** 14, no. 10 (2018): 1011-1015. (* : Equal contribution, † : Corresponding author)

Skills

- Programming: Python, C/C++, Matlab
- Tools/Software: ROS, PyTorch, Tensorflow, Keras, GTSAM, DRAKE, Arduino, PyQt, Blender, SolidWorks, LaTeX

Selected Awards and Honors

- **"Manson Benedict"** Fellowship at MIT 2018 - 2019
- **"Merit Student Award"** at Peking University 2015 & 2016
- **"Wei Lin"** Scholarship at Peking University 2016
- **"Tung OOCL"** Scholarship at Peking University 2015
- **"Meritorious Winner"** in Mathematical Contest in Modeling (MCM) 2015