He Lyu

3850 Coleman Rd, APT 322B, East Lansing, MI, 48823
lyuhe@msu.edu

Education

Michigan State University — *East Lansing, MI*
PhD Student in Computation Mathematics, Science and Engineering. GPA: 4.00/4.00 — *Aug. 2018 - present*
- Advisor: Dr. Rongrong Wang

Fudan University — *Shanghai, China*
MS Student in Computational Mathematics — *Sept. 2016 - Jun. 2018*

Fudan University — *Shanghai, China*
BS in Mathematics and Applied Mathematics — *Sept. 2012 - Jun. 2016*
- Minor in Economics

Research Interests

- Compressed Sensing
- Machine Learning
- Optimization

Research Experience

Michigan State University-Dept of CMSE — *East Lansing, MI*
Graduate Research Assistant — *Aug. 2018-present*
- Proposed and analyzed an adaptive quantization method for direct digital image acquisition that yields a better information conversion rate than the state-of-the-art method in cameras. Joint work with Rongrong Wang et al., manuscript under review.
- Proposed and analyzed an algorithm that extends robust principal component analysis (RPCA) to nonlinear manifolds, which can be applied to manifold denoising tasks. Joint work with Rongrong Wang et al., published at NeurIPS 2019.

Fudan University-Dept of Mathematics and Applied Mathematics — *Shanghai, China*
- Thesis: "A review on variance reduction based stochastic gradient descent methods". Reasearched and compared large-scale optimization algorithms based on variance reduction for stochastic gradient descent (SGD), including SVRG, SAGA, SAG, etc. — *Feb. 2016-Jun. 2016*

Teaching Experience

Spring 2020	**Numerical Linear Algebra CMSE 823**, Teaching Assistant	*MSU*
Fall 2019	**Applied Machine Learning in the Physical and Life Sciences CMSE 890-005**, Teaching Assistant	*MSU*

Awards and Achievements

2019	**CMSE Outstanding Early Student Award**, Michigan State University
2017	**National Scholarship**, Fudan University
2015	**First Prize Scholarship**, Fudan University
2014	**Third Prize in the National University Students Mathematics Modeling Contest**, Shanghai division,China

Software Skills

- MATLAB
- Python
- Latex
- C

Publications

Conference paper

Lyu H, Sha, N., Qin, S., Yan, M., Xie, Y. and Wang, R., 2019. Manifold Denoising by Nonlinear Robust Principal Component Analysis. In Advances in Neural Information Processing Systems (pp. 13390-13400).

In Review

Lyu, H. and Wang, R., 2020. Sigma Delta quantization for images. arXiv preprint arXiv:2005.08487.