XI GONG

EDUCATION

University of California, Santa Barbara *Sept. 2018 - Current*
B.S. in Mathematics; B.S. in Computer Science; GPA: 3.65

RESEARCH EXPERIENCE

Fast optimization algorithm for the Markowitz problem *April. 2021 - Sept. 2021*
(with Prof. Alex Shkolnik)
- Analyzed theoretical properties of a novel optimization algorithm for the Markowitz problem
- Provided theoretical guarantees to the algorithm by proving its convergence, correctness, and performance under the single-factor model
- Identified challenges for adapting the algorithm to a more general setting
- Proposed a heuristic algorithm that partially addressed these challenges and achieved great empirical performance

Debiasing the Box-relaxed optimization decoder *May. 2020 - August. 2020*
(with Prof. Christos Thrampoulidis)
- Read papers on asymptotic bit error rate of the Box-relaxed optimization decoder
- Learned statistical tools such as concentration inequalities, Gaussian comparison lemmas, and Gordon min-max theorem
- Implemented a debiasing scheme for the decoder and evaluated its empirical performance

COURSEWORK

Graduate-level:
- Statistical Theory (2 quarters), Probability Theory (3 quarters)
- Real Analysis (3 quarters), Matrix Analysis
- High Dimensional Probability, Stochastic Calculus (in progress)
- Randomized Algorithms, Differential Privacy (in progress)

COURSE PROJECT

Generating private synthetic data: making DualQuery computationally efficient
- Analyzed algorithms for differentially-private synthetic data generation
- Proposed a computationally efficient variant of the DualQuery algorithm using subsampling technique
- Improved privacy analysis of the DualQuery algorithm in the original paper by a constant factor

TECHNICAL SKILLS

Programming: C++, Java, Python, Matlab, R