

Guanghao Ye

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Last updated on Dec. 2020

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RESEARCH INTERESTS

- ◇ Design and Analysis of Algorithms
- ◇ Convex Optimization
- ◇ Spectral Graph Theory
- ◇ Learning Theory

EDUCATION

University of Washington, Seattle, WA **2017 – 2021 (expected)**
Combined B.S./M.S. in Computer Science, B.S. in Mathematics
Departmental Honors in Computer Science, Cum Laude
Advisor: Yin Tat Lee
Thesis: *Fast Algorithm for Solving Structured Convex Programs*

SELECTED COURSEWORK

Randomized Algorithms, Theory of Optimization and Continuous Algorithms, Probabilistic Combinatorics, Computational Complexity, Cryptography, Algorithms through Geometric Lens, Robustness in Machine Learning

HONORS AND AWARDS

- ◇ Herbold Data Science Fellowship 2020
- ◇ UW Allen School Best Senior Thesis (Honorable Mentions) 2020
- ◇ Microsoft Endowed Scholarship 2018 – 2020
- ◇ 1st place in the ICPC UW Programming Contest 2019
- ◇ 5th place in the ICPC Pacific Northwest Regional 2017/2018
- ◇ 7th place in the International Problem Solving Contest High School Division 2017

RESEARCH

Solving Structured Linear/Convex Programs March 2019 – Present
Supervisor: Yin Tat Lee
Studied the problem of solving sparse linear/convex programs, where treewidth is used as a sparsity measure connected to sparse Cholesky decomposition. Obtained the first algorithm for linear programs which achieves $\tilde{O}(n \text{ poly}(\tau))$, where τ is the treewidth of dual graph of the constraint matrix.

High-Dimensional Robust Estimation Nov. 2019 – May. 2020
Supervisor: Jerry Li
Studied the problem of robustly estimating covariance matrix from an unknown Gaussian distribution, of which ε fraction are arbitrarily corrupted. Designed an algorithm that has nearly-optimal sample complexity and error guarantee and matches the runtime of best known non-robust algorithm up to poly-logarithmic factors.

PUBLICATIONS AND MANUSCRIPTS

A Nearly-Linear Time Algorithm for Linear Programs with Small Treewidth: A Multiscale Representation of Robust Central Path
With Sally Dong and Yin Tat Lee arXiv: 2011.05365
submitted to STOC 2021.

Robust Gaussian Covariance Estimation in Nearly-Matrix Multiplication Time
with Jerry Li. arXiv: 2006.13312
to appear, NeurIPS 2020.

INDUSTRY
EXPERIENCE

Software Engineer Intern
June 2019 – Sept. 2019
Payment Team

Airbnb
Seattle, WA

TALKS AND
PRESENTATIONS

Finding Correlated Pairs
UW Theory Lunch, Seattle, WA

Nov 2019

TEACHING

Introduction to Algorithms: Majors
Spring 2018, Autumn 2018, Spring 2019, Winter 2020

Applied Algorithms: Graduate Level
Winter 2019