Jiayue Wan

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EDUCATION

Cornell University, College of Engineering, Ithaca, NY — Expected May 2023
- Ph.D. in Operations Research and Information Engineering, GPA: 4.13/4.3
- Minor: Computer Science, Computational Science & Engineering
- Skills: Data Analytics, Experimental Design, Machine Learning, Probability, Optimization, Simulation, Stochastic Modeling

Stanford University, School of Engineering, Stanford, CA — June 2018
- M.S. in Management Science and Engineering, GPA: 4.07/4.3

Haverford College, Haverford, PA — May 2016
- B.S. in Mathematics and Physics, *magna cum laude*, Phi Beta Kappa, GPA: 3.96/4

PROFESSIONAL EXPERIENCE

Cornell University, Ithaca, NY — April 2020 – present
COVID Modeling Scientist
- Guided the president and the provost on Cornell reopening decisions (e.g., in-person instruction, screening frequency), achieving a daily incidence rate of 0.01% in the 2020-21 academic year among 34K Cornell students and employees
- Developed Python compartmental simulation models to predict epidemiological outcomes in college environments
- Managed and conducted gateway testing and quarantine capacity analyses for 3 semesters using Python and spreadsheet, in communication with Cornell Housing and Cornell COVID-19 Testing Laboratory
- Led the retrospective parameter estimation and model calibration analysis for the 2020-21 academic year using SQL and Python and conducted a Bayesian analysis for fall 2021 projections
- Investigated the risk of travel by performing a regression analysis on 18K students, 2K travel records in fall 2021 and discovered an 8x higher odds of infection associated with travel, provided support for Cornell's travel policy

Reports of all projects are published online or available upon request.

Cardinal Operations, Shanghai, China — June 2017 – September 2017
Algorithm Engineer Intern
- Initiated and managed a warehouse management project for Budweiser and implemented MIP models in Python
- Designed and implemented clustering and vehicle routing algorithms in Python and delivered business region partition, facility location and route planning solutions for SF express

RESEARCH EXPERIENCE

COVID-19 Mathematical Modeling
- Develop frameworks for model calibration, parameter uncertainty quantification and Bayesian projections in the epidemiological modeling for COVID-19 college reopening decisions
- Formulate a general theoretical framework for correlation in pooled testing in order to investigate its effect on sensitivity and efficiency, and study its impact on real-world policy making for epidemic control
- Conduct exploratory data analysis and regression analysis in Python and SQL to investigate the relative vaccine effectiveness of Pfizer, Modern, J&J

Bayesian Optimization with Applications in Material Design
- Design and implement novel Bayesian optimization algorithms for problems whose kernel functions are expensive
- Develop efficient sequential experimental design algorithms for *de-novo* anti-freeze peptide discovery, in collaboration with molecular dynamics simulation and biochemistry experts

Water Supply Network Optimization
- Formulated a multi-period model solving for flow and pressure required for a large water supply network of over 8K nodes and edges, in collaboration with Siemens Corporate technology.
- Implemented MIP optimization algorithms using Julia and Python.

PUBLICATIONS & WORKING PAPERS

P.I. Frazier, J.M. Cashore, N. Duan, S.G. Henderson, A. Janmohamed, B. Liu, D.B. Shmoys, **J. Wan**, Y. Zhang. Modeling for COVID-19 College Reopening Decisions: Cornell, A Case Study. *PNAS*, to appear.

Y. Lin, Y. Ren, J. Wan, J.M. Cashore, **J. Wan**, Y. Zhang, P.I. Frazier, E. Zhou. Group Testing Enables Asymptomatic Screening for COVID-19 Mitigation: Feasibility and Optimal Pool Size Selection with Dilution Effects. Submitted to *Health Care Management Science*.

J. Wan, Y. Zhang, P.I. Frazier. Correlation Increases Group Testing's Sensitivity. Working paper.

LANGUAGE & TECHNICAL SKILLS

Programming: Python, R, SQL, MATLAB, Julia

Languages: English, Mandarin Chinese, Shanghainese

LEADERSHIP & HONORS

Co-President, Operations Research Graduate Student Association (ORGA)	2020 - 2021
Assistantship from the Office of the Provost	2020 - 2021
Departmental picnic coordinator	2019 - 2020