

EDUCATION

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- Cornell University, College of Engineering**, Ithaca, NY Expected 2024
- Ph.D. in Operations Research and Information Engineering, GPA: 4.13/4.3. Advisor: Peter I. Frazier
 - Skills: Machine Learning, Bayesian Optimization, Experimental Design, Causal Inference, Stochastic Modeling, Simulation
- 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

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- Meta**, Menlo Park, CA May 2022 – present
- Research Engineering Intern, Core Data Science (Adaptive Experimentation)*
- Formulated and developed stopping-aware Bayesian optimization algorithms for the BoTorch package for solving expensive-to-evaluate problems such as hyperparameter optimization (HPO) and AutoML
 - Implemented a general model-based learning curve early stopping framework in the adaptive experimentation (Ax) platform
- Cornell University**, Ithaca, NY April 2020 – May 2022
- Data Scientist, COVID-19 Pandemic Response*
- Guided Cornell's president and provost on whether to reopen for in-person instruction and what interventions to use, achieving a daily incidence of 0.01% in the 2020-21 academic year among 34K Cornell students and employees
 - Developed a Python compartmental simulation model (<https://github.com/peter-i-frazier/group-testing>) to predict epidemiological outcomes in college environments, whose output influenced policies at Cornell, Stanford, Duke, University of Wisconsin - Madison, Boston University, Johns Hopkins, Yale, and several other universities
 - Led retrospective parameter estimation and model calibration analysis for the 2020-21 academic year using SQL, Python and Bayesian machine learning to support improvements to Cornell's asymptomatic screening program
 - Led analysis of the risk of infection during travel to support travel policy decisions and communication with stakeholders by performing causal inference on data from 18K students
- Reports of all analyses are published online at <https://covid.cornell.edu/testing/modeling/>.*
- Media coverage by ABC News, Wall Street Journal, Forbes, Asahi Shimbun.*
- Cardinal Operations**, Shanghai, China June 2017 – September 2017
- Algorithm Engineer Intern*
- Led a consulting engagement with Budweiser, designing and implementing operations research software for managing warehouse operations in Python and CPLEX
 - Designed and implemented clustering and vehicle routing algorithms in Python and delivered business region partition, facility location and route planning solutions for SF Express, a large courier company

RESEARCH EXPERIENCE

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- Bayesian Optimization with Applications in Materials Design**
- Designed and implemented novel Bayesian optimization algorithms in settings of importance by drug discovery and materials design where additional sources of information besides the final objective are available
 - Developed efficient sequential experimental design algorithms, using Bayesian machine learning for materials discovery, focused on preventing ice growth on airplane wings, in collaboration with experts in molecular simulation and biochemistry
- COVID-19 Mathematical Modeling**
- Formulated a general theoretical framework for correlation in pooled testing to investigate its effect on sensitivity and efficiency and refine the scientific community's understanding of its ability to control epidemics
 - Led analysis of vaccine effectiveness in response to queries from the CDC and NYC Health Department using Python and SQL

SELECTED PUBLICATIONS & WORKING PAPERS

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- Frazier et al., Modeling for COVID-19 College Reopening Decisions: Cornell, A Case Study. *Proceedings of the National Academy of Sciences*, 19(2) e2112532119 (2022).
- J. Wan, Y. Zhang, P.I. Frazier, Correlation Improves Group Testing. Major revision at *Management Science*.
- Wan et al., Booster vaccination protection against SARS-CoV-2 infections in young adults during an Omicron BA.1-predominant period: a retrospective cohort study. Under review.

LEADERSHIP & SKILLS

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- Co-President, Cornell University Operations Research Graduate Students' Association (ORGA) 2020 - 2021
- Programming:** Python (PyTorch, NumPy, SciPy, Scikit-Learn, Pandas), R, SQL, MATLAB, Julia
- Languages:** English, Mandarin Chinese, Shanghaiese