

# Jingxu Xu

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## EDUCATIONAL BACKGROUND

### Ph.D. in University of California at Berkeley

08/2019 – 07/2024

- Major in Industrial Engineering and Operations Research
- Research focus: Applied probability, stochastic optimization, simulation and data-driven decision making
- Overall GPA: 3.95/4.0

### B.S. in Peking University

09/2015 – 06/2019

- Major in Statistics, Double major in Economics
- Overall GPA: 3.83/4.0

## RESEARCH EXPERIENCES

### Joint Resource Allocation for Input Data Collection and Simulation

Supervised by Prof. Zeyu Zheng and Prof. Peter Glynn

(Published in *Proceedings of the 2020 Winter Simulation Conference*: <https://ieeexplore.ieee.org/document/9384050>)

- Proposed a general framework to analyze the joint resource allocation problem for input data collection and simulation where both data collection and simulation incur significant costs
- Objective is to maximize the probability of correctly selecting the system with the best performance
- Exploited correlation structure in input data and common random numbers in simulation to save cost

### Multi-level Gradient-based and Gradient-free Stochastic Optimization

Supervised by Prof. Zeyu Zheng

(Published in *Infoms Journal on Computing*: <https://doi.org/10.1287/ijoc.2023.1279>)

- Proposed stochastic optimization algorithms for complicated stochastic systems using a sequence of approximating systems based on zeroth-order and first-order optimization
- Analyzed the influence of dimension on the convergence rate
- Developed multi-level optimization algorithms that couple different approximating systems, and show empirically that the multi-level structure improved computational efficiency

### Strategies for Online Sequential Experiments with Diminishing Marginal Effects

Supervised by Prof. Zeyu Zheng and Prof. Yingfei Wang

(Preprint posted at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4640583](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4640583))

- Formulated the problem of online experiment design in presence of diminishing marginal effects with two tasks: expected regret minimization and valid statistical inference
- Proved that standard regret-minimizing algorithms can generally fail to deliver statistical inference tasks
- Provided an algorithm that successfully delivers both tasks under additional smoothness condition

## INDUSTRY EXPERIENCES

### Amazon.com Inc, Applied Scientist Intern

06/2022-09/2022

*Domain Adaptation for Natural Language Processing Tasks, within JumpStart Team*

- Fine-tune self-attention neural networks for NLP tasks e.g. text classification and text generation, and use prompt-based methods to enhance task-specific information in downstream tasks
- Proposed a novel method for solving domain shift issues for downstream NLP tasks, including training a domain classifier and extracting domain-specific information from the domain classifier
- Used Pytorch to build language models (e.g. BERT and T5), and conducted large-scale parallel computing
- Improved the prediction accuracy by 3%-5% by using the proposed algorithm

### Five Rings LLC, Quantitative Researcher Intern

06/2023-08/2023

- Built predictive models for future price of different instruments and baskets, and used statistical techniques for model comparison and selection
- Designed robust algorithms for large-scale portfolio optimization problems. Applied denoising techniques, minimax and regularization methods to smooth the solution of sequential quadratic optimization problems
- Participated in mock trading to obtain familiarity with how the market operates at the level of individual orders

## MISCELLANEOUS

- **Related Coursework:** Mathematical Programming I/II (A+), Applied Stochastic Process I/II (A+), Statistical Learning Theory (A), Analysis of Time Series (A), Nonparametric and Robust Methods (A), Introduction to Production Planning and Logistics Management (A+)
- **Programming Skills:** Python/MATLAB/Mathematica/R/C++