

## EDUCATION

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- **Columbia University** New York, NY  
*Ph.D. in Industrial Engineering and Operations Research* *Aug 2024 - May 2028*
  - **Affiliations:** Data Science Institute
  - **Awards:** Provost Diversity Fellow
- **Princeton University** Princeton, NJ  
*B.S.E. in Computer Science* *Aug 2020 - May 2024*
  - **GPA:** 3.932/4.000 | **Major GPA:** 4.000/4.000
  - **Certificates:** Applied & Computational Mathematics, Statistics & Machine Learning, Optimization & Quantitative Decision Science
  - **Graduate Coursework:** Advanced Algorithm Design (A+), Statistical Data Science, Modern Statistics, Probability Theory, Fundamentals of Deep Learning (A+), Stochastic Calculus (A+), High Dimensional Probability, Information Theory
  - **Undergraduate Coursework:** Natural Language Processing, Regression and Applied Time Series, Theoretical Machine Learning, Economics and Computation (A+), Analytic Combinatorics (A+), Network Game Theory, Programming Systems, Algorithms and Data Structures, Computer System Design, Advanced Programming Techniques
  - **Awards:** Summa Cum Laude (Highest Honors), Outstanding Student Teaching Award, Tau Beta Pi, Sigma Xi, USAMO Qualifier, Mandelbrot National Rank 33rd, 4 time AIME Qualifier

## RESEARCH EXPERIENCE

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- **Spectral State Space Models** Princeton, NJ  
*Google DeepMind Lab - Advised by: Elad Hazan* *Jan 2023 - May 2023*
- **Analysis of Prophet Inequalities for Combinatorial Auctions** – [paper] Princeton, NJ  
*Princeton Theoretical Computer Science Lab - Advised by: Matthew Weinberg* *Sep 2023 - May 2023*
- **$O(1)$  Prophet Inequality for Subadditive Combinatorial Auctions** – [paper] Princeton, NJ  
*Princeton Theoretical Computer Science Lab - Advised by: Matthew Weinberg* *Sep 2022 - May 2023*

## ACADEMIC FINAL PROJECTS

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- **A Simple Framework for Intrinsic Reward-Shaping for RL using LLM Feedback** – [github] [paper]  
*Advised by: Sanjeev Arora*
  - Developed an LLM-based framework for generating and refining intrinsic reward functions in RL agents
  - Devised methods to incorporate reward-shaping feedback in RL algorithms, including tabular and deep Q-learning, and PPO
  - Demonstrated the superiority of LLM-informed approach over traditional methods on gym-retro environments and Pokemon
- **Robustification of Natural Language Proof Generation with Verifier Guided Search** – [github] [paper]  
*Advised by: Danqi Chen*
  - Finetuned T5-Small and used BFloat16 in training the prover and implemented diverse beam search for decoding
  - Provided alternative pseudo negative sampling techniques and performed ablations studies in training the verifier
- **Prophet Inequalities for Subadditive Combinatorial Auctions** – [arxiv]  
*Advised by: Matthew Weinberg and Huacheng Yu*
  - Surveyed constructive posted price mechanisms achieving state of the art  $O(\log \log m)$  and  $O(\log m)$  bounds
  - Presented new work on the existence of a constant factor prophet inequality
- **LeCaR Caching with Multi Armed Bandits** – [github] [paper]  
*Advised by: Amit Levy*
  - Developed a variant of LeCaR caching algorithm with reinforcement learning, MAB, and multiplicative weights technique

## WORK EXPERIENCE

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- **Snap Research** Santa Monica, CA  
*Research Intern* *Jun 2024 – Sep 2024*
  - In progress
- **Goldman Sachs - Quantitative Investment Strategies** New York, NY  
*Quantitative Research Intern* *Jun 2023 – Aug 2023*
  - Analyzed 15TB proprietary dataset efficiently using Dask and distributed computation across multiple computing clusters
  - Developed prediction models using machine learning and statistical analysis, conducted backtesting for portfolio optimization
- **Merovingian Data** Mendoza, Argentina  
*Machine Learning Intern* *Jun 2022 – Aug 2022*
  - Devised and integrated ML models into existing code to create analytic solutions that enhance Merovingian products
  - Developed algorithms for data collection, cleaning, feature engineering, and uploading to Merovingian cloud infrastructure
- **FanClub** Boston, MA  
*Software Engineering Intern* *Jun 2021 – Aug 2021*
  - Engineered frontend components (CSS, React, Material UI) for web and iOS app to provide exclusive content of top athletes
  - Programmed API calls to the Firebase backend and integrated Stripe API for payment and subscription processing

## TEACHING

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- **Princeton University** Princeton, NJ  
*Teaching Assistant* *Sep 2021 – Present*
  - COS521: Advanced Algorithm Design - Teaching Assistant (Fall 23)
  - COS226: Algorithms and Data Structures - Grading Manager (Fall 23 - Spring 24)
  - COS445: Economics and Computation - Grader (Spring 23, Spring 24)
  - COS398: Theoretical and Empirical Analysis of Streaming Algorithms - Teaching Assistant (Spring 23)
  - COS226: Algorithms and Data Structures - Precept Assistant (Fall 21 - Spring 22)

## TECHNICAL SKILLS

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- **Languages:** Python, R, JAVA, C, Go, HTML, CSS, JavaScript
- **Web/Database Skills:** ReactJS, NodeJS, Firebase, SQLAlchemy, Flask
- **Frameworks/Libraries:** Git,  $\text{\TeX}$ , NumPy, Pandas, Dask, TensorFlow, Huggingface, Pytorch, JAX

## EXTRACURRICULARS

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AI @ Princeton | The Daily Princetonian (SWE) | Club Tennis (Nationals) | Math Club