

## EDUCATION

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### Cornell University

*Ph.D. in Computer Science*

Ithaca, NY

2021–Present

- Advisers: Profs. Éva Tardos & Jon Kleinberg
- GPA: 4.00/4.00
- Coursework includes: Analysis of Algorithms, The Structure of Information Networks, Engineering Societal Systems, Data Science for Social Change

### Princeton University

*Bachelor of Arts in Chemistry*

Princeton, NJ

2017–2021

- Certificates: Applied & Computational Mathematics, Applications of Computing, Materials Science & Engineering
- Overall GPA: 3.98/4.00
- Coursework includes: Advanced Algorithm Design, Probability Theory, Economics & Computing, Combinatorics, Applied Algebra

## RESEARCH EXPERIENCE

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- Theory Group, Cornell University Department of Computer Science June 2021–Present  
*Advisers:* Profs. Éva Tardos & Jon Kleinberg
  - Study ordered-submodular optimization with applications to diversity in recommender systems.
- Princeton University Department of Computer Science May 2020–Present  
*Adviser:* Prof. Matthew Weinberg
  - Study Bayesian multi-item auctions to bound the Bulow-Klemperer competition complexity for independent additive buyers.
  - Senior thesis: *Bounding the Competition Complexity via Dual Flows, Discretizations, and Symmetries* (recipient of Applied and Computational Mathematics Independent Project Prize)
- Knowles Group, Princeton University Department of Chemistry September 2018–May 2021  
*Adviser:* Prof. Robert Knowles
  - Developed novel photoredox catalytic method for heterocyclic olefin hydroamination (formation of functionally useful carbon-nitrogen bonds); modeled thermodynamic properties of method using density functional theory.
  - Senior thesis: *Intramolecular Benzimidazole Hydroamination Enabled by Proton-Coupled Electron Transfer*

## PUBLICATIONS AND PAPERS

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- [1] J. Kleinberg, E. Ryu, and É. Tardos, *Ordered submodularity and its applications to diversifying recommendations*, 2022. arXiv: 2203.00233 [cs.DS].
- [2] E. Ryu, H. H. Xia, G. L. Guo, and L. Zhang, “Multivariable-adjusted trends in mortality due to alcoholic liver disease among adults in the united states, from 1999-2017”, *Am. J. Transl. Res.*, vol. 14, no. 2, pp. 1092–1099, Feb. 2022.

## AWARDS AND HONORS

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- **2021** Phi Beta Kappa, *Princeton University*.
- **2021** Sigma Xi, *Princeton University*.
- **2021** Applied and Computational Mathematics Independent Project Prize, *Princeton University*, awarded for best independent research project.
- **2021** Robert T. McCay Prize, *Princeton University*, awarded for best performance on comprehensive physical chemistry prize exam.
- **2020** William Foster Memorial Prize in Chemistry, *Princeton University*, awarded to one junior for in department for outstanding academic, research, and leadership ability.
- **2018, 2019** Shapiro Prize for Academic Excellence, *Princeton University*, awarded to top 2-3% of class for range, depth, and difficulty of academic program.

## TEACHING EXPERIENCE

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- **Cornell University** (graduate)  
CS 2850: Networks, *Teaching Assistant* Fall 2021
- **Princeton University** (undergraduate)  
COS 445: Economics & Computation, *Course Grader* Spring 2021  
ORF 309: Probability & Stochastic Systems, *Teaching Assistant* Spring 2021  
CHM 304: Organic Chemistry II, *Teaching Assistant* Spring 2019 & 2020

## PROFESSIONAL EXPERIENCE

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- **Valkyrie Trading**, Derivatives Trader Intern May–August 2021  
Developed algorithms to identify mispricings in the options trading market; used in combination with volatility modeling to generate positive expectancy portfolio suggestions.
- **Five Rings Capital**, Quantitative Trading Intern June–August 2020  
Researched cross-symbol market microstructural patterns to develop and backtest trading signals and strategies.
- **Art of Problem Solving**, Grader/Releaser April 2017–Present  
Provide students with homework feedback for online classes covering prealgebra, algebra, geometry, number theory, combinatorics, precalculus, and olympiad-level chemistry; review feedback written by newer graders.

## SERVICE & LEADERSHIP

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- **Expanding Your Horizons at Cornell**, Workshop Leader Spring 2022  
Designed and led a hands-on workshop introducing middle- and high-school girls to computer science topics at education outreach conference.
- **Residential College Adviser** August 2019–May 2021  
Managed a Princeton University residence hall of 20-30 undergraduate students; advised students on academic and personal needs; foster development of a diverse and inclusive community.
- **Princeton University Mathematics Competition**, Assistant Coordinator October 2018–November 2019  
Organized participant registration, host/student matching, guest speaker, and day-of-contest logistics.
- **CityStep Princeton** September 2017–December 2019  
Taught weekly dance outreach classes to students at underserved public elementary schools in Trenton, NJ.

## SKILLS

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**Technical:** Python, Java, R

**Language:** Spanish (conversational proficiency)