

# Rithvik Rao

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## Education

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**Harvard University**, Cambridge, MA, 3.8 Overall GPA **August 2018–May 2022**

- A.B. in Computer Science and Mathematics, S.M. in Computer Science, Secondary in Economics
- Graduate Coursework: Probability I & II; Machine Learning; Spectral Graph Theory; Blockchain; Visualization; Economic Theory; Networks; Market Design; Auctions; Stochastic Choice; Computational Complexity
- Additional Coursework: Data Structures and Algorithms; Economics and Computation; Programming Languages; Linear Algebra and Real Analysis; Measure Theory and Function Spaces; Topology; Algebra; Advanced Micro and Macroeconomics (Econ 1011a/b); Game Theory

## Research

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**Blockchain:** Modeling proof-of-stake with game theory, reinforcement learning. **Prof. David Parkes**

- Neuder, M., Moroz, D.J., Rao, R. & Parkes, D.C. (2020) “Selfish Behavior in the Tezos Proof-of-Stake Protocol.” *Cryptoeconomic Systems*, Issue 0 (MIT Press). Featured in [Yahoo Finance](#). arXiv: [tezos.rrao.me](#)
- Neuder, M., Moroz, D.J., Rao, R. & Parkes, D.C. (2020) “Defending Against Malicious Reorgs in Tezos Proof-of-Stake.” AFT ‘20: ACM Conference on Advances in Financial Technologies. arXiv: [tezos2.rrao.me](#)
- Neuder, M., Moroz, D.J., Rao, R. & Parkes, D.C. (2020) “Low-cost attacks on Ethereum 2.0 by sub-1/3 stakeholders.” GTiB ‘20: Workshop on Game Theory in Blockchain (WINE 2020). arXiv: [eth2.rrao.me](#)
- Neuder, M., Rao, R., Moroz, D.J. & Parkes, D.C. (2021) “Strategic Liquidity Provision in Uniswap v3.” arXiv: [uniswap.rrao.me](#)

**Networks:** Research assistance and original work in social learning, network games. **Prof. Ben Golub**

- Galeotti, A., Golub, B., Goyal, S. & Rao, R. (2021). “Discord and Harmony in Networks.” arXiv: [discord.rrao.me](#)

## Work Experience

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**Software Development Engineer Intern**, Amazon **May 2021–August 2021**

- Enabled all Alexa Skill developers to use improved errors UI and build across locales by migrating Developer Console to new build system. Wrote JavaScript, TypeScript, and Java in React/Redux stack.

**MLH Fellow (Scikit-learn Contributor)** **June 2020–August 2020**

- Designed and implemented optimizations for linear and logistic regression in Python as part of fellowship sponsored by Major League Hacking, GitHub, Facebook.

**Course Staff in Computer Science and Economics**, Harvard University

- Head Course Assistant of CS 50 (Intro Computer Science, February 2020–December 2021); Teaching Fellow of CSCI E-80 (Artificial Intelligence, January 2020–May 2020), CS 234r (Graduate Market Design, January 2021–May 2021); Course Assistant of Econ 1011a (Microeconomic Theory, August 2021–December 2021)
- Developed curriculum, gave lectures, graded problem sets, taught section, held office hours, hired and led 75 staff members, advised projects. Received Bok Center certificate of distinction in teaching.

## Projects

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**Membership Inference Attacks in New Domains**, [mia.rrao.me](#) **December 2019**

- Studied differential privacy results in interpolating regime, new distance metrics, high-dimensional models.

**2017 NFL Season Data Analysis in R**, [nfl-r.rrao.me](#) **May 2019**

- Analyzed play-by-play NFL data using classical statistical and simulation methods in R.

## Skills

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**Concepts:** Machine Learning, Blockchain, Algorithms, Probability, Mathematical Modeling

**Programming and Scripting Languages:** Python, C, R, HTML/CSS, Java, JavaScript, TypeScript,  $\text{\LaTeX}$