Rithvik Rao

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Education

Harvard University, Cambridge, MA **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

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

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

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

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

Programming and Scripting Languages: Python, C, R, HTML/CSS, Java, JavaScript, TypeScript, LaTeX