

## Summary

I primarily study theoretical computer science, with a focus on the foundations of machine learning, optimization, and statistics as well as their applications in natural language understanding, neuroscience, robotics, and economics.

I am interested in research opportunities involving the application of algorithms and statistics, particularly to scientific inquiry and artificial intelligence.

## Education

**Columbia University**, September 2017 — present

Ph.D. in Computer Science

Advisors: Professor Daniel Hsu, Professor Alex Andoni

Thesis Topic: Resource-constrained machine learning

Areas: Theoretical machine learning, algorithms, algorithmic game theory, statistics

Affiliations: [Columbia Data Science Institute](#), [Machine Learning Group](#), [Theory of Computation Group](#)

**Princeton University**, September 2012 — June 2017

A.B. Mathematics (cum laude), M.S.E. Computer Science

Master's Thesis: Temporally Dependent Mappings Between fMRI Responses and Natural Language Descriptions of Natural Stimuli

Advisors: Professor Sanjeev Arora, Professor Ken Norman

Affiliations: [Unsupervised Learning Group](#), [ML Theory Group](#), [Princeton Neuroscience Institute](#), [Computational Memory Lab](#)

## Research

### Conference Proceedings

*The Platform Design Problem.* Christos Papadimitriou\*, **Kiran Vodrahalli**\*, Mihalis Yannakakis\*. Oral Presentation. WINE Conference on Web and Internet Economics, December 2021.

*The Logical Options Framework.* Brandon Araki, Xiao Li, **Kiran Vodrahalli**, Jonathan DeCastro, J. Micah Fry, Daniela Rus. (Long) Oral Presentation and Poster. International Conference on Machine Learning (ICML), July 2021.

*Deep Bayesian Nonparametric Learning of Rules and Plans from Demonstrations with a Learned Automaton Prior.* Brandon Araki, **Kiran Vodrahalli**, Thomas Leech, Cristian Ioan Vasile, Mark Donahue, Daniela Rus. Spotlight Presentation and Poster. AAAI Conference on Artificial Intelligence, February 2020.

*Privacy Accounting and Quality Control in the Sage Differentially Private ML Platform.* Mathias Lécuyer, Riley Spahn, **Kiran Vodrahalli**, Roxana Geambasu, Daniel Hsu. Oral Presentation. Symposium on Operation Systems Principles, October 2019.

*Learning to Plan with Logical Automata.* Brandon Araki\*, **Kiran Vodrahalli**\*, Thomas Leech, Cristian Ioan Vasile, Mark Donahue, Daniela Rus. Spotlight Presentation and Poster. Robotics: Science and Systems, June 2019.

*Attribute-Efficient Learning of Monomials over Highly-Correlated Variables.* Alex Andoni\*, Rishabh Dudeja\*, Daniel Hsu\*, **Kiran Vodrahalli**\*. Oral Presentation. Algorithmic Learning Theory, March 2019.

*A Large Self-Annotated Corpus for Sarcasm.* Mikhail Khodak, Nikunj Saunshi, **Kiran Vodrahalli**. Poster. Language Resources and Evaluation, May 2018.

*A Compressed Sensing View of Unsupervised Text Embeddings, Bag-of-n-Grams, and LSTMs.* Sanjeev Arora\*, Mikhail Khodak\*, Nikunj Saunshi\*, **Kiran Vodrahalli\***. Poster. International Conference on Learning Representations, April 2018.

*A Temporal Decay Model for Mapping between fMRI and Natural Language Annotations.* **Kiran Vodrahalli**, Cathy Chen, Viola Mocz, Christopher Baldassano, Uri Hasson, Sanjeev Arora, Kenneth A. Norman. Poster. Cognitive Computational Neuroscience, September 2017.

### Journal Proceedings

*Learning and Planning with Logical Automata.* Brandon Araki, **Kiran Vodrahalli**, Thomas Leech, Cristian-Ioan Vasile, Mark Donahue, Daniela Rus. Autonomous Robots, August 2021.

*Mapping between fMRI responses to movies and their natural language annotations.* **Kiran Vodrahalli**, Po-Hsuan Chen, Yingyu Liang, Christopher Baldassano, Janice Chen, Christopher Honey, Uri Hasson, Peter Ramadge, Kenneth A. Norman, Sanjeev Arora. Neuroimage, June 2017.

## Invited Talks

Google Learning Theory Group, Virtual, October 2021.

Google Brain, Virtual, August 2021.

Yahoo Research, New York, NY, August 2019.

Princeton Neuroscience Institute, Princeton, NJ, September 2017.

## Teaching

### Columbia University

#### Courses

Fall 2018: TA for COMS 6998 — Computation and the Brain (graduate)

### Princeton University

#### Courses

Spring 2017: TA for COS 511 — Theoretical Machine Learning (graduate)

Fall 2016: TA for COS 397 — Independent Work Seminar in NLP

Spring 2014: Grader for COS 226 — Intro Algorithms

Fall 2013 — 2014: COS Lab TA for COS 126, 226, 217 — Intro Algorithms and Systems

### Mentorship

Summer 2021: Advisor for [Algorithmic Game Theory Undergraduate Theory Seminar](#), and designed the seminar syllabus.

Spring 2017: Advised the junior independent work of Cathy Chen (COS '18) and Viola Mocz (NEU '18) in neuroscience with Professor Ken Norman

Spring 2014 — Fall 2016: Seminar Leader for the NLP-ML Reading Group with Dr. Christiane Fellbaum

## Service

### Reviewing

Reviewer for ICLR 2021; NeurIPS 2021, 2020; ICML 2021, 2020 (Top 33% Reviewer in 2020); NeuroImage 2017.

## Awards

### Spotlight Prize at New York Academy of Sciences Annual ML Symposium (2019, 2020)

Selected as one of ten ( $\approx$  top 10%) speakers to give a spotlight presentation in addition to a poster.

### NSF Graduate Research Fellowship Award

Awarded March 2016 for Computer Science in the subfield Machine Learning.

## Industry Experience

### Google Brain, Student Researcher (Fall 2021)

Part-time employment at Google Brain as a student researcher.

### Google Brain, Research Intern (Summer 2021)

Research internship on training deep neural networks with resource constraints.