Naveen Raman

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Education

University of Maryland — College Park, MD
BS in Computer Science and Math — Expected 2022
ACES Honors College, Global Fellows, Computer Science Honors
GPA: 3.97.

Selected coursework

- Computer Science (grad level): Quantum Computing, Computational Linguistics, Computational Geometry, Deep Learning, Mechanism Design
- Computer Science (undergrad): Computer Vision, Cryptography, Algorithms II
- Math: Real Analysis, Partial Diff Eq., Probability Theory, Statistical Theory, Numerical Methods, Linear Algebra, Calculus III, Diff Eq.

Awards

NSF Graduate Research Fellowship	2022
Churchill Scholarship	2022
CRA Undergraduate Researcher of the Year Finalist	2022
Goldwater Scholarship	2021
Merrill Presidential Scholar	2021
CMNS Summer Scholarship	2021
Brendan Iribe Endowed Scholarship	2020, 2021
Capital One Scholarship	2019
Corporate Partners Scholarship	2019
Computer Science Honors Program	2019
ACES Honors College	2018
Presidential Scholarship	2018

Research

MIT Lincoln Lab, AI Technology Group — Lexington, Massachusetts
Research Intern — Summer 2021
Description: Utilized semi-supervised learning for human-AI collaboration through individual-specific deference algorithms. Developed deep learning ResNet-based models for CIFAR10, and evaluated models by developing synthetic autonomous driving dataset.
Publications: *Improving human-AI deference algorithms through fine-tuning* at Human and Machine Decisions NeurIPS 2021 Workshop

Center for Machine Learning
Mentor: John Dickerson (University of Maryland) — Spring 2021 – Present

Description: Incorporated network externalities into rideshare pricing algorithms, taking into account fluctuating demand. Utilized MDPs using PyTorch to find approximately optimal prices.

Center for Machine Learning
Mentor: John Dickerson (University of Maryland) Fall 2019 – Spring 2021
Description: Mitigated inequality in ride-pooling by generalizing an MDP-framework for fairness based objective functions. Created income redistribution method to reduce driver wage inequality based on Shapley values, and proved guarantees for redistribution.
Publications: *Data-Driven Methods for Balancing Fairness and Efficiency in Ride-Pooling* at IJCAI 2021
Investigating methods of balancing inequality and efficiency in Ride Pooling at AAAI Undergraduate Consortium 2021
Data Driven Methods for Balancing Fairness and Efficiency in Ride-Pooling at ML For Economics Policy NeurIPS 2020 Workshop

University of Maryland
Mentor: Soheil Feizi Fall 2021-Spring 2022
Description: Developed denoising algorithms that were robust across difficulty classes using recurrent architectures. Crafted evaluation datasets based on CIFAR!0 and TinyImageNet, and employed dynamic filters and perceptual loss to further boost performance.
Publications: Under submission at ECCV 2022 conference.

Computational Linguistics and Information Processing Lab
Mentors: Jordan Boyd-Graber (University of Maryland) Fall 2019 – Present
Description: Improved entity linking algorithms by incorporating anaphoric references. Developed human-in-the-loop annotation interface in React to collect data. Combined BLINK entity linking with SpanBERT coreference using Spacy to develop new entity linking algorithm.
Publications: *What more can entity linking do for Question Answering?* at HAMLETS NeurIPS 2020 Workshop
Eliciting Bias in Question Answering Models through Ambiguity at MRQA EMNLP 2021 Workshop
Improving Entity Linking through Quizbowl at MASC SLL 2020

CMU Institute for Software Research Pittsburgh, Pennsylvania
Research Intern Summer 2019
Description: Detected toxicity in online communities through an SVM classifier. Hyperparameter tuned and feature engineered to develop classifier. Mitigated jargon by incorporating log-odds with Dirichlet prior, achieving 91% precision and improving F-Score by 10%.

Publications: *Stress and Burnout in Open Source: Toward Finding, Understanding, and Mitigating Unhealthy Interactions* at ICSE 2020

Center for Bioinformatics and Computational Biology
Research Intern — Summer 2018-Spring 2019
Description: Developed matrix factorization algorithms to detect cancer signatures from mutational data. Incorporated graph-based information and used PCA and T-SNE to study mutational data manifold. Evaluated through imputation metric based on cross validation.

Teaching

Teaching assistant, Department of Computer Science — Fall 2019 - Present
CMSC 330: Programming Languages
Led discussion section, graded quizzes, exams, and wrote projects. Taught about functional programming (OCaml), interpreters, Ruby, and formal grammars.
Student Instructor — Spring 2020 - Present
CMSC 389O: The Coding Interview
Head student instructor for course on algorithms for coding interviews. Held weekly discussions, graded homework, and conducted mock interviews.

Industry

World Resource Institute, Electric School Bus Initiative — Washington DC
Research Intern — Spring 2022
Analyzed current state of electric school bus adoption across United States. Curated dataset of current school bus depot locations, and scraped data on electric school bus adoption

Facebook, Feed Ranking Team — Menlo Park, California
Software Engineering Intern — Summer 2020
Developed web application using PHP-Hack and React to debug the performance of feed ranking machine learning models. Optimized Presto SQL queries to run in seconds, and iterated on user interface based on usability tests.

Service

Maryland Mentor Program — Fall 2020 – Present
Assist elementary schoolers with literacy skills through weekly activities.
Study Habits — Spring 2021 – Present
Assist students at College Park Academy every Friday with math homework.
Cybersecurity Club — Fall 2018 - Spring 2020
Run afterschool cybersecurity club at College Park Academy, introducing Linux fundamentals, and introducing students to careers in cybersecurity and STEM

Other

Math Modelling — Spring 2020 – Present
Developed models for climate change, refugees, and won SCUDEM outstanding award.
Puzzle Club — Fall 2020 – Spring 2021
Vice president, assisted with running puzzle competitions and developed puzzles.