Aayush Gupta

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EDUCATION

MIT
Class of 2022, 5.0 GPA
Computer Science

Saratoga High School
Class of 2018
High Honors

RESEARCH

A Decision-theoretic Approach to Detection-based Target Search with a Drone (2017) (arXiv)

Accepted+presented at 2017 IEEE/RSJ Int'l Conf on Intelligent Robots and Systems (IROS)

Improved rescue finding time by 3.3x compared to heuristics with reinforcement learning, modeled as a partially observable Markov decision process.
Used Julia, SARSOP, and Python to build and test on custom built drone. Led team of 3.

Dynamic Pricing via Reinforcement Learning for Multi-Objective Ridesharing Optimization (2017)

Accepted to BayLearn 2017

Showed 12% profit increase by optimally lengthening average wait time by only 2.3%.
Used Julia, SARSOP, and Python with reinforcement learning to produce a Pareto curve.

Self-attention for Graph Neural Networks (2019)

Won MIT Generator award for Best Project 2018

Replaced standard message passing steps with query-key-value attention from NLP.
Predicted computational chemistry properties on QM9 dataset.

WORK EXPERIENCE

NVIDIA AI Intern: Self-driving Perception Team (2020)

- Analyzed model outputs in Python to discover model bias.
- Tested performance of Tensorflow models at lower resulutions.
- Created metrics pipeline in Tensorflow, making model iteration 10x faster.

Lipoker.io Cofounder (2020)

Created lipoker.io, the first videochat poker site with no signup or downloads.
Led team of 4 to direct vision and build product.
- Built backend from scratch with Flask, SQLAlchemy, and PostgreSQL. Led team.
- Built frontend in React from scratch. Grew to production level with team.
- Led team to deploy on GCP Google Compute Engine with Gunicorn and Nginx.
- Grew to 10,000+ monthly sessions and partnerships with gather.town and others.

Scale AI Intern (2019)

- Used Node.js, React, MongoDB, SQL, Python to model untrusted connected component detection of labelers for a 95% confidence interval on bounding boxes.
- Decreased LIDAR labeling errors by 8%, with new incentives in React and TS.

Securiti.ai Winter Intern (2019)

- Coded custom dilated convolutional neural networks for unique image-based natural language processing applications with Google Colab and Pytorch.

Auto-LaTeX Equations Founder (2015-19)

Over 1,000,000 weekly users , 4.0+ star rating.

- Coded and branded own Google Docs add-on for LaTeX equations.
- Marketed to professors and admins with cold emails to adopt for education.

Hack Lodge Organizer and Developer (2019)

- Led team of 5 to build neural net cookie clicker game with React, Node, & Firebase.

AWARDS

USA Computing Olympiad National Camp Finalist (2016)

Chosen as top 28 pre-collegiate competitive programmers to compete for USA team spot. Mastered algorithms such as dynamic programming, binary trees, and graph theory with C++.

Putnam Top 500 Math Undergrads (2018)

USA Junior Math Olympiad Qualifier (2016)

Selected as top 200 out of over 70,000 pre collegiate students to compete for national camp spot.

USA Physics Olympiad Silver Medal (2017)

Recognized as top 150 precollegiate physics students in the USA.

Datathon Winner (2019)

Won 3rd place at Boston Datathon.

North American Computational Linguistics Olympiad Finalist (2016)

Recognized as top 50 in USA to compete for national team.

SKILLS

Python, JS, TypeScript, Flask, React.js, Node.js, C++, PyTorch, MongoDB, SQL, SQLAlchemy, Java

Data Science, Math, Research, Algorithms, Neural Networks

MIT CS COURSEWORK (5.0 GPA)

Current:
6.172 - Performance Engineering

Past:
6.864: Graduate NLP
6.857: Graduate Security
6.867: Graduate Machine Learning
6.438: Graduate Algorithms for Inference
6.890 Deep Learning for Algorithms
6.036 Intro to Machine Learning
9.66 Computational Cogsci
6.033: System Design
6.046 Advanced Algorithms
6.041 Probability
6.004 Computation Structures
6.03 EECS for Medical Devices