PRANAV RAMESH

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Website | LinkedIn | GitHub

EDUCATION

Harvard University, *School of Engineering and Applied Sciences* | Cambridge, MA ***Expected May 2026***

AB in Computer Science, Minor in Statistics, SM (Concurrent Masters) in Computer Science; Cumulative GPA: 3.83/4.0

- **Relevant Coursework:** Computing Hardware, Data Structures & Algorithms, Discrete Mathematics, Linear Algebra and Vector Calculus, Linear Algebra and Real Analysis I, Systems Programming & Machine Organization
- **Upcoming Coursework:** Artificial Intelligence, Introduction to Probability, Introduction to Data Science
- **Extracurricular Activities:** Harvard Computer Society, Harvard Tech for Social Good, Harvard Undergraduate Capital Partners, Harvard Bhangra Dance Team, Harvard Ghungroo.

South Windsor High School | South Windsor, CT ***August 2018 - June 2022***

- Valedictorian | **Cumulative GPA:** 4.46/4.0 | **SAT:** 1580 (Math: 800) | 2022 Coca-Cola Scholar | Harvard Prize Book Award
- 2x AIME Qualifier | **AIME Score:** 11 | **USA Math Olympiad (USAMO) Index:** 219.5
- **Published Book:** *Java Decaffeinated* (link); **Published Book:** *The Python Starterpack* (link)

RELEVANT EXPERIENCE

3rd Place Citadel Correlation One Summer Datathon Winner | Cambridge, MA ***August 2023***

- Co-developed a prediction model that estimates Delta Airlines' quarterly closing stock price from 2010-2019 as a function of market factors with 99% accuracy.
- Invited to compete at the Citadel Data Open Championship in Fall 2023.

1st Place Moonbeam Winner in Polkadot x EasyA @ Harvard Hackathon | Cambridge, MA ***June 2023***

- Co-developed Oasis, a decentralized social media platform built on web3 technologies that rewards users for sharing their thoughts freely and anonymously.
- Token payout system built on Moonbeam staking DAO incentivizes members to wager on the popularity of their post, measured through upvote milestones.

Harvard Programming Languages Group | *Undergraduate Researcher* | Cambridge, MA ***June 2023 - present***

- Researching formal verification for large language models (LLMs) under Professor Nada Amin in the Program for Research in Science and Engineering (PRISE).
- Improving theorem generation and verification using decomposition and developed a plugin for ChatGPT to refine LLM-generated Coq proofs using verification.
- Fine-tuning Seq2Seq Transformer LLM model to generate the most probable next Coq tactic based on previous tactics and desired goal to write proofs.

Harvard University | *Computer Science Teaching Assistant* | Cambridge, MA ***January 2023 - May 2023***

- Grading student assignments and holding office hours for *COMPSCI E-20 Discrete Mathematics for Computer Science* under Dr. Rebecca Nesson.

North South Foundation | *Software Engineering Intern* | Chicago, IL (Remote) ***January 2022 - June 2022***

- Developed online donations platform using React and Node.js, and implemented transaction processing using Stripe and Braintree APIs.

PROJECTS AND CERTIFICATIONS

Pillar | AI-Powered Prescription Tracking Platform | *SwiftUI, Python, PyTorch, OpenCV* ***June 2023 - present***

- Uses OCR to capture prescription label details from photos and smartly set reminders for the user to take their pills and refill prescriptions.
- Fine-tuned BERT transformer model on custom-made prescription label data (98% accuracy).
- Developed user interface using SwiftUI.

City of Boston Visual Analytics Portal | Expenditures Visualization Platform | *React, Django, Plot.ly* ***May 2023***

- Led a team of 3 software engineers to create a web platform to provide visualizations and insights regarding spending in the City of Boston.
- Created front-end data visualizations and set up backend API requests.

OkaySo | Expenditures Visualization Platform | *React, Express.js, Node.js* ***December 2022***

- Co-developed a web portal for OkaySo for experts to answer anonymous young adults' questions regarding identity, relationships, mental health, and more.
- Constructed real-time chat messaging framework (0.5-sec latency). Built backend and implemented all API endpoints for application.

Table Tennis CV | Table Tennis Game-Tracking Application | *Python, OpenCV, Scikit-Learn* ***August 2021***

- Built a computer vision-machine learning application to track active table tennis gameplay using Python and OpenCV.
- Leveraged frame differentiation and elliptical Hough transform to track a moving ball in view.
- Trained a machine learning model using the Scikit-Learn library in Python to predict where a ball lands based on the initial return location.

MetricMix, LLC | *Founder and Swift Mobile App Developer* ***September 2018 - present***

- (Using Swift for iOS App Development) Developed GeoScholar, a geography quiz app; Scholar.ly, an advanced GPA calculator; Gene Xpress, a protein synthesis simulator; GSEF Official, an economics resource app; and ReadSpeak, an accent translation app.

Shortest Paths Revisited and NP-Complete Problems | Stanford Online | Certificate ***January 2021***
Graph Search, Shortest Paths, and Data Structures | Stanford Online | Certificate ***December 2020***
Greedy Algorithms, Minimum Spanning Trees, and Dynamic Programming | Stanford Online | Certificate ***December 2020***
Divide and Conquer, Sorting and Searching, and Randomized Algorithms | Stanford Online | Certificate ***November 2020***

SKILLS AND INTERESTS

Languages: English (fluent) | Tamil (native) | French (business proficiency)
Programming Languages and Frameworks: C++ (advanced) | HTML/CSS (advanced) | Java (advanced) | JavaScript (advanced) | Python (advanced) | React (advanced) | Swift (advanced) | Node.js (advanced) | Express.js (advanced) | System Verilog (beginner) | Langchain (intermediate) | Django (intermediate) | PyTorch (beginner) | Solidity (beginner)
Interests: Tennis | Piano | Chess | Drone Cinematography | Stand-up comedy | Indian folk dance