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

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.

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 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