Naveen Kannan

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Education

Stanford University **Expected Graduation: June 2026**

GPA: 4.03; Double Major: Mathematics & Computer Science *Stanford, CA*

- Courses: Machine Learning, Cloud Infrastructure and Scalable Application Deployment, Modern Mathematics - Discrete Methods, Finite Fields, Discrete Probability, CS Research, Introduction to Probability for Computer Scientists, Computer Organization & Systems

Experience

AI Innovation Intern **June 2024 - *Present***

Virtualitics *Pasadena, CA*

- Building Gen AI feature to automate data analysis and visualization using 20+ ML routines with completion rate of 85%
- Developed API to connect inference-server to Unity with <5s runtime and python library for external dev/testing
- Created automated benchmarking suite to guide model R&D and quantify reliability as decision tree entropy (<2 bits)

Research Fellow **May 2024 - *Present***

Stanford Artificial Intelligence Lab *Stanford, CA*

- Leading Interpretability research project demystifying concept differentiation in Mixture of Experts (MoE) LLMs

Research Science Institute (RSI) Intern **August 2022 - December 2022**

Massachusetts Institute of Technology - Advised by Dr. Cesar Terrer *Cambridge, MA*

- Utilized the MIT Supercomputer Cluster to analyze SMAP satellite data (since 2015) to track soil/crop development
- Developed random forest model for wetland classification to protect carbon sinks, achieving 92% accuracy
- Selected as one of 80 students internationally for funded research, supported by Apple and Cargill

Research Intern **May 2021 – May 2022**

Kansas State University - Advised by Dr. Stephen Welch *Manhattan, KS*

- Designed and deployed IoT devices to collect environmental data in 23 Kansas counties to cluster biomes with PCA
- Facilitated server transfer to Julia for the NSF EPSCoR project to reduce DiffEq solve time for plant growth by 64%
- Forecast evaporative demand of crops in Kansas with ANN with 5 day lead over NOAA EDDI
- Constructed website to calculate ideal watering plan from CV analysis of top-down soil images, used by 10+ farmers

Projects

Lean Theorem Classifier | *Lean, Mathlib, Keras* **Mar 2024**

- Trained CNN model to automatically classify Lean Theorem Statements into math categories with 93.85% accuracy

Hodgepodge | *Swift, OpenCV, Langchain* **Mar 2024**

- Streamlined food inventory management with a scalable Swift UI solution, handling 100+ unqiue items
- Leveraged AI-powered computer vision and Langchain for barcode scanning and written queries with 95%+ accuracy

Writing Similarity | *Pytorch, Word2Vec, Sentence-BERT* **December 2023**

- Created application to determine a user's most similar author based on either content relevancy or word usage.
- Saved Word2Vec and BERT embeddings of 200+ contemporary authors on FastAPI backend to evaluate cosine similarity

Who's Typing? | *SciPy, FastAPI, JS* **November 2023**

- Built typing test site for user identification through keystroke biometrics, with an av. identification time of <30 seconds
- Differentiated users through Bootstrapping, Kolmogorov-Smirnov, and Chi-square tests for speed distribution statistics

LittleG | *Python, Socket, Numpy* **October 2023**

- Constructed database for graph data from scratch using simple key-value information transfer (avg. query time: 10ms)
- Used for testing/visualizing results in spectral graph theory, with easy retrieval of eigenvalues, colorings, subgraphs, etc
- Implemented temporarily in citation network application, simulating 75 random walks to determine relevant literature

Code the Universe Foundation - 501(c)(3) Nonprofit | *Python, C++, LaTeX* **April 2020 - December 2021**

- Led organization team of 12 to deliver educational CS content on YouTube and live seminars with +100 attendees
- Grew community of 2800 enthusiasts to engage in discussions of tech and projects, fostering 500% growth in engagement

Honors

CS: USA Computing Olympiad (USACO) Platinum Division (top 200), K-State Hackathon 1^{st} place, KU Hackathon Winner ($1000)
Math: Harvard-MIT Tournament Top 10 Team, 6x American Invitational Mathematics Exam (AIME) Qualifier, DHR (top 1%)
Academics: Presidential Scholar Nominee, Governer's Scholar (top 1%), National Merit Finalist, RSI Scholar, Valedictorian
Science: USA Physics Olympiad Semifinalist, Science Olympiad Event National Winner, 3x Science Bowl State Champion

Skills

Languages: Python, C/C++, Julia, Java, JS, C#|| **Tools**: Pytorch, Numpy, Pandas, Matplotlib, Sklearn, React, Unix, Unity
Interests: Sports Analytics, Rock Climbing, Calisthenics, Geography Enthusiast, Global Economics, Trading