

Pranav Varshney

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EDUCATION

University of Michigan

May. 2026

B.S; Computer Science, Data Science

Ann Arbor, MI

- **Courses:** Data Structures, Algorithms, Computer Architecture, Computation Theory, Web Systems, Databases, Linux, Distributed Systems, Computer Networks, Quantum Computing, Practical Data Science, R Programming

TECHNICAL EXPERIENCE

Machine Learning Researcher | University of Michigan

Jan. 2025 - Current

- Building a twin platform using BatFish & Veriflow to analyze network snapshots as DSLs for machine learning
- Creating a framework to automate network snapshots, enhancing dataset size & feature focus for further research

Undergraduate Teaching Assistant | University of Michigan

Aug. 2024 - Dec. 2024

- Overhauled course curriculum, adding 3 projects & 2 lectures to the course, increasing breadth & depth of content
- Engineered an automated grading script in Python, piping results into Canvas, reducing grading time by 99.99%

Software Engineering Intern | United Wholesale Mortgage

May. 2024 - Aug. 2024

- Developed version control data pipelines, optimized database structure, automated GCP flags & loan classification
- Piloted change insights pipeline in C# & SQL to populate central data lake & identify trends to boost code quality
- Normalized database organization (3NF) to reduce data duplicates, pushing an expedited GCP migration timeline
- Launched dashboard to monitor GCP costs, flagging overuse & maintaining data handling etiquette to reduce costs

Web Developer | The Michigan Daily

Oct. 2023 - Apr. 2024

- Enhanced stability, functionality, speed & user experience by resolving technical issues & enhancing performance
- Lead error handling process, fixing 75+ website errors & broken React components to improve webpage reliability
- Optimized performance by 14% by reducing page redirects & HTTP requests, ensuring improved user experience

Software Engineering Intern | Ratna Global Technologies

May. 2023 - Aug. 2023

- Spearheaded development of a car rental website, using React & Node to build a user-friendly & scalable platform
- Built an AI powered customer support bot, automating trivial support tasks & saving 5-10 hours of work weekly
- Designed a PostgreSQL database schema to store data, reducing duplication & raising retrieval efficiency by 20%

PROJECT EXPERIENCE

SD-WAN Analytics (2024 Cisco HackAIthon)

[Presentation](#)

- Enhanced tunnel KPI anomaly detection & network issue resolution, providing insights for network optimizations
- Applied AI to analyze app usage, device health, & NWPI for root cause analysis & network anomaly remediation
- Designed forecast models for network issues & scheduled NWPI trace with ThousandEyes tests for proactive repair

Distributed MapReduce Framework

- Programmed a Python MapReduce framework with fault tolerance, concurrency, & distributed processing features
- Employed TCP for data transfer & UDP heartbeats for fault-tolerant communication between workers & managers

Chess Evaluation Engine

- Innovating a chess evaluation engine with 88% accuracy, ranking material imbalance, piece activity & king safety
- Developed a heatmap using a bitboard to visually represent piece activity & king safety, computing square dangers

Custom Smart Glasses

- Built smart glasses with image, video & audio capturing features, developing an AI system to relay data to the user
- Used RPi, OpenCV, & PyAudio for multi-modal capture, deploying GroqAI to provide real-time feedback to users

Sports Risk Arbitrage

[Source Code](#)

- Designed a Python algorithm to identify & maximize sports risk arbitrage, profiting over \$5,000 in just 3 months
- Applied inverse odds summation to find profitable discrepancies & proportional bet allocation to guarantee returns

PROGRAMMING SKILLS

Languages: C++, C, Python, Go, C#, R, HTML/CSS, Javascript, SQL, LaTeX

Technologies: Git, JIRA, Docker, MySQL, PostgreSQL, Flask, React.js, Astro.js, QisKit, Pandas, Numpy, TensorFlow

Concepts: Full Stack Development, Mobile Development, Cloud Computing, Operating Systems, Machine Learning, NLP, Computer Vision, Data Analytics, Data Visualization, Embedded Systems, Augmented Reality, Agile Development