Pranav Varshney

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Education

University of Michigan **Ann Arbor**
B.S, Computer Science & Data Science May. 2026
Courses: Data Structures, Algorithms, Web Systems, Database Management Systems, Distributed Systems, Computer Networks, Theory of Computation, Computer Organization, Quantum Computing, Practical Data Science, R Programming, Data Analysis
Activities: Michigan Research & Discovery Scholars, Michigan Hackers, Pickle ball, Michigan Poker Club, Indian Student Association

Technical Experience

Machine Learning Researcher | The University of Michigan Jan. 2025 – Current
- Utilizing machine learning to develop self-operating computer networks

Undergraduate Teaching Assistant | COMPFOR 131 Aug. 2024 – Dec. 2024
- Overhauled the course curriculum, adding 3 new projects and 2 new lectures to the course, increasing breadth and depth of content
- Developed a Python script to automate grading, piping results into Canvas, and course database, reducing grading time by 99.99%

Software Engineer Intern | United Wholesale Mortgage May. 2024 – Aug. 2024
- Implemented version control data pipeline, optimized database structure and automated cost monitoring and loan classification
- Piloted a change insights data pipeline in C# and SQL to populate UWM's data lake and identify trends to improve code quality
- Normalized database organization (3NF) to reduce data redundancy, pushing Google Cloud migration on an accelerated timeline
- Launched a CRUD dashboard to monitor GCP costs and usage, flagging overuse and maintaining proper data handling etiquette
- Initialized a decision tree in Python with the Risk and Finance to classify loans as success or failures, saving $20,000 in Q3 costs

Web Developer | The Michigan Daily Oct. 2023 – Apr 2024.
- Improved the website's stability, functionality, speed and user experience by resolving technical issues and enhancing performance
- Lead the error handling processes, fixing over 75 website errors and broken React components to improve webpage reliability
- Optimized website performance by 44% by reducing page redirects and HTTP requests to raising user engagement length by 10%

Software Engineer Intern | Ratna Global Technologies Jun. 2023 – Sep. 2023
- Spearheaded the development of a car rental website for clients, using React and Node to build a user-friendly and scalable platform
- Built an AI powered chat bot to answer customer queries, automating customer support tasks and saving 5-10 hours of work weekly
- Designed a database schema in PostgreSQL to store user data, reducing data redundancy and improving data retrieval times by 20%

Research Assistant | The Big-DIG Laboratory Apr. 2023 – Jun. 2023
- Streamlined sorting and statistical analysis, leading to faster project timeline and providing data-driven insights through data tools
- Employed a custom school heap queue sorting class in Python to sort 750+ schools, guiding lab to conclude in 2 months early
- Demonstrated a 99.5% statistical significance through hypothesis testing in R and supplemental simulations / visual aids in Python

Research Assistant | The London Business School Jan. 2023 – Apr. 2023
- Leveraged Python to extract, clean and load data from 500 contracts into a mimicked SQL database; optimized extraction by 25%
- Determined 90% confidence in internal and external contracts differences using machine learning and statistical analysis in Python

Project Experience

SD-WAN Analytics (2024 Cisco HackAIthon)
- Enhanced Tunnel KPI anomaly detection and network issue resolution, providing insights to users for network issue optimizations
- Applied AI to analyze alarms, app usage, device health, and NWPI data for root cause analysis and network anomaly remediation
- Designed forecast models for network issues, and scheduled NWPI trace with ThousandEyes tests for proactive remediation

Chess Evaluation Engine
- Innovating a chess evaluation engine, ranking material imbalance, piece activity and king safety, maintaining an 88% accuracy
- Developed a heatmap using bitboard representations to visualize piece activity and king safety with naive material calculation

Custom Smart Glasses
- Built a pair of smart glasses with image, video and audio capturing features, developing an AI system to relay summaries to user
- Used Raspberry Pi, OpenCV, and PyAudio for multi-modal capture, while deploying Groq AI to provide real-time feedback to users

Skills

Languages: C++, Python, C, HTML/CSS, JavaScript, SQL, R, Java, C#, LaTeX, Tyspt
Technologies: Git, Linux, JIRA, Docker, MySQL, PostgreSQL, Flask, React.js, Astro.js, QisKit, Pandas, Numpy, TensorFlow, PyTorch
Concepts: Front End Development, Back End Development, Mobile Development, Cloud Computing, Natural Language Processing, Computer Vision, Data Analytics and Visualization, Data Warehousing, Distributed Systems, Augmented Reality, Agile Frameworks