Vihaan Dutta

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EDUCATION

University of Michigan – College of Engineering   Ann Arbor, MI
B.S.E. in Computer Science | Current GPA: 3.67/4.00   *Expected Graduation: April 2027*
- **Awards:** Engineering Scholarship of Honor, Dean's List, University Honors
- **Courses:** Data Structures and Algorithms, Intro to Computer Organization, Computational Linear Algebra

EXPERIENCE

UMich Mechanical Engineering Department   Remote
Software Developer Intern   *May 2025 – August 2025*
- Architected full-stack course page automation tool using FastAPI and the Canvas LMS API to programmatically produce and deploy structured course pages to serve 200+ students a semester, eliminating setup for course faculty.
- Developed endpoints to asynchronously create 50+ HTML pages via Jinja templates with real-time user feedback.
- Fine-tuned a university GPT model to provide secure, AI-powered summarization for core department courses.

VCU Autonomous Robotics and Vehicles Laboratory   Richmond, VA
Software & AI Research Assistant   *May 2025 – August 2025*
- Implemented a LiDAR data processing pipeline to capture and format 10,000+ RGBD image inputs a session, facilitating seamless integration with a real-time SLAM algorithm.
- Streamlined the creation of 3D simulation environments through Python Onshape-to-URDF conversion scripts, enhancing autonomous vehicle PPO network training and improving model accuracy.
- Upgraded technology stack by integrating the JAX physics engine and SKRL reinforcement learning library, improving system efficiency and reducing model training time by 30%.

Strategic Tech Solutions   Remote
Business Development Intern   *June 2024 – April 2025*
- Interfaced with SharePoint's API to vectorize and store 1000+ documents with Hugging Face sentence transformers, Pinecone DB, and scikit-learn, creating Microsoft Teams plugin to match company capabilities with contracts.
- Developed file-formatting scripts in C++ to drive classification and organization for 200+ files.
- Maintained an archive of 30+ project write-ups while optimizing SharePoint search utility, boosting productivity.

Chesapeake Controls   Glen Allen, VA
Information Technology Intern   *June 2023 – Aug 2023*
- Optimized backup system by integrating open-source software, saving $100+ annually and improving data security.
- Synthesized custom AWS Elasticsearch, Logstash, and Kibana (ELK) stack monitoring solution to track health and performance of 5 critical production file servers, catalyzing real-time alerts and proactive issue resolution.

PROJECTS

Full-Stack Multiplayer Web Game | *TypeScript, Node.js, AWS, Redis, PostgreSQL, Google OAuth*
- Built a CI/CD pipeline using GitHub Actions to automate Docker container deployments to AWS Lightsail, enabling low-downtime production releases.
- Engineered high-throughput, real-time player statistics tracking using Redis for sub-millisecond leaderboard updates and leveraging PostgreSQL (Supabase) and Google OAuth for data persistence and user authentication.

AI Robotics Research Lab Matcher | *Python, FastAPI, Tailwind, AWS, Hugging Face API, Gemini API, Pinecone DB*
- Developed a scalable data extraction pipeline using Python, Gemini API, and BeautifulSoup to parse and structure over 50,000+ tokens from 30+ robotics lab websites, automating database updates for new sites using cron on AWS.
- Engineered a semantic matching system by extending web scraping pipeline to generate vector embeddings with Hugging Face transformers and indexing them in Pinecone DB to accurately match researchers to robotics labs.
- Consolidated information from disparate robotics lab websites into a centralized, Tailwind CSS application by deploying a FastAPI REST API, improving researcher access to university-wide robotics lab opportunities.

SKILLS & INTERESTS

- **Languages:** Python, C/C++, Java, Golang, TypeScript, JavaScript, CSS, HTML
- **Skills**: Git, AWS (Lightsail, EC2, DynamoDB, Lambda), Kubernetes, Docker, Node.js, PostgreSQL, Redis, Pinecone DB, MongoDB, PyTorch, FastAPI, React, Tailwind CSS, Scrum, Agile, Linux, Microsoft Office