# Ekansh Sahu

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## Education

**University of Maryland, College Park** **August 2023 - May 2027**
*Bachelor of Sciences, Computer Science*
*GPA: 3.87 - Dean's List*
Relevant Coursework: CMSC351 (Algorithms), CMSC132 (OOP II Data Structures), FIRE (Research Experience: Bio-Inspired Robotics), MATH246 (Differential Equations), MATH206 (Matlab).

**Machine Learning Specialization, Coursera (DeepLearning.AI)**

- Courses: Supervised Machine Learning, Advanced Learning Algorithms, Unsupervised Learning & Reinforcement Learning.

**AWS Certified Cloud Practitioner Certified**

- Holds fundamental understanding of IT services and their uses in the AWS Cloud. Demonstrated cloud fluency and foundational AWS knowledge and able to identify essential AWS services necessary to set up AWS-focused projects.

## Skills

**Programming**: HTML, Tailwind CSS, JavaScript, React (VITE, API Integration, Deployment with Supabase), Python (TensorFlow, Keras, OpenCV, Matplotlib, NumPy, Pandas, PyTorch), SciKit Learn, Java, C, Version Control (Git), C++, NodeJS, APIs
**Design & Media**: Figma, Adobe Photoshop, Illustrator, After Effects, Blender, Autodesk Maya, UI/UX Design.

## Experience

**Research Assistant ( Dr. Haizhao Yang )** **Dec 2024 - Present**
*College of Computer, Mathematical, and Natural Sciences, University of Maryland*

- Fine-tuning and benchmarking state-of-the-art LLMs (e.g., Qwen2.5, DeepSeek-VL R1) using PEFT methods like LoRA, leveraging LLaMA-Factory, HuggingFace Transformers, and PyTorch in multi-GPU distributed environments to increase overall accuracies and assessing failures.
- Contributing to research exploring RL scaling laws by building custom evaluation pipelines, managing virtualized training workflows on Linux servers, and applying techniques in instruction tuning, inference optimization, and prompt design.

**Academic Peer Mentor (Dr. Lena Johnson)** **Aug 2024 - Dec 2024**
*Office of Undergraduate Research, University of Maryland*

- Mentored classes of 60 FIRE students by facilitating discussions, aiding team projects, addressing questions, and helping in presenting research and papers related to the fields of Bio-Inspired Robotics.

**Community Assistant** **Aug 2024 - May 2025**
*Department of Resident Life, University of Maryland*

- Administered key distribution, package processing, and service desk operations, streamlining daily tasks for 706 residents.
- First point of contact for visitors and residents; issued core key changes and troubleshooted issues in the building.

**Web Developer and Designer** **Aug 2024 - May 2025**
*Campus Coders Crew*

- Collaboratively build websites for UMD student organizations—from Figma wireframes to functional deployment. Helped deliver real-world products in team-based settings while supporting peers of varying experience levels.

## Projects

**Bioinspired Flight Optimization Project** *Research @ FIRE Program, University of Maryland (2024)*

- Designed and tested flexible TPU-85A wingtips controlled via Futaba micro servos, Arduino Nano, and 6V NiMH battery, with control logic implemented using Arduino IDE in C to optimize active wingtip actuation for drag reduction and improved flight efficiency.
- Conducted iterative testing on a lightweight UMX Radian foam body, refining aerodynamic performance through servo torque analysis, CAD wingtip design, and material selection, achieving sustained flight times of up to 40 seconds with raised wingtips.

**Knowtion - A health tracker web app** *Presented at HoyaHacks '25*

- a real-time mental health tracking web app that analyzes audio and physiological signals using Librosa and XGBoost to detect stress and emotional shifts, leveraging datasets like RAVDESS, TESS, SAVEE, and WESAD.
- Developed a full-stack pipeline with a React frontend and Flask backend, integrating ML inference and user reporting to help individuals monitor mood patterns and make informed mental health decisions.

**TrotMate - Smart Roadtrip Planner**

- Developed a full-stack web app that helps users plan multi-day road trips with automated daily stop suggestions. Integrated Google Maps, Places, and Directions APIs to segment routes based on custom drive-time limits and dynamically fetch nearby hotels and restaurants.
- Implemented an interactive UI for visualizing routes, selecting overnight stays, and exporting trips to Google Maps. Solved complex challenges in geolocation parsing, real-time data integration, and shared React state management to deliver a globally scalable, user-centric experience.

**Handwritten Digit Recognizing Model (MNIST dataset)**

- Developed a neural network model using the MNIST dataset to classify handwritten digits with high accuracy.
- Built a predictive system to classify new handwritten digits and validated results by comparing predictions with actual labels.