Soham Kundu

github.com/sohamkundu27 • skundu6@wisc.edu • sohamkundu.dev • linkedin.com/in/sohamkundu27 • US Citizen

Education

University of Wisconsin-Madison GPA: 3.75/4.00

BS in Computer Engineering and Computer Science *Expected Graduation May 2026*

- Relevant coursework- Data Structures and Algorithms, OOP, Machine and Assembly Language Programming, AP CSA, Discrete Math, Linear Algebra and Diff Eq, Multi-Variable Calculus, Physics: Mechanics, Physics: E+M

Experience

Applied Optics for NLOS Imaging Research January 2025 – Present

Undergraduate Researcher at UW-Madison *Madison, WI*

- Developing low-level software in C for miniaturized Non-Line-Of-Sight (NLOS) imaging hardware, integrating picosecond lasers and SPADs to capture and analyze photon timing data for high-precision image reconstruction.
- Designing real-time algorithms to track laser spots on relay walls for accurate reconstruction of hidden objects.
- Collaborating on hardware-software integration to scale NLOS systems for applications such as autonomous navigation, lunar exploration, medical imaging, and search-and-rescue operations to increase precision and reduce costs

AI Software Engineer Intern June 2024 – September 2024

Outlier AI *Remote*

- Optimized code generated by LLMs across 200+ tasks in 3 AI projects, providing feedback to enhance accuracy by 25%
- Debugged Java, Python, and JavaScript code, utilized RL to enhance accuracy across multi-turn conversational AI tasks
- Collaborated with AI researchers and engineers from different projects to analyze model performance metrics and identified trends to provide actionable insights for AI model improvements

Projects

Greenhouse IoT Monitoring System | *github.com/sohamkundu27/Greenhouse-IoT-Monitoring-System*

- Developed an IoT-based greenhouse monitoring system with Raspberry Pi, programming in C to optimize GPIO integration
- Containerized backend and frontend with Docker, configured Azure IoT Hub for real-time data transmission of over 10,000 data points daily, integrated SQLite for local data storage, and ensured reliable cloud deployment
- Built a Django/React app with REST APIs, enabling real-time visualization of 5 environmental metrics

Smart Budget Tracker | *github.com/sohamkundu27/Smart-Budget-Tracker*

- Developed a full-stack web application for budget management using C# .NET Core, React, and SQL
- Tracked income, expenses, and budgets in real-time using interactive dashboards powered by Chart.js for data visualization.
- Implemented automatic transaction categorization, recurring expense tracking, real-time overspending alerts, and more

Super Mario Bros Reinforcement Learning (RL) | *github.com/sohamkundu27/Super-Mario-Bros-RL*

- Implemented Double Deep Q-Learning algorithm in PyTorch to train an AI agent to beat Super Mario Bros
- Used computer vision (CNNs) to allow the agent to interpret the environment and epsilon-greedy decision-making

Cribify - *Housing Search Made Easy* | *github.com/sohamkundu27/Cribify*

- Developed a mobile app with a Tinder-like interface using React Native and Flask, integrating them with REST APIs, and leveraging Google Maps API for proximity analysis and ML models for personalized recommendations.
- Implemented a hybrid StackingClassifier with TensorFlow, combining Random Forests and neural networks to achieve a 95% improvement in classification accuracy based on rent preference, distance to classes, and # of roommates

JetBot Autonomous Robot | *github.com/sohamkundu27/Jetbot*

- Built a functional mini robot using a Jetson Nano, 3D-printed components, and custom electrical assembly
- Trained an ML model for real-time autonomous navigation, integrating obstacle detection, object recognition, and motor control to enable the JetBot to identify and react to objects in cluttered environments using camera input.

ML Activity Recommender | *github.com/sohamkundu27/ML-Activities-Recommender-System*

- Generated a synthetic dataset with over 70,000 data points using Pandas and NumPy for robust model training
- Trained a ML model using Sklearn's MultiOutputClassifier with a RandomForestClassifier; 90% accuracy on test data

Campus Involvement

Wisconsin Autonomous - *Perceptions Team* Madison, WI//September 2024 – Present

- Developed ML models for autonomous vehicle perception, refining object detection for safety. Used OpenCV to implement neural networks for real-time image and sensor data processing, supporting autonomous navigation and decision-making.

Code to Connect - *Volunteer Instructor* Madison, WI//September 2024 – Present

- Taught elementary students basic Java, HTML and CSS, simplifying concepts to inspire and introduce them to programming

Technical Skills

Languages: C/C++, C#,Java, Javascript, Python, SQL

Frameworks/Libraries: Bootstrap, Django, Express, Flask, Matplotlib, Node, NumPy, OpenCV, Pandas, PiGPIO, React, React Native, Sklearn, TensorFlow, WiringPi, .NET Core

Developer Tools: AWS, Azure, Blender, Cura, Docker, Git/GitHub, Google Cloud, Jetson Nano/Orion, Linux