Prakhar Gupta

416 Mosher, Mosher Jordan Hall, 200 Observatory | Ann Arbor, MI 48109
prakharg@umich.edu | (734) 877-0661 | linkedin.com/in/prakhar55

Education

University of Michigan - Ann Arbor **Ann Arbor, MI**
Bachelor of Science in Engineering (B.S.E.) in Computer Science & Engineering ***GPA: 3.92/4.0*** December 2025

- *Honors:* William J. Branstrom Freshman Prize **(top 5% of U-M class)**, University Honors & Dean's List (all terms)
- Flight Simulation Lead–Michigan Aeronautical Science Association, Fundraising Chair–TAP Prof. Sustainability Fraternity
- *Relevant Coursework:* Computer Vision, Intro Computer Org., Foundations of Comp. Sci., Data Structures & Algorithms, Comp. Lin. Algebra, Calculus (III, IV), Comp. Sci. Pragmatics, Prog. & Data Structures, Discrete Math, Robotics Mechanisms

Experience

Aptiv **Troy, MI**
Software Engineering Co-op (Winter & Fall 2024 Semesters) *Jan. 2024 - Dec. 2024*

- Working with Aptiv engineers towards a realistic "Virtual Driving Simulation" to enhance the verification of Aptiv's **Advanced Driver Assistance Systems (ADAS)** in various scenarios, including corner cases.
- Developing models using real-world vehicle data to replicate sensor (radar and camera) performance in various environmental conditions, providing realistic sensor outputs that drive the behavior of downstream algorithms.

Department of Robotics, University of Michigan **Ann Arbor, MI**
Teaching Assistant, Robotics Mechanisms (ROB 203) *Aug. 2023 - Present*

- Supporting a lab of 20 students for a course focused on the design, build, and operations of robotic systems, providing guidance on embedded programming and controls, system design and integration, and troubleshooting Arduino components.

Department of Computer Science & Engineering, University of Michigan **Ann Arbor, MI**
Research Assistant, Advisor: Prof. Lin Ma *May 2023 - Present*

- Contributing to building a foundation Machine Learning model that can learn the architecture and design of databases to help optimize database systems.
- Trained AutoML & Large Language Models using Low-Rank Adaptations on the Great Lakes HPC Cluster to predict runtimes of complex SQL queries across different RDBMSs on datasets 100GB in size with absolute errors as low as 100 ms.

NASA's Aether Project **Ann Arbor, MI**
Software Engineering Intern (Full-Time in Summer & Part-Time in Fall) *May 2023 - Present*

- Assisting in the development of the code for Aether, an open source upper-atmosphere model (Primary Investigator: Dr. Aaron Ridley) for better space weather prediction, and some of the workflows around it.
- Implemented function-specific verbose level control, enhancing code customization and debugging capabilities.
- Streamlined ensemble runs in the model, allowing better control of inputs for parallel computing.
- Incorporated HDF5 file compatibility, broadening software package options for improved model plotting capabilities.
- Adapting a library of tools built for tracing a satellite through GITM to work on Aether, enhancing data-model comparisons.

Eban-Rothschild Lab, University of Michigan **Ann Arbor, MI**
Research Assistant, Advisor: Prof. Ada Eban-Rothschild *Sept. 2022 - April 2023*

- Reported results on an Image Classification baseline from a PyTorch model to assess how well a single frame CV model predicts behaviors on a first of a kind dataset with lesser context bias compared to standard activity classification datasets.
- Fully funded by the University of Michigan to present on "Developing Computer Vision Tools for Automatic Animal Behavioral Classification" at the **National Conference on Undergraduate Research (NCUR 2023)** in Eau Claire, WI.

Kuwait Oil Company (Government of Kuwait) **Ahmadi, Kuwait**
Information Technology Intern *June 2022 - July 2022*

- Supported the Company's IT Service Desk with software and hardware related troubleshooting and technical queries.
- Aided CPU & Computer Hardware fixes with full-time staff to ensure concrete technical support to all departments.

Projects

- Trained Large Language Models on optimal solutions from over a quarter million 2x2x2 Rubik's Cube scrambles, achieving a 50.73% solving accuracy for the puzzle (preliminary results – ongoing solo project). (2023)
- Implemented a Machine Learning Multi-Variate Bernoulli Naive Bayes Classifier in C++ that automatically identifies the subject of a post from a Piazza discussion forum with an 87% accuracy. (2023)
- Developed a Computer Vision program in C++ that uses a seam carving algorithm for content-aware resizing of images which works by finding and removing seams in the image that pass through least important pixels. (2023)

Technical Skills: Python, C++, VS Code, MATLAB, R, HTML/CSS, JavaScript, SQL, Bash, Git, Arduino, Transformers, AutoML