Ashrith Edukulla

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Education

University of Michigan, Ann Arbor, **August 2024 – May 2027**
Bachelors of Engineering in Robotics GPA 3.96/4.0

- **Honors/Awards:** Rank 3 in World Robotics Olympiad, 4-time medalist in International Youth Robotics Contest, 3x American Mathematics Contest (AMC) qualifier, 2x American Invitational Mathematics Examination (AIME) qualifier
- **Relevant Coursework:** Data Structures and Algorithms, Robot Optimisation, Circuit Design, Linear Algebra, Robotic Differntial Equations

Work Experience

Synergic Adaptive Machinas (SAM) Lab @University of Michigan **August 2024 – December 2025**
Undergraduate Researcher

- **Research macro- and micro-scale robot swarms** under Prof. Steven Ceron to explore collective motion and environmental interaction.
- **Design and test physical swarm** behaviors using decentralized control, physical reconfiguration, and swarm intelligence.

DSC Lab @ UM-SJTU Joint Institute **May 2024 – August 2025**
Undergraduate Researcher

- **Conduct research** at the DSC Lab under Prof. Chengbin Ma, focusing on control strategies for dynamic systems such as electric vehicles and energy grids.
- **Develop algorithms** for intelligent multi-port energy routing and high-spatial-freedom wireless power transfer in digital energy networks.

Michigan Mars ROVER **November 2024 – May 2025**
Embedded software engineer (part-time)

- **Developed embedded software** using the STM32Cube IDE to interface with hardware components such as servo motors, LEDs, and accelerometers.
- **Collaborated with the team** to optimize system performance and ensure seamless hardware integration.

PROJECT Experience

Motion-Sensing Robotic Limb **December 2024 – present**
Robotics Engineer

- **Developed an accelerometer-based control system** for a robotic limb, enabling precise finger motion sensing and real-time control.
- **Designed software** to process accelerometer data and convert it into accurate movements for controlling the robotic limb.
- **Integrated and calibrated sensor modules** to ensure stable and consistent tracking of finger movements.

FROST **August 2024 – December 2024**
Robotics Engineer

- **Led the mechanical design** and development of FROST, a robotic black ice detection system aimed at improving pedestrian safety.
- **Developed and modeled** mechanical components using CAD software to ensure optimal functionality and durability.
- **Collaborated** with a cross-functional team, including hardware, software, and communication leads, to design and integrate sensors, de-icing mechanisms, and alert systems.

HighWay Go **May 2023 – October 2023**
Robotics Engineer

- **Designed and developed** HighwayGo, an autonomous highway agricultural robot that automates plant care on highway dividers using a soil moisture detection system and water pump for efficient irrigation
- **Programmed a used robotic arm** with 3D-printed parts and five servo motors to cut leaves in multiple shapes, supported by a mobile app for real-time robot monitoring and control.
- **Integrated renewable energy systems** with solar panels and wind-based electricity generation extend operational runtime while ensuring weather-resistant durability using acrylic and plywood materials.

Other Projects: AutoFarm, Smart Wheel

Skills

- Technical Skills: C++, Julia, SolidWorks, Differential Equation Computation, Optimization & Root Finding, Linear Algebra, Arduino, Sensors & Actuators, MATLAB, Data Structures, Real-Time Programming, System Modeling
- **Non-Technical Skills:** Teaching, Leadership, Team Collaboration, Research,, Problem Solving, Interdisciplinary Work