GUANYU XU

+1-734-330-1367 | xuguanyu@umich.edu |
Ann Arbor, MI - 48105, United States

EDUCATION

- **University of Michigan** *08 2024 - present*
  Anticipating Bachelor of Engineering in Computer Engineering in May 2026 Ann Arbor, US
  - GPA: 3.96/4.00
  - Dean's Honor List

- **Shanghai Jiao Tong University** *09 2022 - present*
  Anticipating Bachelor of Engineering in Mechanical Engineering in Aug. 2026 Shanghai, China
  - Undergraduate Excellent Scholarship Recipient
  - Participant of Dual Degree Program of the Joint Institute.

PROJECTS

- **Project A: Stretchable Optical Waveguide Sensor for Shape Reconstruction** *02 2025 - present*
  Summer Research Project at University of Michigan [GitHub]
  - **Introduction:** In this project, we developed a stretchable, soft optical waveguide sensor that can be used to reconstruct the surface geometry of itself. Possible applications include soft robotics state estimation and tactile force sensing.

- **Project B: Lumen Grid: Multi-Robot Competitive Parking Game** *02 2025 - 04 2025*
  Course project for Introduction to Embedded System Design (EECS 373) at the University of Michigan. [GitHub]
  - **Introduction:** In this project, we used STM32 microcontroller to implement three interconnected subsystems. The game involves four Zumo robots competing to occupy as many of the 10 dynamically lit spots as possible.
  - **Contributions:**
    - Program in C++ to manage robot control logic and communication.
    - Design an IMU-based remote controller for the Zumo robot with vibration feedback.
    - Interface with a camera for position tracking of each robot based on color code.
    - Develop the main control algorithm for the game setting.
  - **Outcome:**
    - Proficiency in serial communication protocols including UART, I2C, SPI, etc.
    - Experience with logic analyzer and gdb debugger.
    - Experience with wireless communication protocols including Bluetooth and Zigbee.

- **Project C: Transformable wheel for Lunar Rover** *02 2023 - 08 2024*
  Project of the undergraduate research program (PRP) at Shanghai Jiao Tong University. [GitHub]
  - **Introduction**: In this project, we design and build a lunar rover model with transformable wheel. Real-time sensing is implemented for self-adaptive wheel transformation actuation on a Raspberry Pi platform.
  - **Contributions:**
    - Implemented a PID controller with an IMU for path stabilization.
    - Interface with ultrasonic sensor and LiDAR for wheel transformation control.
  - **Outcome:**
    - Experience with CAD design software including SolidWorks.
    - Enhanced skills of comprehending spec and datasheet of hardware.

- **Project D: CanSat: Hands-on Satellite Design** *01 2024 - 02 2024*
  Course Project of Summer & Winter School at Technische Universität Berlin
  - **Tools Used**: Arduino, SolidWorks.
  - **Contributions:**

    - Implement an orientation detection algorithm with filtering using accelerometer and gyroscope.
    - Design the satellite body and parachute separator using CAD software.
  - **Outcome:**
    - Gain hands-on experience in prototype design.
    - Develop troubleshooting and problem solving skills.

PATENT

UTILITY MODEL PATENT

[P.1] Guanyu Xu, Longquan Liu, et al. (2024). **A Variable Radius Wheel**. National Intellectual Property Office, Patent No. ZL 2024 2 0506534.0. Registration Date: 2024.03.15, Grant & Publication Date: 2024.09.13.

SKILLS

- **Specialized Area:** Embedded System Design, Control Theory, and Machine Learning.
- **Interested Area:** Vision Language Model, chip architecture.
- **Proficient Programming Languages:** C/C++, Python, Verilog, ARM assembly
- **Mathematical & Simulation Tools:** Mathematica, MATLAB, and Simulink
- **Other Tools & Technologies:** SolidWroks, Abaqus, AutoCAD, Raspberry Pi, STM, and Arduino.

HONORS AND AWARDS

- **Third prize in the 13th SJTU Liming Cup Mechanical Innovation Competition for Freshmen** *05 2023*
  Shanghai Jiao Tong University
  - Designed a mechanical vehicle that could grab and raise objects, catch little balls, and climb up obstacles.
  - The competition is graded based on the vehicle's performance by measuring the points it gets at the competition venue.
- **Outstanding Project of PRP in 2023** *10 2023*
  Shanghai Jiao Tong University
  - Award for Project C listed above.
  - Our project was considered as highly creative and accomplished well.