

Shaochen “Gavin” Ma

gavin.shaochenma@gmail.com | (626) 361-8227 | www.linkedin.com/in/shaochen-gavin-ma

Objective

Seeking a Robotics Engineer to apply hands-on experience in C++, Python, and ROS-based systems to build intelligent, autonomous robots. Skilled in multi-sensor fusion, UAV/UGV control, SLAM, and AI-enhanced perception for real-world navigation and interaction.

Education

Georgia Institute of Technology

Aug 2024 – Dec 2025

MS in Electrical and Computer Engineering | GPA: 4.0 / 4.0

- *Relevant Courses:* C++, ROS2, Computer Vision, AI/ML, Multithreading, OpenCV, OpenGL, CUDA, Cyber-Physical System, Electric Vehicle, Wireless Network, Technology Entrepreneur

University of California, Irvine

Sep 2020 – Jun 2024

BS in Computer Science and Engineering | GPA: 3.73 / 4.0

- *Relevant Courses:* Programming Languages, Embedded System, Computer Network, Computer Architecture, Semiconductor, Technical Communication

Technical Skills

Programming: C/C++, Python, Java, MATLAB, VHDL, Verilog

Framework: ROS2, MAVLink, DroneKit, ArduPilot SITL, OpenCV, TensorFlow, Gazebo, Simulink, Nav2, Wireshark

Experiences

WeKruit LLC | *Software Engineer Intern*

May 2025 – Aug 2025

- Built a full-stack multimodal interview analysis platform with React and TypeScript, delivering modular components and RESTful data flow with built-in emotion analysis for responsive user interaction
- Architected a serverless cloud pipeline for parallel inference and cross-modal scoring, supporting video files up to 2 GB with 8 MB chunked uploads and completing analysis within 3 minutes
- Implemented a gaze-tracking module with facial-landmark-based eye region detection and fixation and saccade classification, delivering real-time overlays and heatmaps and surfacing eye-contact and attention metrics

Autonomous Robotics with ROS2 and TurtleBot3 | *System Developer & Leader*

Jan 2025 – Apr 2025

- Programmed and simulated autonomous robotic behaviors in ROS2 Humble using Gazebo, TurtleBot3, and OpenCV
- Developed ROS2 nodes for real-time object tracking and following via PID control with LiDAR-camera fusion
- Implemented waypoint navigation and reactive obstacle avoidance using /odom, /scan, and TF-based localization
- Deployed SLAM and path planning with the Nav2 stack; tuned global/local costmaps and DWB/Pure Pursuit controllers for smooth, collision-free trajectories

Multi-Drone Swarm Control with Emergency Handling | *Software Dev & Leader*

Mar 2025 – Apr 2025

- Simulated UAV swarm coordination using Python, ArduPilot SITL, DroneKit, and MAVLink over UDP
- Developed a custom UDP-based protocol for synchronized multi-drone control and emergency handling
- Implemented multithreaded socket programming for real-time RC overlay, LOITER, and mission resume functionality
- Analyzed network-level vulnerabilities via Wireshark and demonstrated MAVLink spoofing with controlled packet injection

Electric Vehicle Simulation and Control Projects | *System Developer*

Aug 2024 – Dec 2024

- Modeled parallel Hybrid Electric Vehicle (HEV) dynamics, battery cycling behavior, and power electronic systems using MATLAB/Simulink, simulating embedded control scenarios in real-time environments
- Designed and built RC-based battery circuit models; evaluated State of Charge (SOC) tracking and achieved ~96.6% round-trip energy efficiency
- Implemented Permanent Magnet Synchronous Motor (PMSM) drive control using sine-triangle PWM and third-harmonic injection; analyzed dq-axis control and minimized torque ripple
- Simulated EV charger with and without Power Factor Correction (PFC); quantified Total Harmonic Distortion (THD), charging time, and waveform quality

Autonomous Rover with Sensor Fusion and Object Detection | *Software Developer*

Oct 2023 – Mar 2024

- Built an autonomous rover using Jetson Nano Orin, Pixhawk, and ROS; integrated GPS, RPLiDAR, and depth camera for real-time perception and control
- Preprocessed RPLiDAR data to construct a 3D environment fused with camera depth frames; applied semantic segmentation as an additional criterion for obstacle avoidance
- Developed real-time path planning and waypoint navigation modules, achieving 75% outdoor accuracy
- Integrated MAVLink telemetry and implemented communication over UART, I2C, TCP, and IEEE 802.11 for sensor and system coordination

EdgeDevice AI LLC | *Machine Learning Engineer Intern*

Aug 2022 – Sep 2022

- Developed and implemented statistical and machine learning models in Python to analyze system performance data and predict hardware-related trends such as value fluctuations and pricing
- Enhanced model robustness and reliability by designing and executing controlled experiments to evaluate performance under varying conditions, improving prediction accuracy and model fit scores