Kai-Chi Weng

kaichi@umich.edu • (01)734-330-7655 • linkedin.com/in/kane-weng • github.com/Kane-Weng

EDUCATION

University of Michigan **Ann Arbor, MI**
BSE in Robotics Engineering, Minor in Computer Science *Aug 2024 – Expected May 2027*
GPA: 4.00/4.00
Related Coursework: Introduction to Machine Learning (EECS 445), Foundations of Computer Vision (EECS 504)

RESEARCH EXPERIENCE

SIM-26 team | Multidisciplinary Design Program *University of Michigan* **Ann Arbor, MI**
Subteam Lead & Software Engineer *Jan 2026 – Expected Dec 2026*

- Lead a 4-person subteam to design a "Wizard of Oz" driving simulation, delegating tasks, tracking milestones, and presenting weekly experimental progress to a faculty mentor and a 20-person research group
- Formulate a literature-backed experimental methodology to eliminate human-subject social bias, utilizing Sample Entropy to quantify how lead vehicle unpredictability impacts driver visual demand
- Implement the experimental paradigm by engineering a multiplayer listen server in Unreal Engine 5 (C++/Blueprints)

PROJECT EXPERIENCE

NiFT team | Perot Jain TechLab at Mcity *University of Michigan* **Ann Arbor, MI**
Systems Integration Researcher *Jan 2026 – Expected Dec 2026*

- Architect a 6-node ROS 2 Humble workspace in collaboration with mobility startup NiFT, establishing a foundational software stack by configuring launch files, TF2 transform trees, and URDF/XACRO models for Gazebo simulation
- Engineer the vehicle's drive-by-wire pipeline by integrating ros2_socketcan and parsing proprietary .dbc files, translating high-level ROS commands into 5-byte hardware CAN messages (steering, throttle, braking, and e-stop)
- Integrated Unitree LiDAR and Mcity RTK Beacon GPS to feed a custom path-tracking node, implementing a cross-track error (CTE) algorithm to dynamically adjust steering angle and speed along predefined waypoints

Michigan Mars Rover Team *University of Michigan* **Ann Arbor, MI**
Autonomy & Robotic Arm Subteam Member *Sep 2024 – Present*

- Implement REP-105 sensor fusion via ROS 2, integrating multi-modal suites (RTK, IMU, CV) to linearize geodetic GPS data for centimeter-level autonomous navigation
- Developed a 6-DoF pose estimation pipeline using OpenCV and ArUco markers for precise fiducial tracking, reducing positional drift by 75%
- Engineered and fabricated 20+ precision robotic arm parts via Siemens NX, CNC, and 3D printing, featuring a self-centering camera system with 100% return accuracy

WORK EXPERIENCE

Robotics Department *University of Michigan* **Ann Arbor, MI**
Instructional Aid – ROB 320 & ROB 201 *May 2025 – Present*

- Instruct students in C/C++ and Linux IPC (TCP, sockets, pipes) to develop the Robot Interprocess eXchange (RIX), a custom ROS-like middleware, and configure MBot hardware for applied kinematics, URDF, and TF tree labs
- Design comprehensive course exams, lead hands-on lab sections, and hold weekly office hours to help students debug complex lower-level software architectures
- Redesigned 8 core Julia assignments for ROB 201 (Calculus for the Modern Engineer) to elevate algorithmic difficulty and reinforce applied calculus concepts

Math Learning Center *University of Michigan* **Ann Arbor, MI**
Math 115/116/215 Tutor *Jan 2025 – Jan 2026*

- Deliver 10 hrs/week of drop-in and group tutoring for Calculus I-III
- Facilitate weekly Math 215 study groups with GSIs, supporting 20–30 students with structured problem sets

SKILLS

Programming: C/C++, Python, MATLAB, R, Julia, Verilog, Assembly
Software & Tools: ROS 2, Linux, Unreal Engine 5, Gazebo, Siemens NX, ModelSim