

Jonathan Tao

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EDUCATION

University of Illinois Urbana-Champaign

Champaign, IL

B.S. in Computer Engineering, Minor in Semiconductor Engineering

Expected May 2028; GPA: 4.0/4.0

- **Coursework:** ECE 220 (Computer Systems and Programming), ECE 210 (Analog Signal Processing), ECE 120 (Introduction to Computing), ECE 110 (Introduction to Electronics)

EXPERIENCE

Rivian

Research Park, IL

Embedded Software Intern

Jan 2026 – Present

- Developing firmware for the Electric Management Module (EMM) using C and Python; validating control logic via hardware-in-the-loop (HIL) simulation to optimize various charging modes.
- Optimizing code in a multithreaded and FreeRTOS environment at the firmware level to increase fault tolerance and improve telemetry.

Illini Electric Motorsports (UIUC FSAE Team)

Champaign, IL

BMS Software Lead

Aug 2025 – Present

- Architecting the transition of the Battery Management System (BMS) firmware from a bare-metal environment to FreeRTOS to enhance real-time performance, scalability, and task scheduling.
- Leading the microcontroller migration from STM32F4 to STM32H7 to leverage higher processing power for better modeling algorithms and increased GPIO capabilities.
- Building a HIL (Hardware-in-the-Loop) test environment to automate BMS firmware validation using a LabJack and an Arduino.
- Implementing Dual Extended Kalman Filters in MATLAB Simulink to improve State-of-Charge (SoC) and State-of-Health (SoH) estimation accuracy by more than 15%.

AbbVie

Abbott Park, IL

Analytical R&D Software Intern

Jun 2025 – Aug 2025

- Engineered and deployed an internal RAG support agent using LangChain, OpenAI API, and Power Automate, reducing information retrieval time for SOPs and equipment guides by over 50%.
- Developed a Python-based integration for the Microsoft Teams API, enabling seamless user interaction with the LLM-powered support agent directly within chats.

Freelance Computer Builder

Lincolnshire, IL

Designer and Technician

Feb 2020 – May 2025

- Engineered, sourced, and assembled over \$11,000 worth of custom PCs, specializing in small form factor (SFF) and high-performance builds.
- Provided comprehensive client services, including consultation, system assembly, and deployment of Windows and Linux operating systems.

PROJECTS

Custom CoreXY 3D Printer | Autodesk Inventor, C++, Klipper, Raspberry Pi

- Designed and constructed a high-performance CoreXY 3D printer from the ground up, featuring a rigid frame modeled in Autodesk Inventor and custom 3D-printed components.
- Configured Klipper firmware on a Raspberry Pi 4 to drive salvaged Ender 3 electronics, achieving high-speed printing at over 1500 mm/s with 7000 mm/s² acceleration.

W.A.N.D.E.R. Autonomous Robot | C++, ESP32, Autodesk Inventor

- Engineered a maze-solving autonomous robot featuring a custom 3D-printed chassis, integrating a gyroscope, wheel encoders, and distance sensors for robust localization.
- Implemented a C++ pathfinding and SLAM algorithm on an ESP32 microcontroller to efficiently map and navigate unknown maze environments.

SKILLS

Languages: C, C++, Verilog, Python, MATLAB, Java, R, JavaScript

Hardware & Design: Altium, STM32 (H7/F4), ARM Cortex-M, HIL Testing, ESP32, Autodesk Inventor

Frameworks & Tools: FreeRTOS, PyTorch, LangChain, Git, WSL, Bazel, Linux, Docker, Simulink