

Rami Hamada

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EDUCATION

The University of Texas at Austin

Austin, TX

Bachelor of Science in Electrical & Computer Engineering, Minor in Robotics | GPA: 3.78/4.00 Expected Dec. 2027

EXPERIENCE

Embedded Systems Engineering Intern

May 2026 – Aug. 2026

Silicon Audio

Austin, TX

- Owned the 3-axis MEMS accelerometer across a seismic acquisition system, from the STM32/FreeRTOS digitizer through the embedded Linux host, delivering a 25–400 Hz channel alongside the primary optical sensor
- Built the digitizer acquisition path, reconstructing FIFO-batch timestamps from timer-captured watermark interrupts and buffering samples in time-indexed rings
- Extended the host acquisition service to validate XYZ windows, preserve digitizer timestamps through buffering and recovery, and distribute data to MiniSEED files, livestreams, and web APIs
- Eliminated intermittent sample loss by tracing an SPI stall with a logic analyzer and moving FIFO reads to DMA, validating 48+ hours with zero gaps or overlaps
- Fixed UART byte loss and merged COBS frames by replacing idle-triggered DMA restarts with continuous DMA and delimiter-based framing, reducing errors from 40–60 to 1–2 per 12-hour run

Undergraduate Research Assistant

Aug. 2024 – Apr. 2026

Advanced Robotic Technologies for Surgery Laboratory

Austin, TX

- Built the software and control stack for a robotic 3D printer used to fabricate liquid-metal strain sensors
- Designed a ROS 2 architecture separating printer motion, pneumatic extrusion, and user control for responsive live experimentation
- Developed Python tooling for mold registration, parameter sweeps, and automated sensor characterization, reducing setup time by 70%
- Modified Marlin C/C++ firmware for syringe-based gallium printing, integrating custom hardware and tuning motion profiles
- Co-authored a paper published at the 2026 IEEE International Conference on Robotics and Automation (ICRA)

PROJECTS

Drone Autonomy Platform | ROS 2, PX4, Jetson Orin Nano, C++/Python

Mar. 2026 – Present

- Built a quadrotor from component selection and CAD through system integration and onboard autonomy software, validating 30+ min flight time
- Designed a modular ROS 2 architecture for vehicle communication, sensing, SLAM, and health monitoring
- Fused stereo-IMU VIO with PX4 EKF2 for GPS-independent state estimation, achieving < 10 cm endpoint error over a 10 m closed-loop test
- Resolved VIO/RTAB-Map synchronization issues, reducing worst-case TF lag from 2.45 s to < 90 ms and enabling a 44-node SLAM run
- Modified QGroundControl to add live TensorRT perception overlays to a 1920×1440, 30 fps FPV stream

TECHNICAL SKILLS

Languages: C, C++, Python, MATLAB, Bash, Java

Embedded Systems: STM32, FreeRTOS, DMA, interrupts, register-level programming

Robotics: ROS 2, PX4, MAVSDK, RTAB-Map, OpenCV, DepthAI, CUDA, TensorRT

Protocols: SPI, I2C, UART, RS-485, MAVLink, COBS

Hardware & Prototyping: KiCad, Fusion 360, logic analyzer, oscilloscope

Tools & Platforms: Linux, Buildroot, CMake, Git