

Simon Kaminer

Robotics, embedded systems, and
mechatronics

Selected work / 2025–2026

Northwestern University
B.S. Mechanical Engineering, expected June 2028



ABOUT

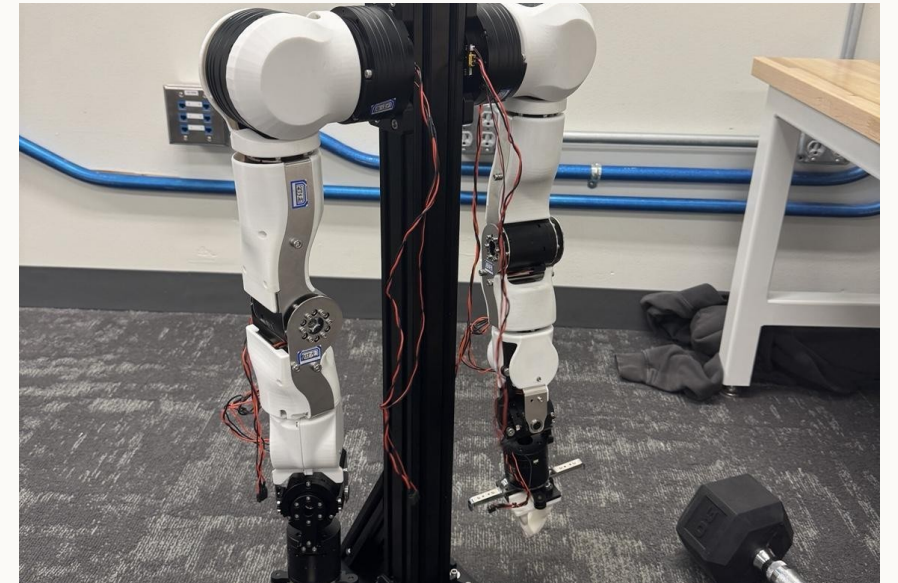
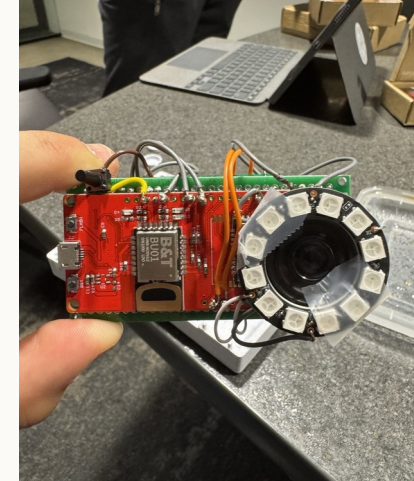
I design and build robotic systems, embedded firmware, and integrated electromechanical hardware.

EDUCATION

Northwestern University
Mechanical Engineering, Robotics concentration
Artificial Intelligence minor

FOCUS

Robot controls
Embedded firmware
Hardware and software integration



Meemo

Wearable guardian-child separation system

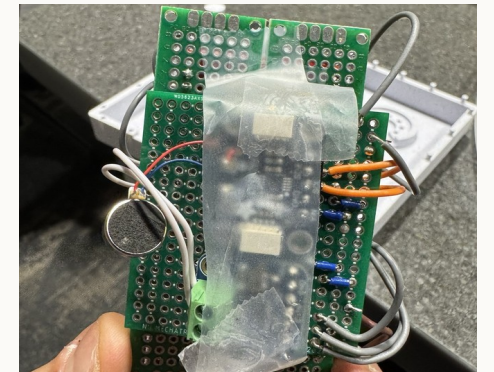
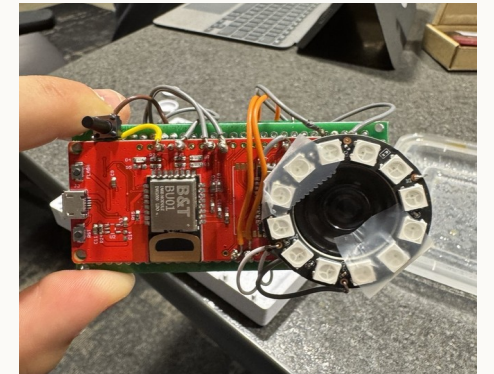
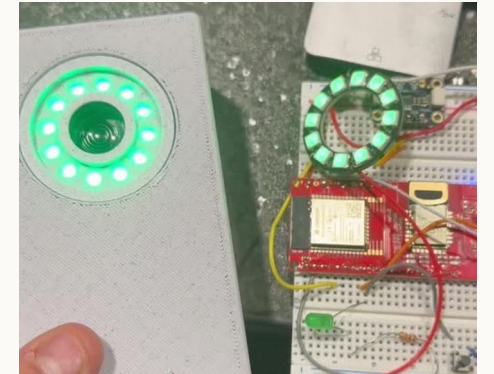
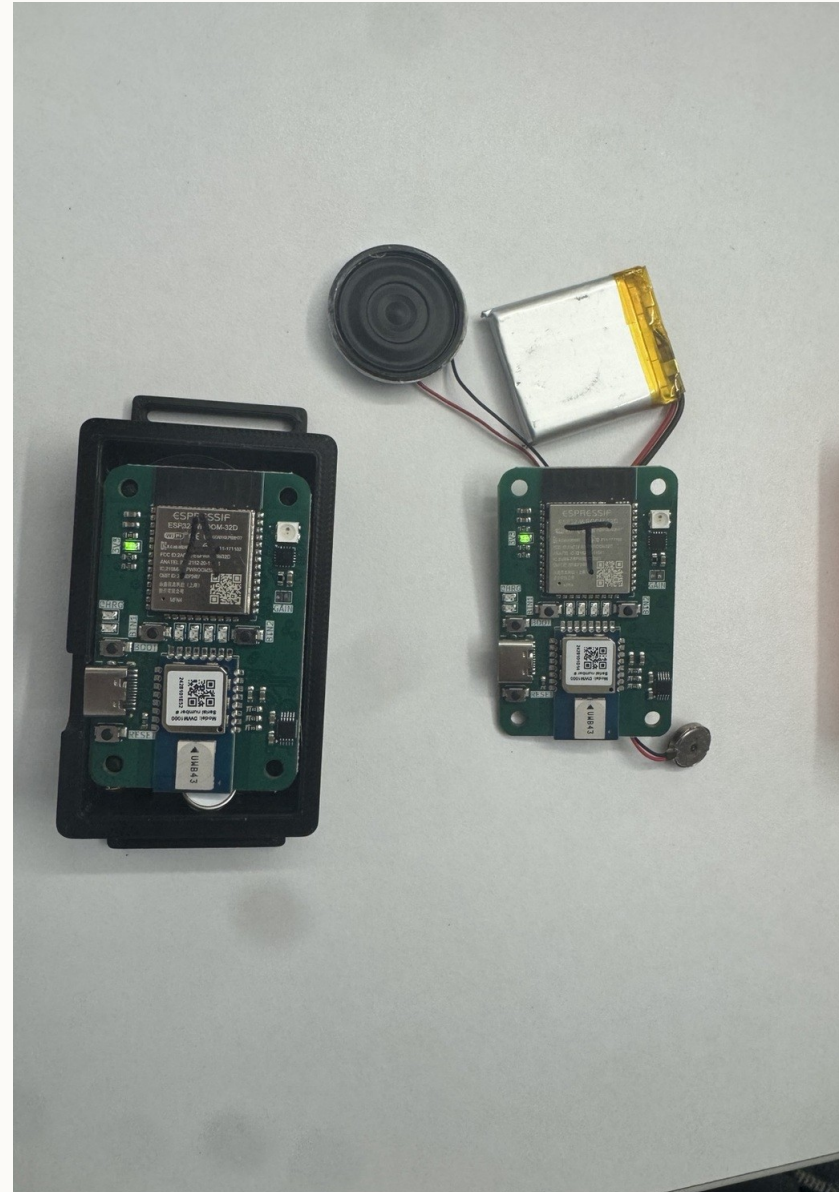
ROLE

Lead Firmware & Robotics Engineer

WHAT I BUILT

I lead firmware development and electronics integration for Meemo, a wearable guardian-child separation alert system. ESP32 controllers combine UWB ranging and wireless communication with visual, haptic, and audio alerts.

ESP32 UWB ESP-NOW C++



OpenArm / HAND-ERC

Robot arm assembly and control

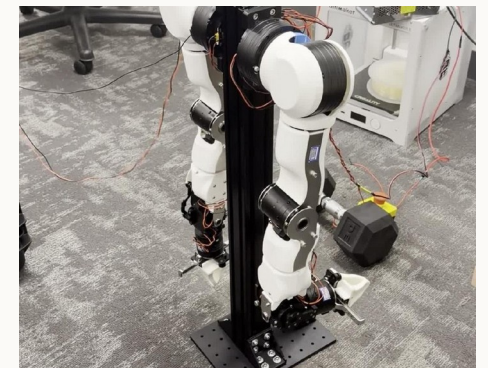
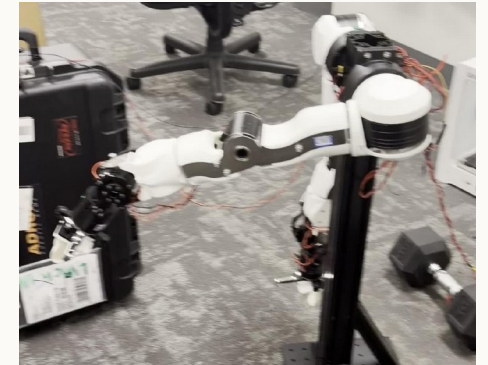
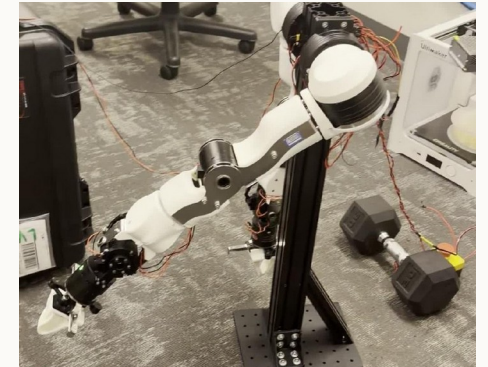
ROLE

Research Assistant

WHAT I BUILT

I built and wired two robot arms, integrated CAN motor communication, and connected ROS 2 motion planning to the hardware. I calibrated the joint mappings and tested planned motion on the physical system.

ROS 2 MOVEIT CAN MOTOR CONTROL



MagClean 2.0

Whiteboard-cleaning robot built in 36 hours

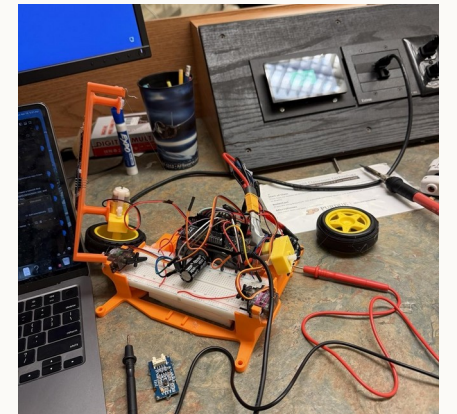
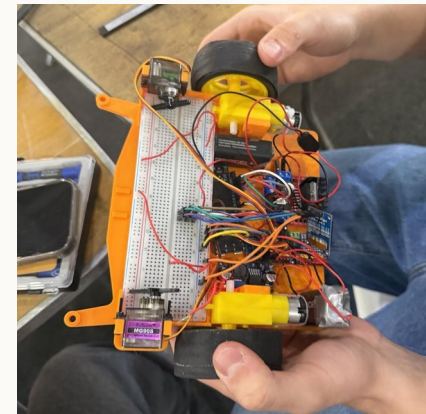
ROLE

Mechanical and Electrical Build Lead

WHAT I BUILT

I designed and assembled most of the robot, including CAD, printed parts, wiring, sensors, and motor control. Magnets held it to a vertical whiteboard while a camera planned cleaning paths.

ESP32 OPENCV 3D PRINTING MOTOR CONTROL



STM32 Flight Controller

Custom firmware for a quadcopter

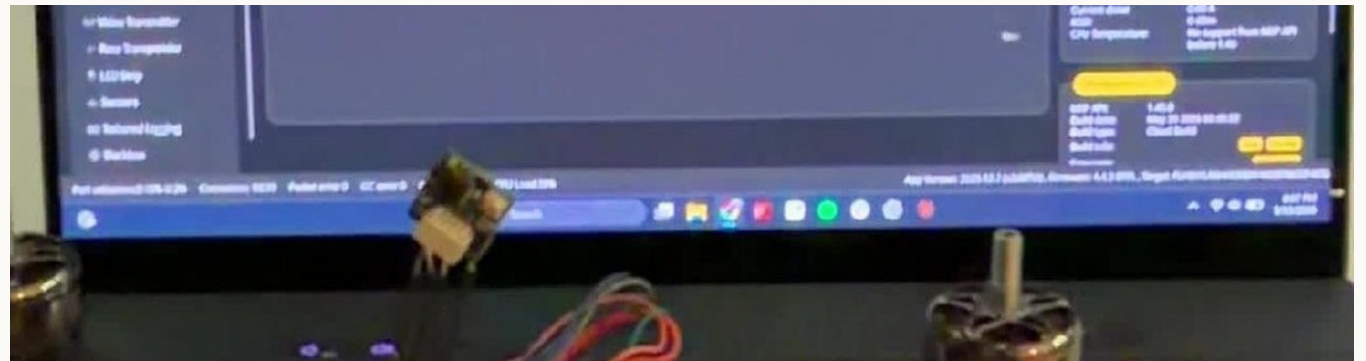
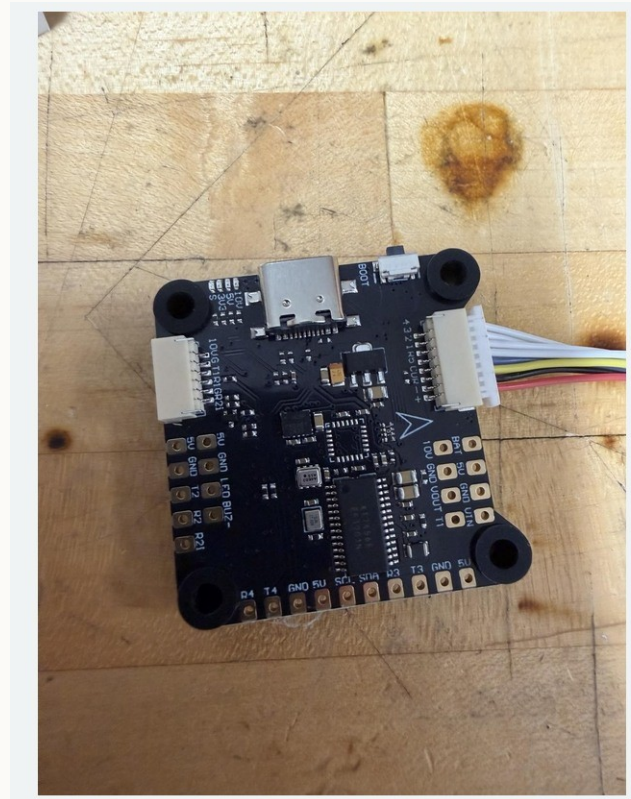
ROLE

Firmware Developer

WHAT I BUILT

I developed bare-metal C firmware on an STM32F405, implemented USB communications and SPI IMU acquisition, and estimated roll and pitch from live sensor data. Motor control and flight testing remain in development.

STM32F405 C SPI USB IMU



Hamster Playground

Sensor-controlled hamster playground

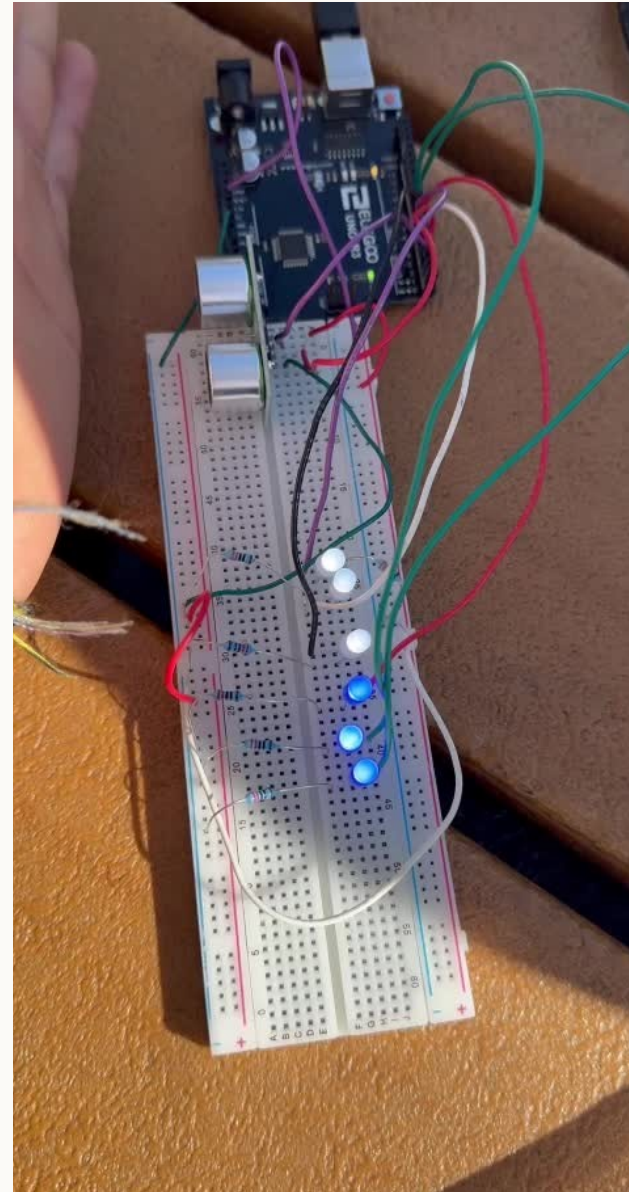
ROLE

Personal Build

WHAT I BUILT

I integrated proximity sensing, sequential LED lighting, wheel activity measurement, and a motorized elevator into a responsive hamster playground. The elevator uses a suspended platform for vertical movement.

SENSORS LIGHTING MECHANISMS EMBEDDED CONTROL



Reactive lighting



Completed elevator

Engineering skills & contact

EMBEDDED

C/C++
STM32 and ESP32
SPI, CAN, UART, PWM

ROBOTICS

ROS 2 and MoveIt
Motor control
Sensors and calibration

BUILD

SolidWorks
3D printing and CNC
Soldering

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