Erin Floresca

Salt Lake City, Utah | efloresca3@gmail.com | linkedin.com/in/erin-floresca | (801)-500-0085 | U.S. Citizen

Education

Georgia Institute of Technology Atlanta, GA

B.S. Computer Engineering | Specialization in Devices, Distributed Systems, and Software Design *May 2025*

Coursework: *Data Structures & Algorithms, Physical Foundations of Computer Engineering, Digital System Design, Circuit Analysis, Prototyping Intelligent Devices, Embedded Systems Design, Computer Communication, Intro to Robotics & Perception*

Projects

Wearable IoT Device for Special Needs Communication & Feedback | *ESP32, BLE, Android, Arduino, C++* Jan 2025 – Apr 2025

- Engineered an end-to-end IoT communication system linking an ESP32 with a custom Android app over BLE, enabling real-time biometric and activity feedback for a wearable device that assists in communication for nonverbal special needs users.
- Developed an Android application in Android studio that used an onboard mobile phone accelerometer to classify user activity (active or inactive) with >90% accuracy and transmitted updates to an ESP32 microcontroller for responsive control.
- Programmed BLE server functionality with real-time heart rate sensor data and a haptic feedback algorithm into a unified ESP32 program in C++ to respond to potential high user stress, providing a soothing stimulus for recovery to baseline heart rate.
- Co-authored a 50+ page interdisciplinary technical design document detailing customer requirements, design specifications, verification methods, design rationale, and implementation details to streamline future development and meet user needs.

Computer-Controlled Industrial Sewing Machine | *Arduino, C++* Jan 2025 – Apr 2025

- Reverse-engineered minimally documented industrial sewing machine I/O to model timing relationships and signal patterns to control stitch output based on user-defined counts and operational constraints, modernizing stitching control to a digital platform.
- Developed custom Arduino firmware in C++ to count and control stitches with 0% error tolerance, integrating rotary encoder data to synchronize needle position for autonomous control of stitching, enabling reliable and repeatable results.
- Programmed interrupt-based blocking logic to perform repeated stitch cycles from a single user input, automatically generating control pulses for a duration corresponding to the desired stitch count.

Smart Planter | *Arduino, C++, TinkerCAD* Jun 2024 – Aug 2024

- Built a self-regulating smart planter using sensor data fusion from temperature, humidity, light, and soil moisture sensors with C++ firmware for an Arduino microcontroller to autonomously manage plant health.
- Programmed an adaptive watering algorithm controlling a mini-pump based on soil readings, reducing manual watering by 80%.
- Integrated an LCD display to provide real-time environmental feedback and actionable messages such as "Too little light" or "Too humid", with custom display logic that translates raw sensor data into clear, user-friendly messages, improving product usability.
- Built a compact and visually appealing planter that included an electronics bay, plant box, and a water tank, in TinkerCAD.

Experience

Housing Office Assistant Aug 2024 – May 2025

Georgia Tech Student Housing *Atlanta, GA*

- Delivered front-line customer service to students and staff by resolving inquiries and concerns promptly and professionally.
- Assisted residents with key issues and lockouts, ensuring secure access, accurate documentation, and timely issue resolution.

Neuromorphic Research Intern Jul 2021 – Aug 2021

Georgia Tech Research Institute *Atlanta, GA*

- Conducted literature research on neuromorphic computing and spiking neural networks, identifying key challenges in energy-efficient perception systems to inform future project directions.
- Configured secure SSH access to a remote system hosting spiking neuromorphic hardware, reducing model training setup time.
- Authored a detailed step-by-step SSH access guide used by collaborators, standardizing system access procedures across the lab.

View Prediction and Localization Team Member Aug 2020 – Dec 2020

Vertically Integrated Projects (VIP) Team at Georgia Tech *Atlanta, GA*

- Collected an image-to-pose dataset to train a neural network for view-based navigation, enabling the model to learn accurate spatial relationships and improving its ability to generalize across varying viewpoints.
- Programmed MATLAB scripts to visualize and clean 1,874 image-pose data pairs, filtering anomalies and formatting them into structured datasets that enhanced neural network training for blimp localization.

Skills

Hardware: Arduino, ESP32, ARM
Software: C/C++, Java, Python, MIPS/RISC-V/ARM
Protocols: BLE, TCP/IP, I2C, UART, SPI, Serial, USB, PWM
Developer Tools: VSCode, Arduino IDE, Git, Agile, Keil Studio, TinkerCAD, Linux CLI, Android Studio
Lab Tools: Multimeter, Soldering Tools, 3D Printing, Rapid Prototyping, Oscilloscope, Laser Cutter, Hand Tools