Jeff Weissling

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Education

Texas A&M University – *BS-MXET*
Bachelor of Science in Multidisciplinary Engineering Technology - Mechatronics
Minor in Computer Science | Minor in Embedded Systems Integration

Relevant Coursework: Control Systems, Programming Languages, Mechanical Design Applications, Computer Organization, Embedded Systems Software, Data Structures & Algorithms, Mechatronics, Electronic Instrumentation, Applied Dynamic Systems, Microcontroller Architecture, Analog Electronics, Product Design & Solid Modeling

Strake Jesuit College Preparatory

Professional and Work Experience

Mechatronics Engineering Capstone – *Software Engineer* **January 2024 - December 2024**

- Designed and successfully built a smart-walker device to collect force, distance, and heart rate data via load cells, rotary encoders, and a pulse oximeter, with NFC-based user authentication utilizing an ESP32-based control system.
- Programmed multithreaded firmware with CSV logging, Wi-Fi connectivity, and browser-accessible data retrieval through a local HTTP server.
- Designed custom PCB layouts and 3D-printed enclosures for seamless integration with the walker frame.
- Created a Python-based GUI to visualize session data through time-series graphs and tables, supporting patient monitoring and clinician review.

ShareTea – *Shift Manager* **June 2022 - Present**

- Supervise daily operations, train new employees, manage inventory, and ensure quality service in a high-volume environment.

Projects

Night-Vision Object Retrieval Robot **Spring 2023**

- Developed a mobile robot with IR-enhanced night vision to autonomously detect, pursue, and retrieve objects.
- Integrated LIDAR-based obstacle avoidance and real-time tracking via Raspberry Pi and ROS2.
- Designed and 3D-printed a custom claw, controlled by stepper/DC motors through GPIO and H-bridge.

Object Sorting with Dual UR3e Manipulators **Fall 2024**

- Programmed two UR3e robotic arms using ROS2 and MoveIt! to autonomously sort and place blocks by color.
- Integrated a PLC-controlled conveyor and photoelectric sensors to coordinate object flow between robots.
- Developed real-time sorting logic using JointState messaging, digital I/O, and ROS2 topic subscriptions.

Line-Following Robot with PID Control **Fall 2024**

- Developed a color-following robot using an Arduino Due, TCS34725 RGB sensor, and H-Bridge motor drivers.
- Programmed a PID controller to dynamically correct trajectory based on red-channel error from real-time sensor data.

EMG-Controlled Game Interface **Spring 2023**

- Captured and filtered EMG signals using custom analog circuitry to detect muscle flexes.
- Programmed LabVIEW to convert waveform data into real-time keyboard inputs for gameplay control.

Leadership and Involvement

PhilSA Modern Dance Team – *Director* **August 2022 - May 2024**

- Led creative direction through choreography, music curation, and performance staging for showcases and competitions.
- Managed team logistics including auditions, scheduling, communications, and event coordination for up to 100 members.

MSC Freshman Leaders International – *Logistics Officer* **August 2019 - May 2020**

- Coordinated event planning, travel arrangements, and operational logistics for cultural and service initiatives.

Technical Skills

- C++, Python, Java, Haskell, MATLAB, LabVIEW, Quartus, Keil, SolidWorks, Creo, ROS2, Arduino, Linux, ARM/x86 Assembly