Bryan Amato

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EDUCATION

Bachelor of Science in Electrical and Computer Engineering, *Minor in Robotics, Computer Sci.* **Overall GPA:** 3.50/4.0
The University of Texas at El Paso, College of Engineering   **Anticipated:** Spring 2026
Honors/Awards: College of Engineering Dean's List, University Honors Program
Scholarships: UTEP Academic Scholarship, Eta Kappa Nu Endowed School Scholarship

SKILLS

• Signal Processing	• Wireless Communication Protocols	• Robotic Circuit Design
• C, C++, Java, Python, Arduino	• GitHub, VS Code, Segger Studio, CCS	• Mechatronics, Soldering
• Linux/Ubuntu	• Machine Learning on Edge Devices	• Bilingual: Spanish, English

WORK EXPERIENCE

Walt Disney Imagineering – Show Control Hardware Intern | *Animatronics, Industrial Automation*   **Summer 2025**
- Designed and documented **wiring schematics** in AutoCAD, coordinating with mechanical engineers to integrate safely into moving robotic figures while ensuring durability and compliance with industrial safety standards.
- Developed a **portable Pelican case hardware-in-the-loop (HIL) test unit** for field validation of robotic actuators, enabling rapid diagnostics and commissioning in operational environments.
- Verified and supported integration of **real-time motion control networks (EtherCAT, CAN)** and **industrial control components (PLCs, safety interlocks)** to ensure deterministic performance and robust fail-safe operation.

UT Austin – ECE Next REU Program | *Batteryless Wearable Devices, CNN Classification, PyTorch*   **Summer 2024**
- Integrated a **kinetic energy harvesting** (KEH) circuit powered by an induction coil and **human motion** to drive an accelerometer and **Bluetooth Low Energy** (BLE) beacon, enabling **batteryless data transmission** in a wearable device.
- Optimized energy usage and data resolution, reducing the energy consumption of a **31-bit BLE package** from 37 µJ to 31 µJ at -30 dBm, enabling increased data transmission within the same **energy availability** of the device.
- Achieved a 98.2% validation accuracy in **human activity recognition** (HAR) by training a preliminary **convolutional neural network** (CNN) model on PyTorch utilizing accelerometer data collected across various physical activities.

TECHNICAL PROJECTS

Sun City Rocket Team – Autonomous Ground Station | *Avionics Systems, Long-Range RF Communications*   **Current**
- Designed an **autonomous antenna tracking system** utilizing **sensor fusion (Kalman filter)** of accelerometer, barometer, and GPS data to maintain real-time alignment with rocket trajectory.
- Implemented a **low-latency XBee telemetry uplink/downlink** using **FHSS** in the **900 MHz ISM band** for robust transmission of accelerometer and GPS data.
- Developed **C++ embedded control firmware** on a **National Instruments roboRIO,** implementing a **closed-loop PID** system to convert fused telemetry data into motor commands for **real-time antenna orientation.**
- Performed system-level **RF validation**, including **line-of-sight (LOS) range testing, SWR measurements,** and **end-to-end telemetry integrity checks** to ensure reliable communications throughout flight operations.

UTEP – Asynchronous Neuromorphic Architecture | *Dynamic Vision Sensor, Spiking Neural Networks*   **Current**
- Prototyping an **ultra-low power** autonomous navigation system with **Speck Dynamic Vision Sensors (DVS)**, **LiDAR**, and the **NVIDIA Jetson Nano**, leveraging **event-based vision,** interrupt-driven **SPI communication**, and custom **PCB design.**
- Developing an **asynchronous** neural processing pipeline using **Spiking Convolutional Neural Networks (sCNN)** to efficiently process sparse, **event-driven** data, enabling real-time obstacle classification and motion detection.
- Training and deploying custom asynchronous models using **SynSense's Samna SDK**, enabling in-sensor classification for rapid detection of **dynamic obstacles**, reducing bandwidth and **power consumption** targeting **below 300 mW** on average.

IEEE Region 5 – Robotics Competition | *Computer Vision, Autonomous Drone, ROS, Python, SLAM*   **Spring 2023**
- Led the development of an autonomous rover–drone system simulating a delivery truck navigating a neighborhood, with the drone performing aerial deliveries and providing real-time **localization** and navigation for **dynamic route mapping**.
- Programmed an autonomous DJI Tello drone using Python and OpenCV for **object recognition** and **asynchronous data communication** with the rover via a Wi-Fi access point.
- Implemented a **wireless communication** system with an MSP432-controlled rover transmitting real-time **odometry** and **localization data** to an ESP32, relaying data over Wi-Fi to a ROS-enabled Raspberry Pi for **autonomous navigation**.

PROFESSIONAL AFFILIATIONS & HONORS

Special Projects Member – UTEP Sun City Summit Rocket Team   **Fall 2024 – Current**
President – Robotics and Automation Society (IEEE RAS)   **Fall 2022 – Summer 2024**