

Camilo Bayona

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Skills

CAD: OnShape, AutoDesk Fusion360, Blender

Programming: C, C++, Python, Linux, Bash, Git

Toolchains: Cmake, G++, PlatformIO

Experience

Lead programmer, UF Dream Team Engineering – Gainesville, FL Feb 2026 – Present

- **MIDI Controller: Assisting patients in assistive therapy by developing a MIDI based controller**
- Simplified a multi stage MCU-to-Python-to-DAW pipeline into a direct USB MIDI implementation on a Raspberry Pi Pico W using TinyUSB and MIDI libraries, enabling direct integration with Ableton Live.
- Prototyped a breadboard circuit containing the Pico, various potentiometers and buttons, capable of enumerating from USB to Ableton Live, enabling control of DAW software.
- In progress: designing a custom PCB in KiCad to reduce footprint and improve usability based on DJ controller layout constraints.

Participant, DTE x SHPE Designathon – Gainesville, FL March 2026

- Collaborated in a 24 hour designathon to develop a 3D printed calculator mounted stencil featuring engineering symbols to help students study.
- Was awarded the title of 'Honorary Mention: Design Elegance'.

Officer, Santa Fe Engineering Club– Gainesville, FL Aug 2014 – Sept 2020

- Led electronics team in developing fundamental skills by providing introductory programming lessons in Python, hands-on learning with Arduino starter-kits.
- Guided team in parts list for the electronics side of an autonomous underwater vehicle (AUV) for the RoboSub competition in California.

Projects

Autonomous Panning Security Camera cambay/Autonomous-Webcam

- Created a closed-loop control system using OpenCV with a Haar cascade classifier for real-time face detection, converting face position error into motor actuation commands to center targets within the frame.
- Designed, soldered, and integrated an embedded motion control circuit (Raspberry Pi 4 + Arduino Nano + TMC2209 + NEMA 17) Pi 4 sends UART commands to Arduino via PySerial at a baud rate of 115200 for motor actuation.

3D Lidar SLAM Rover (In progress) cambay/rplidar_mks_driver

- Upgrading a Slamtec RPLIDAR C1 2D scanning system into a 3D LiDAR by mounting it on a servo-driven axis to generate stacked scans for 3D reconstruction using spherical coordinates.
- Writing drivers to implement UART-based control in C++ using raw hexadecimal command packets for scan initiation, motor control, and data acquisition.
- Storing point data with the intention of converting scans into usable Voxelmap using ROS2 for autonomous navigation.

Education

- **Santa Fe College**– A.A. in general engineering Feb 2024-Apr 2026
- **University of Central Florida**– B.S. in Computer Engineering Aug 2026-Apr 2028