

Fabio D. Salgado

McDonough, Georgia 30253 | 470-878-7155 | fsalgado3@gatech.edu | fabiosalgado.com | Pending Asylee

Objective

Computer Engineering student at Georgia Tech seeking a full-time engineering position focused on embedded systems, digital signal processing, and computer architecture. Hands-on experience developing real-time hardware/software systems, DSP applications, and networked embedded platforms using C/C++, microcontrollers, Raspberry Pi, and FPGA technologies.

Education

Georgia Institute of Technology | Atlanta, GA

August 2024 – Present

Bachelor of Science in Computer Engineering, Overall GPA 3.50 / Major GPA 3.60

Expected Graduation, May 2027

Berry College | Rome, GA

January 2021 – May 2024

Bachelor of Science in Dual Degree Engineering program transfer with 94 Credit Hours, Overall GPA 3.73 / Major GPA 3.82

Expected Graduation, May 2027

Skills

Programming: C, C++, MATLAB, Java, RISC-V assembly, VHDL (FPGA), RISC-V

Hardware: Raspberry Pi, ARM Cortex microcontroller, ESP32 microcontroller, FPGA, Oscilloscope, Logic analyzer

Software: Embedded Linux, FreeRTOS, GStreamer, OpenCV, Flask, Git, Quartus, Q-SYS Designer (Level 1 certified), Q-SYS Control 101 certified, AutoCAD, Autodesk Revit, Docker, LaTeX

Communication: Design Proposals, Technical Reports, Presentations (large and small audiences), wiring diagrams and schematics

Languages: English (fluent), Afrikaans (beginner)

Experience

NetPlanner Systems | Peachtree Corners, Georgia

June 2026 – July 2026

AV lab Programmer / Technician (12 hours/week)

Technology Systems Integrator.

- Programmed AV control systems and user interfaces in Q-SYS Designer, developing control logic, signal flows, and system controls.
- Built and configured AV rack systems for testing and commissioning, wiring equipment and verifying signal paths and functionality.
- Troubleshoot audio, video, and network-connected AV equipment, retrieving network device information for configuration and diagnostics.

Berry College IT Students (BITS) | Rome, Georgia

August 2021 – May 2024

PC Technician / PC Deployment and Support (12 hours/week)

- Imaged and deployed 150+ faculty/staff PCs valued at over \$50,000 across 8+ campus buildings with minimal downtime.
- Coordinated deployment schedules with a 4-person team and 20+ departments to support campus technology needs.
- Provided 3 years of frontline hardware, software, and user troubleshooting support.

Projects

Raspberry Pi Video over IP System

Summer 2026

- Designed a Raspberry Pi video-over-IP system using a Pi 5 as a central DSP/core node and Pi 4 source/sink nodes over Gigabit Ethernet/PoE.
- Built a real-time C++/GStreamer 1080p30 pipeline with OpenCV frame handling, H.264 software encoding, RTP packetization, and UDP streaming; parallelized pixel processing across CPU cores.
- Implemented convolution-based sharpening, blurring, edge-detection, and embossing filters using integer kernels and ARM-oriented optimization.
- Developed a Flask web UI and C++ socket interface for remote DSP control, integrating embedded Linux, networking, real-time processing, and system control.

ESP32 walkie talkies

Spring 2026

- Designed and built a pair of ESP32 walkie-talkies integrating I²S microphone/amplifier, OLED display, potentiometer, PTT control, and navigation interface.
- Leveraged dual-core architecture and FreeRTOS to separate real-time audio processing and wireless communication from UI/device-control tasks.
- Implemented 16 kHz voice sampling and ESP-NOW audio transmission using DMA buffers, circular buffering, and RTOS synchronization for continuous half-duplex playback.
- Applied DSP techniques including DC blocking, low-pass filtering, dynamic-range compression, pre-gain, fading, and soft limiting to improve speech clarity and reduce distortion.
- Configured peer-to-peer ESP-NOW communication using MAC addresses, delivery-status callbacks, and link-status detection across a 100-meter range.
- Created pin-level wiring diagrams documenting GPIO, I²S, I²C, RF interfaces, and power distribution.

Open-Channel Sensing & Impulse Noise Filtering

Spring 2026

- Developed a MATLAB communication-system simulation evaluating open-channel detection and impulse-noise filtering across varying channel counts and noise conditions.
- Compared MSE, adaptive thresholding, Welch PSD, and autocorrelation using ROC/AUC analysis and execution-time measurements.
- Implemented adaptive LMS, Hampel/median, wavelet, and amplitude-clipping filters for impulsive-noise suppression while preserving speech fidelity.
- Performed Monte Carlo analysis across 10–500 channels and –5 to 30 dB noise, evaluating detection accuracy and computational complexity; achieved 30–65 dB post-filtering SNR under high-amplitude impulsive noise.

DE10 Board LED peripheral

Spring 2025

- Designed a custom LED brightness peripheral for the DE10 FPGA board using VHDL and Quartus.
- Collaborated with a 5-person team to implement and test hardware functionality; authored technical documentation and presented project results.

Mbed Snake

Spring 2025

- Developed a real-time embedded Snake game in C++ using Mbed OS, interfacing a uLCD, navigation switch, and pushbuttons with a microcontroller.
- Implemented dynamic game-state management, collision detection, hardware abstraction, and graphics routines.

Relevant Coursework

Embedded Systems Design, Fundamentals of Digital Signal Processing, Applications of Digital Signal Processing, Digital System Design Lab, Programming Hardware and Software Systems, Arch, Systems, Concurrency & Energy in Computation.

For detailed information on other projects and myself, please visit my personal website portfolio: fabiosalgado.com.