

PARTH PATEL

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EDUCATION

Master of Science in Electrical and Computer Engineering

Aug 2024 - May 2026

University of Colorado Boulder

GPA 3.7/4

Relevant coursework: Embedded System Design, Real Time Embedded Systems, Concurrent Programming

Bachelor of Technology in Electronics and Communication Engineering

Aug 2020 - May 2024

Institute of Technology, Nirma University

Relevant coursework: Computer Architecture, Embedded Systems, Computer Networks

TECHNICAL SKILLS

Peripherals & protocols: GPIO, UART, SPI, I2C, ADC, DAC, DMA, Timers, Interrupts, PWM, Ethernet

Lab Skills: Oscilloscopes, Interface Analyzers, Soldering, Function Generator

Programming Languages: Embedded C, C++, Python, Bash, Verilog, 8051 Assembly, Rust

Tools & Technologies: Git, Keil, STM32CubeIDE, Quartus, Vivado, Libero, FreeRTOS, Perf

Microcontrollers/Processors: Intel 8051, ARM Cortex-M0, ARM Cortex-M4, Zynq-7000 SoC FPGA

PROFESSIONAL EXPERIENCE

Amazon Web Services (Annapurna Labs)

May 2025 – Aug 2025

Embedded Software Intern

Austin, TX

- Extended AWS's performance profiling tool for ARM Graviton CPUs, adding low-overhead PMU instrumentation for cycle counts, cache behavior, and microarchitectural stall analysis; improved profiling resolution by **25%** on internal workloads.
- Developed a hardware-event-triggered profiling pipeline that automatically captures performance traces when CPU/cache and custom hardware metrics thresholds are crossed; enabled efficient debugging for longer workloads.
- Built a ring-buffered pre-trigger capture subsystem that records context before and after performance violations, reducing false negatives and eliminating **>40%** of manual reproduction effort during root-cause analysis.

elInfochips, an Arrow electronics company

Jan 2024 - May 2024

Embedded Firmware Intern

Remote

- Implemented FreeRTOS-based firmware for BLE Mesh devices, including task scheduling, synchronization primitives, and ISR-safe messaging to support concurrent radio, sensor, and system tasks on constrained microcontrollers.
- Integrated and debugged BLE Mesh provisioning, heartbeat, and relay features using JTAG/SWD trace and UART logging to analyze packet flow, link failures, and mesh rejoin behavior.
- Built a Python-based automation framework to repeatedly test BLE node bring-up, connection timing, and mesh reformation, reducing manual test effort by **50%**.

ACADEMIC PROJECTS

Custom Embedded Development Board Bring Up [Link](#)

Aug 2024 - Nov 2024

- Designed and developed a microcontroller-based board using the AT89C51RC2, integrating peripherals such as NVS-RAM, EEPROM, LCD, GPIO, DAC, ADC, and SPLD. Additionally, implemented in-system programming and gained hands-on experience in hardware integration and low-level programming in assembly language.
- Wrote low-level firmware for terminal-based, menu-driven, user-interactive programs to allow the user to interact with on-chip as well as off-chip peripherals.

STM32-Based Oscilloscope Development [Link](#)

Oct 2024 - Dec 2024

- Engineered a functional oscilloscope using the STM32F091 board and ILI9341 TFT Display, implementing ADC and DMA with bare-metal programming for real-time signal acquisition.
- Conducted system-level verification to ensure accuracy in signal acquisition and processing. Added push-button to set voltage thresholds, attenuation, and slope adjustments, with real-time peak-to-peak voltage and frequency display.

TECHNICAL PUBLICATIONS

Real-Time Voice Recognition System using TinyML on Arduino Nano 33 BLE [Link](#)

Nov 2023

9th IEEE International Symposium on Smart Electronic Systems

Automated Compiler for Manycore Architectures [Link](#)

March 2024

10th IEEE International Conference on Advanced Computing and Communication Systems (ICACCS)