# Nolan Tuttle

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https://github.com/nolantuttle | https://nolantuttle.com/

## Summary

Detail-oriented Embedded Systems Engineer with hands-on experience in microcontrollers, hardware-software integration, and Linux-based systems, seeking opportunities in embedded software and IoT solutions.

## Technical Skills

Languages: Embedded C, C++, Python, MIPS/ARM64 Assembly
Platforms: ARM Cortex-M, ESP32, Raspberry Pi
Protocols: GPIO, I2C, SPI, UART

## Professional Experience

**Summer Externship** May 2025 – August 2025

- Completed externship developing proof-of-concept for automatic multicast tunneling between Linux machines using Linode's cloud computing platform to provision VMs and simulate multicast UDP traffic using smcroute, iperf, and Ubuntu's AMT module.
- Wrote Bash scripts to configure tunnel endpoints and analyzed network performance characteristics over private VLAN and public internet.

**Study Group Leader** Fall 2024 – Spring 2025

*Grand Canyon University, College of Engineering and Technology* *Phoenix, AZ*

- Coordinated a study group focusing on Computer Architecture and Operating Systems
- Collaborated weekly with 2-4 students by reviewing course materials and through programming exercises when applicable

## Projects

**GaggiaBerry - IoT Espresso Machine Controller** (https://github.com/nolantuttle/GaggiaBerry) June 2025 – Present

- Built custom controller on Raspberry Pi Zero 2 WH with I2C LCD, K-type thermocouple ADC, and digital water level sensors for precise real-time monitoring. Added multi-threaded data handling with synchronization to ensure reliable, deadlock-free operation across sensors.
- Migrating performance-critical logic from Python to C using memory-mapped GPIO, reducing response time significantly for temperature regulation.
- Deployed autonomous brewing service on Linux with auto-start, achieving seamless IoT integration and consistent espresso extraction.

**Pager - A Virtual Memory Manager** (https://github.com/nolantuttle/VirtualMemoryManager) March 2025

- Implemented a simplified virtual memory manager in C, simulating logical-to-physical address translation using page tables.
- Mapped logical pages to physical frames and handled reading/writing memory pages between input and output files for demonstration.

## Education

Grand Canyon University, Phoenix, AZ

*B.S. Software Engineering* *Fall 2022 – Expected Graduation April 2026*

Relevant Coursework:

- Embedded Systems
- Digital Logic and Design
- Embedded Systems II
- Computer Architecture
- Operating Systems
- Algorithms and Data Structure