Nolan Tuttle

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Summary

Embedded software engineering student experienced in real-time control, microcontroller firmware, and Linux-based embedded systems. Work includes ARM Cortex-M and Raspberry Pi platforms, sensor integration, and PID-controlled thermal systems implemented in C/C++. Seeking an embedded or systems-focused software engineering internship.

Technical Skills

Languages: Embedded C, C++, Python, VHDL
Platforms: ARM Cortex-M, RP2040, ESP32, Raspberry Pi
Concepts: Real-time Control Systems, PID Control, Linux Services, Memory-mapped I/O

Professional Experience

Summer Externship   May 2025 – August 2025
- Developed a proof-of-concept for automatic multicast tunneling between Linux machines using AMT, smcroute, and iperf; provisioned and managed test environments using Linode VMs.
- Wrote Bash scripts to configure tunnel endpoints and analyzed network performance characteristics over private VLAN and public internet.

Research Intern   Fall 2025 – Present

Grand Canyon University, Canyon Artificial Intelligence Research   *Phoenix, AZ*
- Working in a team of 5 engineers to deliver a robot prototype navigating with strictly computer vision; no LiDAR or GPS.
- Implemented a Raspberry Pi 5-based embedded controller with multiple cameras for stereovision and real-time processing. Assisted development of depth-based classification for a 72% CPU usage reduction. Responsible for market research for the Autonomous Image-based Machine (AIM) research group.

Projects

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

- Built custom controller on a Teensy 4.0 microcontroller
- 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
- Operating Systems
- Algorithms and Data Structures
- Computer Architecture