NOLAN TUTTLE

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SOFTWARE ENGINEERING 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++. Excel in competitive embedded or systems-focused software engineering tasks.

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

EDUCATION/COURSEWORK

Grand Canyon University, Phoenix, AZ - *B.S. Software Engineering*   *April 2026*

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

PROFESSIONAL EXPERIENCE

Summer Externship – Akamai Technologies   May 2025 – August 2025

- Developed 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   September 2025 – Present

Grand Canyon University, Canyon Artificial Intelligence Research   *Phoenix, AZ*

- Working in team of 5 engineers to deliver robot prototype navigating with strictly computer vision; no LiDAR/GPS.
- Implemented Raspberry Pi 5-based embedded controller with multiple cameras for stereovision & 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

Gaggietto - PID Espresso Machine Controller (https://github.com/nolantuttle/Gaggietto)   June 2025 – January 2026

- Built custom controller on a Teensy 4.0 microcontroller, migrating from a Raspberry Pi Zero 2 WH and achieving < 2s startup time, over a 90% improvement from initial release. Utilizes SSR to switch the boiler for PID control cycles, tuned for the boiler's high thermal inertia.
- Accurate boiler PID control within ±1ºC improving shot pull consistency, graphical OLED display showing heat curve, button debouncing, controls mode & temperature adjustment, custom open-source 3D printed enclosure.

PhytoPi – IoT Plant Monitoring System (https://github.com/nolantuttle/PhytoPi)   August 2025 – Present

- Capstone project for Software Engineering Program at GCU, building enclosed system using machine learning, sensors and camera images to analyze plant conditions and automate plant care.
- Features Raspberry Pi controller interfacing with soil moisture sensor, BME680 environment sensor, grow lights, and water pump, to offer insights about plant health through kiosk screen and mobile app built using Flutter.