

# Caleb Provost

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## PROFESSIONAL SUMMARY

Experienced embedded systems software engineer skilled in designing, developing, and implementing robust solutions for a wide range of applications, including consumer electronics, automotive electronics, and industrial automation. Proficient in embedded C/C++, real-time operating systems, hardware-software integration, and enabling the delivery of efficient and scalable embedded software. Demonstrating a strong commitment to professional development, I have earned a Master's degree in Electrical Engineering (MSEE) while working full-time, which has also improved my adept skills at collaborating cross-functionally to translate complex requirements into efficient and scalable embedded software. Demonstrated success in troubleshooting intricate hardware-software integration issues and delivering innovative embedded solutions that leverage the latest technologies to ensure high performance and reliability.

## EDUCATION

Master of Science in Electrical Engineering - Embedded Systems Engineering  
University of Colorado                      Boulder, CO                      May 2024

ABET Certified Bachelor of Science in Engineering Technology-Computers  
DeVry University                      Downers Grove, IL                      August 2019

## TECHNICAL SKILLS

- Proficient in designing customized embedded solutions and products based on research and development
- Expertise in embedded C/C++ programming for real-time, resource-constrained systems, including RTOS and bare-metal
- Full-stack and IoT integration utilizing HTML/CSS/JavaScript/SQL with bare-metal systems, SaaS, AWS, and more
- Strong experience with hardware-software integration, device drivers, and low-level peripherals
- Skilled in system architecture design, including abstraction layers and modular frameworks
- Adept at performance optimization techniques (memory, CPU, power)
- Familiarity with communication protocols (CAN, WiFi, Bluetooth, MQTT, A2B, I2S, SPI, I2C, and more)
- Experience with embedded software testing (unit, integration, validation)
- Expertise in version control, build automation, and CI/CD practices
- Proficiency in debugging complex hardware-software issues using industry tools, IDEs, and self-designed tools
- Experience developing firmware for microcontrollers, SoCs, and FPGAs including Arm, RISC V, Altera, Xilinx, NIOS, and more
- Experience with sensor integration, signal processing, and data analytics for IoT, backend systems, and UI frontend
- Familiarity with machine learning and AI techniques for embedded systems
- Skilled in embedded software documentation and technical writing, including simplifying content for publications and cross-departmental reviews and analysis

## PROFESSIONAL EXPERIENCE

Radio Sound, Inc.                      Louisville, KY                      December 2019 – Present  
*Software Engineer*

- Designed and developed cutting-edge embedded software for automotive infotainment systems
- Architected RTOS-based software enabling seamless integration of infotainment, CAN bus, and vehicle sensors/actuators
- Implemented robust embedded software designs ensuring high reliability and performance for in-vehicle and aftermarket audio
- Collaborated cross-functionally to translate complex requirements into optimized embedded solutions
- Pioneered agile practices and CI/CD to accelerate feature delivery and improve software quality
- Drove rapid prototyping and smooth integration of new hardware platforms
- Optimized resource utilization through strategic code organization and efficient design
- Established comprehensive test frameworks to validate embedded software
- Proactively resolved complex challenges related to real-time performance, concurrency, and hardware-software integration
- Participated in code reviews to improve quality and comply with coding guidelines
- Developed innovative algorithms for advanced driver assistance and autonomous functionalities
- Mentored junior engineers on embedded software best practices and troubleshooting techniques
- Documented technical specifications, user guides, and developer manuals to support maintenance and onboarding
- Contributed to the selection and evaluation of third-party software components and tools
- Demonstrated excellent communication and collaboration skills in cross-team project discussions

Electrolux

Louisville, KY

August 2018 – April 2020

*R&D Engineering Technician*

- Fabricated test fixtures, devices, and controls while developing tests to meet compliance and work orders.
- Created risk assessment programs and maintained laboratory data acquisition systems.
- Troubleshoot units and equipment for root cause analysis and redesign.
- Communicated technical results and records of tests for lab and customers.
- Developed and programmed test fixture to implement long-term reliability testing and data analysis.
- Acquired latest laboratory equipment to implement best practice procedures according to compliance regulatory bodies.

Kentuckiana Comfort Company

Louisville, KY

April 2018 – August 2018

*HVAC Electronics Technician*

- Evaluate electronic schematics and acquire necessary tools and equipment for assembling circuits and components.
- Responsible for installing and maintaining the electrical components in a 10 to 20 ton HVAC system, including all electrical wiring, controls, and other climate-control systems.
- Evaluated work orders and planned accordingly.
- Perform six sigma and industry standard 5S requirements.

Flex

Louisville, KY

January 2017 – April 2018

*Engineering Technician*

- Thoroughly understand customer needs when performing engineering duties and offer relevant products, solutions, and accessories to meet demand.
- Engineer and maintain up-to-date knowledge of the company's products, service features, accessories, and pricing plans, for technicians to utilize and repair.
- Provide front-line customer support, including technical product hardware and software troubleshooting and diagnosis.
- Act quickly and resourcefully to ensure that work is completed within specified time and quality parameters while performing support to repair technicians.
- Ensure an inviting environment for the customers by maintaining a neat and clean technical engineering department that exemplifies the priorities of in stock and services.

Teach and Learn in Korea (TaLK)

Republic of Korea

August 2014 – July 2016

*TaLK Scholar*

- Act as an ambassador for the United States of America while in South Korea and its education system.
- Perform community leadership roles, leading with exemplary behavior and a sense of work ethic that encourages the increased growth of the 'TaLK' Program.
- Foster successful and engaging ESL classes through the use of practicum, hands-on classes, and various cultural activities, all while performing 'TaLK' Scholar duties provided by the schools and Local Provincial Office of Education.
- Perform extracurricular activities to improve the student's education.
- Engineer ways to perform studies and complete school tasks during personal time.