Spencer Beer

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Summary

Strong academic record with a passion for continuous learning and a desire to contribute to cutting-edge technologies in the field of cyber security, embedded systems, machine learning, and automotive systems. Possesses a solid understanding of embedded programming, operating systems, and cybersecurity.

Education

Colorado State University | GPA 3.6 — Fort Collins, CO
Master of Science in Systems Engineering, Embedded and Heavy Vehicle Cyber Security — 08/2024 - 05/2026

Colorado State University | GPA 3.6 — Fort Collins, CO
Bachelor of Science in Computer Engineering, Embedded Systems, IoT, and Machine Learning — 08/2020 - 05/2024

Technical Skills

Programming Experience: Java, JavaScript, C, C++, SystemC, Python, MATLAB, Assembly (ARM, MIPS, x86, XTENSA), HTML, CSS (+Bootstrap), Verilog, VHDL, PowerShell, Bash, Sockets, SQL, YAML, Machine Learning (TensorFlow, TensorFlow Lite, PyTorch, scikit-learn, OpenCV), Parallel Programming (CUDA, OpenCL, OpenMP), Shell scripting, API
Software Tools: Visual Studio Code, Quartus Prime II, Keil uVision5, Cadence, Fusion 360, Git, GitHub, Microsoft 0365, GEM5, Sniper, Arduino, PlatformIO, SysAdmin Tools (ADUC, Clonezilla, MDT, SCCM, SaltStack, Docker, Ansible, and misc. command-line tools), Cybersecurity Tools (Wireshark, Nmap, Burp Suite, Ghidra, Metasploit, Nessus, and misc. command-line tools), Networking (Wazuh, WireGuard, pfSense, OpenWRT, VLAN configuration, DNS, DHCP), Automotive Tools (DG Tech, GNU Radio, Scapy-Autmotive, can-utils), Cloud Platforms (AWS, DigitalOcean), Virtualization (Hyper-V, Vagrant, WSL)
Other Skills: Soldering (including surface-mount technology), Reverse Engineering (hardware and software), Embedded OS (Yocto, Buildroot, FreeRTOS), Microcontrollers & SBCs (STMicroelectronics, Espressif Systems, Arduino, Raspberry Pi, BeagleBone Black), Software and Hardware Optimization Techniques, Logic Analyzers and Oscilloscopes, Various Communication Protocols (SPI, I2C, CAN, LIN, Ethernet/802.11xx, UART, RS-485/232, JTAG, SWD, MQTT, PCI, SATA), I/O (GPIO, ADC, DAC, PWM), Memory Systems (DDR, NAND, NOR, SRAM, DRAM), Standards (SAE, AUTOSAR, POSIX), RF/SDR (GNURadio, RTL-SDR, HackRF One), PCB Design (Altium Designer), Firmware Development (Drivers), Signal Processing (MATLAB, NumPy, SciPy), Agile and DevOps Methodologies (CI/CD).

Professional Experience

Colorado State University — Fort Collins, CO
Graduate Research Assistant | Embedded Security Engineer — 05/2024 - Present

- *Ultimate Truck Hacking Platform:* Custom Yocto OS research with the NMFTA, used heavy vehicle network analysis.
- *Vehicle Penetration Testing Platform:* ISO 24134 platform for mobile penetration tests in any vehicle environment.
- *CyberEvent SysAdmin:* Lead Network & IT Consultant for CyberX Challenges.
- *Patching ECMs using OFRAK:* Research with Red Balloon Security on encrypting CAN bus communications.
- *OneNet Gateway:* Research with NMEA on developing the first NMEA 2K to NMEA OneNet protocol converter.
- *Electronic Logging Devices:* Research and reverse engineering on the security of mandated IoT logging devices.

Colorado State University — Fort Collins, CO
Engineering Technical Services | Support Technician — 08/2022 - 01/2024

- *Development of Custom Tools:* PowerShell based, administrative, open-source tools used in software management.
- *Support Engineering:* Debugging hardware, software, scripting, writing technical documentation, and OS management.

Colorado State University — Fort Collins, CO
Engineering Success Center | Staff — 05/2022 - 08/2022

- *Windows 10 Kiosk:* Data collection, and statistical analysis regarding engineering student success.

Misc.

- *Licenses & certifications:* Bendix Brake Certified
- *Volunteering:* Black Hat MEA Car Hacking Village Instructor, Assistant Coach for XC and Track Team, and Ski & Snowboard Swap Volunteer
- *Hackathons & CTFs:* CyberSEED 2024 & 2025, SwampCTF 2024, MITRE eCTF 2025, CyberX Challenges, USDA RibClassification