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 embedded systems, machine learning, and automotive systems. Possesses a solid understanding of embedded programming, operating systems, and computer networking / security.

Education

- Colorado State University / Aug. 2020 – May 2024
Bachelor of Science in Computer Engineering **|** GPA 3.6 | Embedded Systems and IoT with a minor in Machine Learning
- Colorado State University / Aug. 2024 – May 2026
Master of Science in Systems Engineering | Research in Embedded and Heavy Vehicle Cyber Security

Technical Skills

***- Programming Experience*:**
- Java, JavaScript, C / C++, SystemC, Python (TensorFlow, PyTorch), MATLAB, Assembly (ARM/MIPS), HTML, CSS (+Bootstrap), Verilog, PowerShell, Bash, Sockets

***- Software Tools*:**
- Visual Studio Code, Quartus Prime II, Kiel uVision5, Cadence, Fusion360, Git, Microsoft 0365, GEM5, Sniper, Arduino, SysAdmin Tools (Clonezilla, MDT, SCCM, SaltStack, Docker, and misc. command line tools), Cyber Security Tools (Wireshark, Nmap, Burp Suite, Ghidra, and misc. command line tools), Home Networking (Wazuh, Wiregaurd, etc.)

***- Other Skills*:**
- Soldering, Reverse Engineering, Embedded OS (Yocto), Microcontrollers & SBCs (STMicroelectronics, Espressif Systems, Arduino, Raspberry Pi), Software and Hardware Optimization Techniques, Logic Analyzers and Oscilloscopes, Various Communication Protocols (SPI, I2C, CAN, Ethernet, etc.), VMs (VirtualBox, XCP-ng, VMware), I/O, Memory Systems

Engineering Projects

- Ultimate Truck Hacking Platform / Current:
- Research Project with the NMFTA, used in heavy vehicle network analysis.

- Smart 3D Printing / Current:
- Raspberry Pi 3B+ used as 3D print server and monitor, with upgraded Ender 3 Pro firmware.

- CAN-AUTO-IDS / May 2024:
- Custom autoencoder analysis in detection of common attacks on the CAN bus.

- Screamba / May 2024:
- Raspberry Pi 5, and knock-off Roomba retrofitted with an IMU used to scream at owners.

- Electric-Go-Kart / May 2024:
- Capstone project with E-Kart team at CSU. Served as the computer vision and ECU communications engineer.

- Autonomous Pedestrian Detection with Depth Estimation / Dec. 2023:
- Developed a Stereo Depth Estimation and object detection algorithm for the Raspberry Pi 4B.

- ESP32 "Smart Fish Tank" / May 2023:
- Team based, embedded sensor and monitoring project used for aquariums, developed with Arduino C++ libraries.

- ESP32 Temperature Sensor, "GenoSENSE" / Aug. 2022
- Assisted in the design of a real-time temperature sensing product for CSU's Bioengineering labs.

- Electric Water Bottle / Oct. 2019
- Designed and developed prototype, programmed in C++ with Arduino IDE using a recycled windshield washer reservoir.

Work Experience

- Research Associate, Systems Cyber, CSU / Current
- Bendix Brake Certified
- C/C++ programming
- CAN network development and diagnostics
- Embedded OS Development

- Engineering Technical Services Support Technician, CSU / Aug. 2022 – Jan. 2024
- Managed domain computers with SCCM
- Debugged hardware and software issues
- Gained fundamental skills in the CLI and scripting
- Worked on IT / administrative open-source tools
- Imaged and understand Windows 10/11 and Unix/Linux OS
- Wrote technical documentation and solutions articles

- Engineering Success Center Staff, CSU / May 2022 – Aug. 2022
- Developed a touchscreen kiosk solution for front desk with Windows 10, Power Automate, and PowerShell

Leadership & Involvement

- Cross Country & Track Team Leader / Dec. 2019
Assistant coach for high school track & xc team

- Ski & Snowboard Swap / Dec. 2015 – Dec. 2018
Organized affordable gear for local ski community