Falls Church, Virginia
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Christopher Boerner

Computer Engineer

Active Secret Clearance
Eagle Scout
boernerc20.me

Computer Engineering Master's graduate with experience in embedded systems, digital design, and electronics. Skilled in integrating FPGA and microcontroller platforms with Ethernet and serial networks for real-time data acquisition, test, and validation. Background in hardware/software co-design for aerospace and power systems applications.

Skills

Languages: C/C++, Python, Bash, Verilog, MATLAB

Systems & Platforms: Linux (Arch, Ubuntu), Windows, Docker, Git, Virtualization (VirtualBox)

Networking & Security: TCP/IP, MQTT, SSH, Network configuration

Software & Tools: OOP, Vivado/Vitis, STM32CubeIDE, KiCad, LTSpice, Cadence Virtuoson

Hardware Integration: FPGA/SoC, Circuit Design, Embedded Linux deployment, UART/SPI/I2C interfacing

Education

Master of Engineering in Computer Engineering — May 2025
Virginia Tech – Focused on Computer Systems – GPA: 3.8 — *Alexandria, Virginia*
Advisor: Dr. Cindy Yi (Virginia Tech)

Bachelor of Science in Computer Engineering — May 2024
Virginia Tech – General Computer Engineering – GPA: 3.6 — *Blacksburg, Virginia*

Technical Experience

Northrop Grumman | Space Systems — Nov 2024 – Present
Pathways Systems Engineer — *McLean, Virginia*
- Develop and execute test scripts using NASA STOL syntax for the HALO module of the Gateway lunar space station, conducting validation on simulated and physical hardware in the flatsat environment.
- Analyze C/C++ flight software to define command sequences and telemetry monitoring requirements, supporting integration and testing activities for the Artemis program.

Virginia Tech | FPGA-Accelerated Echo-State Network (Master's Project) — Nov 2024 – May 2025
Graduate Researcher — *Alexandria, Virginia*
- Designed an FPGA SoC implementing an Echo-State Network for real-time wireless radio channel prediction.
- Developed a TCP server for Ethernet-based communication between the Linux client and Zynq SoC.
- Implemented firmware modules for data buffering, fault handling, and timing verification

Grenoble Electrical Engineering Laboratory | Expe-SmartHouse Project — Jun 2024 – Aug 2024
Research Intern — *Grenoble, France*
- Designed a distributed control system integrating photovoltaic energy sources and Wi-Fi connected microcontrollers.
- Programmed MQTT data exchange for power system coordination between houses and a centralized Raspberry Pi energy manager.

NAVAIR – Aircraft Data Acquisition System | Senior Design Project — Aug 2023 – May 2024
Project Member — *Blacksburg, Virginia*
- Developed a DAQ for aircraft diagnostics using STM32 and Artemis MCUs with UART and RF
- Designed PCB interfaces with power regulation, analog signal conditioning, and sensor isolation for vibration, temperature, sound, and humidity monitoring.
- Collaborated with my team on system integration, power distribution, and hardware verification.

Projects

Academic & Course Projects

VLSI Design Project | 12-bit Multiplier in Cadence Virtuoso
Nov 2023 – Dec 2023
- Designed a 12-bit Braun multiplier (schematic/layout) with carry-select adders in Cadence Virtuoso
- Verified functionality through DRC/LVS/PEX checks and measured propagation delay, power, and area for ADP optimization.

Integrated Design Project | Blood Oxygen Sensor
Jan 2022 – May 2022
- Created a multi-stage amplification and filtration circuit for photodiode sensor signals.
- Multiplexed between conditioned red and infrared channels to calculate blood oxygen saturation.

Personal Projects

Minecraft Jukebox Replica
Jun 2025 – Sep 2025
- Designed a proto-board for RFID sensing, power delivery, and analog audio output.
- 3D-printed enclosure and RFID-tagged discs trigger sound playback via ESP32 firmware.

FPV Drone Design and Build
May 2023 – Present
- Built and tuned a 5" FPV drone with GPS telemetry, flight controller, and fail-safe power system.
- Configured radio link (ELRS) and PID loops for stable, high-performance flight.