[John Gagnon]

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Computer Engineer seeking hardware, firmware, and embedded roles, with prior experience spanning the computing stack. I'm well-rounded, but my skills center around Digital Design, Programming, and Signals. Currently living in Hillsboro, OR and willing to relocate for internships and long-term employment.

Skills

Hardware	Digital Design & Verification, System Verilog, Computer Architecture, CMOS VLSI Logic and Layout, Digital Systems Testing, Lab Equipment
Programming	Python, C/C++, C#, Assembly, and ready to learn more.
EDA	Cadence Virtuoso, Calibre DRC/LVS, Quartus, GEM5
Scripting & Dev	Git, Linux, VM & Containers, Networking

Education

Georgia Institute of Technology

GPA: **3.5**

M.S. in Computer Engineering — August 2024 → May 2026

- **GLSI**: VLSI with a focus on semiconductor physics limiting performance.
- **Digital Systems Testing**: Automatic Test Generation, Fault Propagation, and Faulty Logic Simulation Algorithms in Python.
- **Advanced Programming Techniques**: Parallel programming techniques in CUDA/pthreads/OpenMPI.
- **Digital Communications**: Design and analysis of high-performance signaling solutions in constrained channels.
- **Power Electronics**: DCDC and ACDC converter design.

Virginia Tech

In-Major GPA: **3.79**, Last 60 GPA: **3.91**

B.S. in CPE - VLSI / Chip-Scale Integration — August 2020 → May 2024

- **RTL & Architecture**: Created a digital MIDI synthesizer and VGA visualizer on an FPGA in Digital Design II. Supported by a tool chain for converting images and MIDI files into my format (System Verilog / Quartus / Rust). Memory architecture comparison using GEM5 in Computer Architecture II.
- **VLSI**: Design/Layout/Area-Delay Product optimization of a 16-bit fast adder, numerous D Flip-Flops, and a 12-bit Booth Encoded Wallace Tree Multiplier layout (Cadence Virtuoso / Calibre LVS).

  Designed a fixed precision Matrix-Vector Multiplication ASIC (SystemVerilog/Python).
- **Analog Circuits**: **(Best in Class)** award for Signals & Systems. Created an Electrocardiogram amplifer on breadboard with 4 filter stages.
- **Software Design**: **(Best in Class)** award for Embedded Systems (C). Lisp Interpreter & QT5 rendering program (C++).

Work Experience

Moseley Architects

Richmond, VA

Software Engineer — Jan. 2017 - Current

- **Web Development**: Starting as an intern, collaborated with SMEs and the Board of Directors to create a modern website (Linux / PHP / Javascript).
- **Development**: Helped modernize our tech stack and security (classic ASP to .NET) by almost 20 years. Created hybrid cloud .NET library and apps, replacing old infrastructure. Developed a Web-based project bidding service with API and management interface (C#, PHP, Ansible, Linux, Networking).

Personal

RISC-V RV32I Core

- RV32I Core using SystemVerilog / Verilator / Quartus. Currently integrating UART/USB peripherals into its custom Operating System.

Custom Keyboard

- Designed and built my own keyboard. I ordered the custom PCB (KiCad) and components, then soldered, assembled, and flashed the microcontrollers to make a keyboard tailored to my needs.

Framework Laptop Board Repair

- Through reading the laptop's schematic, soldering probes to the Embedded Controller / BMC, and reverse engineering the NOR flash on a working laptop (Hot Air + SMD Soldering). Following the repair, I built a custom storage chassis and power supply for its use as a server for Network Attached Storage and a Virtual Machine host.