

Matthew Boler

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Education

- **Auburn University** Auburn, AL
M.S., Mechanical Engineering (Thesis Option) May 2019 - August 2021
 - Thesis:
 - Graduated with **3.86** cumulative GPA.
 - Relevant courses: Optimal Control and Estimation, Nonlinear Systems and Control, Digital Image Processing, Probability and Stochastic Processes
- **Auburn University** Auburn, AL
B.S. Mechanical Engineering, Computer Science Minor 2014-2019
 - Graduated with Honors, **3.56** cumulative GPA.

Work Experience

- **D-Wave Systems** Vancouver, BC
Junior Research Scientist and Software Engineer May 2002 - Aug. 2002
 - Implemented quantum computing algorithms in a JAVA quantum computer simulator, such as quantum Fourier transform, and the quantum eigenvalue finding algorithm.
 - Implemented algorithms for generating Hamiltonians for small molecules.
- **EXI Wireless** Richmond, BC
Bluetooth Group Software and Hardware Engineer May 2001 - Aug. 2001
 - Wrote firmware and PC software tools to implement an embedded FLASH/EPROM memory serial programmer for an Atmel Thumb AT91FR4081 processor.
 - Tested, debugged, and fixed Bluetooth development boards with hardware problems.
 - Programmed an embedded serial command interface and memory peak/poke utilities.
 - Integrated EXI's patient monitoring system with Bluetooth wireless networking technology.
- **EXI Wireless** Richmond, BC
RFID Tags Group Hardware Engineer Sep. 2000 - Dec. 2000
 - Managed a Bluetooth daughter-board project; created schematics and PCBs using OrCAD.
 - Created an embedded web server demo using a DOS Stamp single-board computer.
 - Designed and implemented an automated RFID Tag Tester. Created schematics and PCB using OrCAD, and programmed GPIB and serial port communication routines in C.
 - Tested RF ID tags using RF equipment (spectrum analyzers, attenuators, TEM cells, antennae).
 - Programmed GPIB data acquisition routines in C for an RFID RF Immunity testing program.
- **Dr. Andre Marziali's Biophysics Lab** UBC
NSERC Research Enginner May 2000 - Aug. 2000
 - Developed novel technology for thermal cycling of DNA samples in sub-micro litre volumes.
 - Designed mechanical and electrical components for a 384-sample prototype system.
 - Wrote control software/drivers in LabVIEW for the gantry robot and plate stacker.

- Built three prototypes for a 384 hole aluminium thermal cycling block.

- **Nortel Networks, OPTera Solutions, Photonic Group** Kanata, ON
Research Engineer *Jan. 1999 - Apr. 1999*
 - Designed a new method of measuring thermal and adiabatic chirp in 1.25/2.5 GHz Lasers. This new method has now been patented by my supervisor Kihong Kim (U.S. patent # 6,178,001).
 - Tested and characterized laser diodes, DWDM filters, and Mach-Zehnder Interferometers
 - Programmed automated DC Laser Testing and Mach-Zehnder Interferometer data acquisition and analysis programs using LabVIEW (over GPIB).
 - Constructed Mach-Zehnder Interferometers using bare fibre spliced together, and characterized them.
 - Was responsible for all lab testing routines involving lasers, filters, and interferometers.

School Projects

- **SpectraVu Medical** Vancouver, BC
Engineering Physics Project Lab, APSC 479 *Sep. 2001 - Apr. 2002*
 - Designed and implemented a digital video processing system for lung cancer imaging,
 - Selected components (video DAC, ADC) and created schematics in OrCAD.
 - Implemented image processing functions and data control blocks in VHDL using an Altera ACEK1K FPGA. Learned VHDL and MAX+PlusII development tool on my own time.
- **Analog Circuit Design and MOSFET Device Design**
Semiconductor Devices Course, EECE 480 *Sep. 2001 - Apr. 2002*
 - Designed a high-frequency cascode amplifier, simulated it using HSPICE, and did layout using Cadence Virtuoso Layout software. Manufactured on a Gennum GA911 chip.
 - Designed and simulated a deep sub-micron (70 nm channel) MOSFET using MEDICI.
- **Low-cost Optoelectronic Localizer**
Engineering Physics Project Lab, APSC 459 *Sep. 2000 - Apr. 2001*
 - Worked on the LoCOL (Low-cost Optoelectronic Localizer) project in a team of three.
 - Programmed a PIC microcontroller to control the timing of the three CCD cameras.
 - Designed power supply and re-built electrical circuits for the CCD sensors, processors.
- **Other Projects**
UBC and at home *1999-2000*
 - Designed and debugged a digital voltmeter using a Motorola 68000 processor.
 - Added features to the digital voltmeter including scrolling text, and a warning buzzer, which won 3rd place in the IEEE Voltmeter Competition.
 - Constructed and debugged a digital clock on a PCB for PHYS 159.
 - Built an AM short-wave radio at home, on a 2" × 2.5" piece of breadboard.

Skills

Languages: C++, Python, Matlab, Julia

Operating Systems: Linux (Debian), Solaris, UNIX, MacOS X, Windows 95/98/NT/2000/XP

Applications: Mathematica, MatLab, GNU Octave, LabVIEW, Cadence, L^AT_EX, OpenOffice, MS Office XP, OrCAD schematic capture & PCB layout, Altera MAX+PlusII VHDL FPGA Design

Lab Skills: Digital/Analog Scopes, Spectrum Analyzer, Function Generators

Fab Skills: PECVD and sputtering deposition, UV lithography, wet etch, dry etch (RIE), mask aligner, step profiler, ellipsometry, infrared spectroscopy, x-ray diffraction

Miscellaneous: software configuration management, strong verbal and written communication skills, excellent troubleshooting and debugging skills, exceptional problem solving skills, good teams skills

Interests

Academic: Solid state devices, nanotechnology, photonics, microcontrollers, RF/wireless

Sports: Playing hockey and swimming

Computers: Currently maintain two official Debian Linux packages, Mozilla beta tester, enjoy using and learning Linux systems, Building electronics projects at home, and writing JAVA software

Musical: Playing guitar and piano

Membership: Student member of IEEE since 1998, Materials Research Society member since 2002

Other: Reading novels