Ana Ciocoiu

Portfolio: https://waywardphoton.github.io/ +1 (604) 379-2376

Qualifications

- Software skills: Python, C, C++, x86 Assembly, ARM Assembly, VHDL, Linux
- Hardware skills: embedded systems, PCB design and layout, microelectronic circuit design

Work Experience

Professional Development Consultant, Quantum Algorithms Institute (Vancouver, BC) 11.2023 – Current

- Establishing and maintaining strategic partnerships with educational institutions and industry organizations
- Creating tailored professional development initiatives in STEM

Embedded Software Engineering, Photonic (Vancouver, BC) 05.2022 – 06.2023

- Designed, implemented, and debugged digital control circuits containing programmable logic devices and FPGAs
- Wrote bash scripts to enable and automate deployment of Petalinux on Zynq FPGA board with embedded ARM cortex
- Developed devices drivers in Python based on the VISA communications driver and existing APIs (Python or C++)
- Wrapped existing C libraries in Python using ctypes, merged new drivers into in-house control software
- Actively contributed to bug fixes, package management, and code reviews for in-house software
- Experience with test-driven development: wrote unit tests in Python for drivers
- Improved git workflow by implementing and teaching new team members about continuous integration (CI)

Seminar Instructor, Engineers and Geoscientists of British Columbia (Vancouver, BC) 06. 2022, 11. 2023

- Designed and taught day-long seminars on introductory quantum computing
- Adapted highly technical material to suit professional engineers with minimal background knowledge
- Designed interactive Python coding activities to introduce fundamental quantum computing concepts
- Hosted the workshop on a shared server with Jupyterhub, allowing participants to run coding examples
- Created engaging course webpages using matplotlib and plotly to visualize quantum computing concepts

Graduate Research Assistant, University of British Columbia (Vancouver, BC) 01.2021 – 06.2023

- Interpreted and processed data using Python for use in academic presentations, conferences, and journal papers
- Used packages such as matplotlib to create compelling data visualizations
- Developed electrical control schematics and procedural documents for use within the research group
- Developed computer simulations in Python to investigate physics of electron spins in semiconductors

Software Engineering Co-op, Quantum Institute (Sherbrooke, QC) 05.2020 – 09.2020

- Conceptualized and crafted simulation platform using TCAD tools for semiconductor manufacturing process
- Designed TCL scripts to enable design automation and facilitate interaction with design and analysis tools
- Drove testing and optimization of software platform for qubit design; provided guidance to process engineers
- Integrated semiconductor manufacturing process into hardware design stage, streamlining design process

Electronics Engineering Co-op, Technische Hoschscule Mittelhessen (Giessen, Germany) 05.2019 – 09.2019

- Coded and debugged microcontroller in C to automate operation and data collection from laser spectroscopy system
- Engineered analog electronic circuit for laser diving circuit; designed and fine-tuned PCB layout to specifications
- Eliminated signal propagation delay by testing, researching, and upgrading electronic circuit components

Education

MASc Electrical Engineering, University of British Columbia 01.2021 – 06.2023

BASc Electrical Engineering, University of British Columbia 09.2016 – 01.2021

Project Experience

8080 Emulator (2022). Creating an emulator of the 8080 chip in C++. Researching and implementing assembly language operations, creating a method for simulating and handling interrupts. Implementing graphics using OpenGL.

Superconducting Circuit Design (2021). Term project for a course on superconducting circuit design. A circuit containing multiple co-planar waveguide resonators operating within a range of 4-8 GHz with and without SQUID arrays is designed and laid out for fabrication. Python scripting used to customize structure design and simulate using Qiskit metal framework.

Variational Quantum Eigensolver (2021). As part of a Quantum BC workshop team, we created a variational quantum eigensolver (VQE) that finds the ground state energy of the hydrogen molecule using available quantum resources. Entire simulation is coded ground-up in Python using available packages. Noise mitigation is also applied to give a better solution. We won third place in the competition.

Clubs

Maple Bacon. Learning about network vulnerabilities and cybersecurity through a series of gamified hacking challenges. Developing skills in C, C++, Python, and x86 Assembly.