Engineering Physics 5th Year
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Basil Wong

Technical Experience: Python, C++, C, Java, MATLAB

Walus Labs – Undergraduate Researcher – (April 2018 – Sept 2018)

- Part of a 5 person team researching the simulation of Quantum Cellular Automata
- Responsible for creating the physics engine computing the Quantum Coherence Vectors over time
    - Utilized SUNDIALS(C++), Boost(C++), NumPy(Python) to compute ordinary differential equations
    - Engine is self contained package (C++ and Python versions)
    - Integrated into QCA Designer CAD tool

Neurio Technology – Hardware/Software Engineer Coop – (April 2017 – Sept 2017)

- Independently designed and implemented testing system to be integrated with the overseas manufacturing process of current transformers
- Designed and prototyped the testing jig (10 units/5 seconds, 20,000 unit maintenance lifetime)
    - Managed $5000 budget for sourcing and purchasing required parts
    - Designed and manufactured custom parts using *AutoCAD* and in-house 3D printing
- Wrote the *python* scripts for testing the specifications of each unit with API to Arduino slave
- Wrote the *python* scripts for logging, processing and analyzing the test data of thousands of units for the purpose of quality assurance and optimization
- Worked with contract manufacturer in China to get manufacture test system running at the location of manufacturing (Changzhou)
- Part of a 4 person hardware team in a 20 person company, projects were completed independently

Intel – Embedded Systems Engineer Coop – (Jan 2016 – April 2016) Vancouver, Canada

- Validation testing of new Solid State Drive Controller *ASIC*
- Wrote and ran *Python* scripts that interacted with C-based framework
- Debugged and modified 20+ *Python* test programs from previous build to validate current *ASIC* version that the team was working on
- Worked in a small team of 4 for most of the term

Electronic Arts / VMC - Quality Assurance - (Jul 2015 - Sep 2015 and Jul 2014 - Sep 2014) Burnaby, Canada

- Recognized, indexed and described reproduction steps of 100+ problems on 4 different game consoles (Sony, Microsoft)
- Employed Console Developer Software(Xbox One Manager, PS4 Neighborhood, Juice) to log and analyze game data and crash logs

UBC Orbit – Communication and Data Management Lead (Sept 2017 – Sept 2018) Vancouver, Canada

- Team Lead of the 8 person Communications Data Management Team
- Management role: Hardware/Software integration with other teams(COMMs, Payload), assigning members tasks to keep the team on schedule, ramping up new team members
- Technical role: Implementing protocol API for communication between microcontrollers and the modules of other teams over *SPI, I2C, UART*
- Spearheaded design and prototype of triple redundant STM32f401 microcontrollers for space applications
    - Estimated at 10% of the cost of a normal radiation hardened microcontroller
    - Successfully tested a prototype under proton beam at TRIUMF facility November 2017
    - Design is based on C

Technical projects/Labs

Projects on GitHub: https://github.com/basilwong

- gyrocompass-sim (Python)
    - Simulates the movement of a gyrocompass and how its change in angular momentum overtime evolves due to planetary rotation
- simple-sundials-example (C++)
    - Examples and setup instructions for SUNDIALS packages.
    - SUNDIALS: SUite of Nonlinear and DIfferential/ALgebraic Equation Solvers
- small-steps (Native React)
    - Lumohacks Hackathon Project: Cross Platform Mental Health Smart Phone Application
- quantum-dot-cellular-automata (MATLAB)
    - Project focuses on solving the general Hamiltonian of two kinds of QCA circuits
- monte-carlo-2D-ising (MATLAB)
    - Simulates the two-dimensional Ising model using the Metropolis-Hastings algorithm.

Uber Bots Competition – Electrical/Software Lead (May 2016 - August 2016)

- Designed and built a fully automated robot that picked up and dropped off stuffed animals
- Robot operated with a custom heavy duty version of a Arduino board (TINAH)
    - CPU AI for path correction, locating passengers, navigating obstacles (walls, opposing robot), optimized map navigation emphasizing speed and efficiency

Additional Experience with the following Hardware/Software

- Arduino, STM, Nordic Microcontrollers
- Raspberry Pi 3 Model B
- ModelSim, Quartus, Altera DE FPGAs
- Microsoft, Linux, OS
- Eagle

Other Experience

Indigo Books - Customer Service Rep./Cashier/Stock (Jun 2011 - Dec 2011) Vancouver, Canada
President/Member of Sentinel Secondary Student Council - (Sep 2012 - Jun 2014)
Harmony Arts Festival - Production Crew Member (Jun 2013 - Jul 2013) Vancouver, Canada

Education

University of British Columbia, Applied Science, 5th Year Engineering Physics - (Sep 2014 - Present)

Awards and Achievements

May 2015 - Standing 1 - (UBC Faculty of Applied Science) Dean's Honor List
June 2014 - Park Royal Scholarship - Achievement in community events, sports and extra-curricular activities
June 2014 - Provincial Academic Scholarship - Achievement in Provincial Exams
June 2014 - Service Award as Graduating Class of 2014 President
June 2010 - 2014 - Sentinel Secondary School Principals List 4.0 Award

Activities and Interests

Loves hockey, football and basketball. Follows the NHL, NFL and NBA.
Playing guitar, piano, avid reader