

Hayden Tsui

4A Mechatronics Engineering | University of Waterloo

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SKILLS

Hardware: Analog/Digital Circuit Design, Schematic Capture, PCB Design, Board Bring Up and Validation

Lab Experience: Oscilloscopes, Function Generators, VNA, DMM, Equipment Automation, Soldering (>=01005)

Tools: Ansys HFSS, Cadence ADS/Allegro, Altium, DxDesigner, PADs Layout, LTspice, EAGLE and SolidWorks

Software : Python, Bash, C, C++, MATLAB with experience in SPI, I2C, UART, PCIe protocols

EXPERIENCE

Electrical Test Engineer Intern at Facebook, Menlo Park, CA May- Aug 2018

- Ansys HFSS & ADS Channel Link Simulation of PCIe Gen 4 to characterize eye and optimize Tx/Rx params
- Signal Integrity Validation of high speed protocols such as PCIe Gen 3 & DDR4 and other serial interfaces
- Worked with ODM to facilitate and troubleshoot factory bring up, functional failures

iPhone Baseband Hardware Design Intern at Apple Inc, Cupertino, CA Sept - Dec 2017

- Defined **PMIC architecture**, requirements and specs for custom silicon used in future generation products
- Validated Baseband/RF systems involving high speed signals and RF interfaces such as **PCIe and RFFE**
- Owned the design of development boards and debug flexes for the iPhone RF team
- **Python automation** to control power supplies, DMM, CWMs, oscilloscopes and devices under test

iPhone Baseband Hardware Design Intern at Apple Inc, Cupertino, CA Jan - Apr 2017

- Wireless communication hardware design ranging from **characterization, MLB schematics to PCB layout**
- Collaboration with RF engineers regarding RF hardware architecture for 2G/3G/LTE cellular technologies
- Improved accuracy of power measurement platform by 80%, optimizing calibration algorithms in **Python and C**

Apple TV Hardware Engineering Intern at Apple Inc, Cupertino, CA May - Aug 2016

- Designed PMU test board from start-finish from **spec definition, schematic capture, board design to bring-up**
- Gained solid understanding of board design process such as **stack-up, impedance control** and constraints
- Developed **embedded C** code for on-board MCU to monitor and control battery charging via I2C
- Wrote numerous **Python and Bash** scripts to extract, process, and visualize data from 275,000 + files

Hardware Design Engineering Intern at Nanometrics, Ottawa, ON Sept - Dec 2015

- Assisted in the **PCB layout and multi-layer routing** of a 4 layer PSU PCB, implementing a fly-back converter
- Designed and implemented a SD/EMMC to USB interface via **SPI & 4-bit mode**
- Reduced power consumption of instrument by 12% through **component selection** and experiments
- Developed understanding of **EMI certification** through involvement in certification testing

PROJECTS

Bass-Boosted Headphone Amplifier, USB Rechargeable

- Conducted a **SPICE simulation** using LTSpice to model bass-boosted frequency response and behaviour
- Component Selection, **Schematic Capture, PCB layout** of a 2 layer board using DxDesigner and PADs Layout

EDUCATION

Candidate for B.A.Sc in Mechatronics Engineering, GPA: 3.97, University of Waterloo

Sept. 2014 - Present