NATHAN LEUNG *Mechatronics Engineering, University of Waterloo*

neleung@edu.uwaterloo.ca | 519 903 6247 | nathan-leung.github.io

Summary

- Skilled software engineer with experience in **embedded systems** and **audio digital signal processing**
- Languages: **C**, **Python**, **Java**, **C++**, and **MATLAB**
- Tools/Protocols/Etc: Bluetooth LE, Android App Dev, scikit-learn, NumPy, Git, Google ProtoBuffs, SMS

Experience

Audio Software Engineering Intern - HomePod | **Apple Inc.** Summer 2017

- Built internal tools in python to test and analyze the reliability of audio-focused HomePod features
- Developed a classification learning model to predict errors and optimize tuneable feature parameters
- Detected and fixed major bugs which brought minimum error rate down from 4% to 0%
- Applied knowledge of audio digital signal processing to simulate environmental audio effects for testing

Embedded Software Developer | **Clear Blue Technologies Inc.** Fall 2016

- Contributed to the embedded software architecture for cloud-connected solar/wind powered street lights
- Designed and developed messaging API between the controller and cellular modem with AT commands
- Built SMS-based communications engine to manage operation when primary cloud connection drops
- Reduced the hardware failsafe latency—to disable ports with unsafe power levels—from 1s to 0.25s

Research and Development Engineer | **Lumentra Inc.** Winter 2016

- Developed a smart light-intensity measuring device that is controlled by an Android app over Bluetooth LE
- Prototyped with a microcontroller (running an RTOS) to collect data from an I2C light sensor in C
- Implemented Android App features such as real-time graphing and SQLite database management.

Engineering Design Co-op | **Centerline Ltd.** Summer 2015

- Developed a work flow system to prepare aluminum rods; reduced time of the existing process by 45%
- Designed and edited CAD models of Centerline products using Autodesk Inventor 2014 and AutoCAD

Projects | nathan-leung.github.io/projects/list

Zombie Survival Embedded Video Game | C

- Top-down survival game built on an embedded microcontroller with a real-time operating system
- Player uses bombs to kill the simple AI 'zombies' which move towards the player position on an LCD screen

Audio Frequency Spectrum Visualizer | MATLAB

- MATLAB application that displays the magnitudes of frequency bands of an audio sample in real-time
- Uses 10 simultaneous band pass filters to measure each band, and displays the magnitudes every 50ms

Education and Coursework

Mechatronics Engineering (3rd Year) | University of Waterloo Fall 2014 to Winter 2019 (Expected)

- 91% cumulative average; Ranked 2nd out of 87 students in most recent term

Machine Learning Course | Andrew Ng, Coursera In Progress

Automate the Boring Stuff with Python | Al Sweigart, Book Completed