SIMON CHEN

4A MECHATRONICS ENGINEERING
UNIVERSITY OF WATERLOO

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SKILLS

- **Programming Languages:** C, C++, Python, PLC, SQL
- **MCU / Processors:** STM32F4, STM32L4, Atmega, ESP8266, PIC17
- **Protocols / Interfaces:** SPI, I2C, UART, USB, RS232
- **Hardware:** Analog / Digital Circuits Design, Schematic Capture, PCB Layout, Soldering, Machining
- **Electronics Debugging:** Oscilloscope, DMM, Logical Analyzer
- **Software Tools:** Keil μVision, Arduino, Git, Altium Designer, OpenCV, MATLAB / Simulink, SolidWorks

EXPERIENCE

Mechatronics Engineering Jan - Present
Nymi Inc | Toronto, ON CA
- Researching and integrating IMU motion recognition features with STM32L4 for the next generation Nymi Band

Drone Research Assistant May - Aug 2018
University of Waterloo | Waterloo, ON CA
- Prototyped a wirelessly-controlled magnetic docking station to automatically charge a drone when landed
- Designed two-layer PCBs for controlling electromagnets, drone onboard charging, and landing station signalling
- Implemented C++ code in Arduino for drone landing detection and charging process control

Design Verification Specialist Sep - Dec 2017
Evertz Microsystems | Burlington, ON CA
- Designed a two-layer PCB with redundant power in PADs Logic for product GPIO testing
- Troubleshooted product implementations of serial interfaces and ethernet protocols (SDI, ASI,TCP, UDP, IP)

Data Mining & A.I. Engineering Jan - Apr 2017
daVinci Retail | Toronto, ON CA
- Developed a sales trend forecasting model by employing exponential regression using Python and TensorFlow
- Achieved a 72% product sales prediction accuracy with 15,000+ samples with a deep neural network prototype
- Implemented a multi-dimensional clustering algorithm based on K-means++ used for client sales analysis

PROJECTS

Autonomous Search & Rescue Robot
- Designed an Atmega-2560-based autonomous robot to locate a target and return-to-base across a barrier
- Implemented firmware in C for various I2C sensor data retrieval, motor PWM controls, and PID autocorrections
- **Technologies / Protocols**: Atmega 2560, VL53L0X ToF, BNO055 IMU, Ultrasonic, I2C, C, PID, Altium Designer

RC Micro Drone
- Designed and laid out a two-layer PCB drone with a STM32F4 processor, MPU9250 IMU, and DC motor drivers
- Developing firmware in C for PWM radio communication, motor PWM controls, and drone PID stabilization
- **Technologies / Protocols**: STM32F4, MPU9250 IMU, SPI, UART, C, PID, Altium Designer

Path Navigating Robot
- Constructed a PIC17-based line-following robot with op-amp signal filtering and sensor feedback circuits
- **Technologies / Protocols:** PIC17, Voltage Regulators, C, Sensors (Hall-effect, Infrared, Optical Encoders)