SIMON CHEN

MECHATRONICS ENGINEERING 3A

x454chen@edu.uwaterloo.ca
github.com/xychenSimon
xychenSimon.github.io

SKILLS

- **Programming Languages:** C / C++, Python, FPGA, PLC, SQL
- **MCU / Processors:** STM32F4, ESP8266, PIC17
- **Protocols / Interfaces:** SPI, I2C, UART, USB, RS232, RS422
- **Hardware Skills:** Analog / Digital Circuits Design, Schematics Capture, PCB Layout, Soldering, Machining
- **Electronics Debugging:** Oscilloscope, DMM, Logical Analyzer
- **Software Tools:** Keil uVision, STM32CubeMx, Arduino, Git, Altium Designer, MatLab, SolidWorks

EXPERIENCE

Design Verification Specialist Sep - Dec 2017

Evertz Microsystems | Burlington, ON CA

- Designed a two-layer PCB board with PADs Logic for product GPIO testing with redundant power
- Improved product development efficiency by verifying signal integrity of interfaces (Intercom, Serial, SDI, ASI)
- Troubleshooted product implementations of ethernet protocols (TCP, UDP, IP)
- Verified product integrity by measuring insertion and isolation loss of CWDM fibre optic MUX/DEMUX

Data Mining & A.I. Engineer 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 over 15,600+ samples with a deep neural network prototype
- Implemented a multi-dimensional clustering algorithm based on K-means++ used for client sales analysis

PROJECTS

RC Micro Drone Nov - Current

- Designed and laid out a four-layer PCB with STM32 F446 processor, MPU9250 IMU, and DC motor drivers
- Developing firmware for STM32F4 to receive IMU sensor data through SPI
- Implementing C code for 9-axis IMU sensor fusion, motor PWM controls, and drone PID stabilization controls
- **Technologies / Protocols**: STM32F4, IMU, C, SPI, UART, Altium Designer

IoT Surveillance Motion Detector Oct - Dec 2017

- Programmed ESP8266 Wi-Fi to interface with PIR motion sensor to monitor human presence within 6 meters
- Implemented C++ code for online system management and power consumption control
- **Technologies:** ESP8266, PIR Motion Sensor, Arduino, C++, Altium Designer

Path Navigating Robot Jun - Aug 2017

- Constructed and programmed PIC17 to control a motorized robot based on multiple sensor feedbacks
- Designed and soldered noise reduction, signal filtering, sensor feedback, and power monitoring circuits
- **Technologies / Protocols:** PIC17, TTL, Voltage Regulators, C, Sensors (Hall-effect, Infrared, Optical Encoders)

Catch'em All May - Aug 2017

- Developed a multi-threading game on an ARM Cortex M4 that interfaces with joysticks, push buttons, and LEDs
- Implemented mutual exclusion concurrency in C to manage program object generation, user input, and background graphics task runs
- **Technologies:** ARM Cortex M4, C