SIMON CHEN

MECHATRONICS ENGINEERING 3A

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SKILLS

- Experience working with STM32F4, PIC17 and ESP8266 microcontrollers
- Solid understandings of embedded/RTOS and its protocols (SPI, I2C, UART, USB)
- Design knowledge in analog/digital circuits, schematics capture, PCB layouts
- Electronics troubleshooting experience using Oscilloscope, DMM, and Logical Analyzer
- Hardware Tools: Keil uVision, STM32CubeMx, Arduino, Altium Designer, MatLab, SolidWorks
- Software Tools: Git, C/C++, Python, SQL

PROJECTS

RC Micro Drone Nov - Current

- Constructed a remote controlled micro quad-copter from scratch
- 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)

EXPERIENCE

Design Verification Specialist Sep - Dec 2017

Evertz Microsystems | Burlington, ON CA

- Designed a two-layer PCB board for product GPIO testing (Technologies: PADs Logic, Redundant Power)
- Verified product signal integrity of various interfaces (Intercom, Serial, SDI, ASI)
- Troubleshooted product implementations of ethernet protocol (TCP, UDP, IP)
- Validated the insertion and isolation loss of fibre optic products (Technologies: CWDM)

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