Daniel Xie

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Education

Bachelor of Engineering Science, Computer Engineering **September 2019 - Present**
Western University, London, ON

Work Experience

General Motors - Active Safety Advanced Development Co-op Student **May 2022-Present**
General Motors CTC Oshawa - Canadian Technical Center, Oshawa, ON

- Used OpenCV and PyTorch in several computer vision projects to rapidly develop and iterate improvements on prototypes for proof-of-concept (POC) and concept selection. Prototypes were implemented on development hardware and used in user testing to understand customer experience and understand benefits and limitations of various approaches. Innovated and developed novel methods as well as passed lessons and prototypes production release team backlog for implementation.
- Spearheaded development of synthetic data pipeline for user testing and for rapid proof-of-concept and MVP development across team, reducing dependence on in-vehicle development and increasing efficiency of data collection.
- As GM Student Social Committee President, led a committee to organize professional development and social events for students to connect with each other and get career development advice.

Biophysics of Communication Lab - Research Assistant **October 2021-December 2021**
Western University, London, ON

- Developed and troubleshooted a custom Windows sound editor and generator application that integrates OCT (Optical Coherence Tomography) imaging system with data acquisition equipment and an audio system. Implemented with Python and Matlab.
- Set project timelines, prioritized tasks, created diagrams for ideation and communicated check-in updates to the head researchers to ensure that the project was on track.
- Improved workflow, data sampling rate precision and data acquisition efficiency.

Projects Experience

Western Formula Racing - Traction/GLV Team Member **September 2019-Present**
Western University, London, ON

- Developed and designed a DC-DC converter PCB (500V to 12V) with teammates using EAGLE AUTODESK that was compliant with the Formula SAE safety guidelines.
- Updated the Power Distribution Module PCB design utilizing undervoltage protection circuits to prevent overdischarge of the lithium-polymer battery cells.
- Designs helped the team earn third place in the Formula SAE North American EV Presentation Event.
- Supported subsystem projects with duties including: sourcing components and generating BOMs, communicating design concepts to teammates, generating documentation, soldering, advising PCB assembly and troubleshooting.

Western AI - Summer/Gideon Projects Member **September 2019-May 2021**
Western University, London, ON

- Developed and troubleshooted a Long Short-Term Memory neural network model with a business applications team to predict stock prices.
- Developed, trained and troubleshooted VGG16 neural network models with two teams that achieved ∼95% accuracy in diagnosing different Alzheimer's disease stages from MRI images and achieved ∼92% accuracy in diagnosing 14 different diseases X-ray scans.

Smart Door Lock **March 2021 - April 2021**

- Simulated and designed an Arduino-based smart door lock for a backyard shed using TinkerCAD software.
- Generated BOM and prototyped the smart door lock with BLE capability, stepper motor, and I2C LCD display on breadboard.

- Designed schematic and PCB layout for a custom Arduino shield using Eagle.

COVID Safety Smart Room Controller **February 2021 - April 2021**

- Developed embedded software in C for an ARMv7 microcontroller to track the number of occupants in a room and enforce COVID-19 safety guidelines.
- Implemented using peripherals such as timers, interrupts, counters and seven-segment displays.

FPGA CPU with Unified Cache **October 2021 - December 2021**

- Designed control logic for a RISC-based FPGA CPU using an Unified cache to fetch, decode and execute 14 instructions.
- Implemented in VHDL and used components such as up-counters, registers, multiplexers and logic gates. Minimized the amount of clock cycle executions possible to ensure efficiency in execution time.

Skills

- **CAD/ECAD:** Eagle Autodesk, Saturn PCB Design Toolkit, Onshape, SolidWorks, Cadence Virtuoso
- **Prototyping:** Arduino, ESP32, CANBUS, SPI, Breadboard Circuits
- **Programming/Scripting Languages:** Python, Java, MATLAB/Simulink, C, C++, VHDL, Rust, Bash, ARM Assembly
- **Software/Frameworks:** Git, CarMaker, CARLA, OpenCV, PyTorch, Tensorflow, Jupyter Notebooks, IntelliJ, Quartus Prime, Microsoft Visual Studio Code, Microsoft Visual Studio, Google Colaboratory, Jupyter Notebook, Android Studio, Arduino IDE
- **Tools/Skills:** Digital Oscilloscope, Multimeter, Function Generator, Soldering
- **Operating Systems:** Windows, Linux, Unix
- **Miscellaneous:** SAFe Certified,

Other Interests

Wireless Microcontrollers, Formula 1 Racing, Cooking and BBQ, Basketball, PC Gaming