Ellie T. Xu

Mechatronics Engineering BASc & Psychology BA | University of Waterloo

Portfolio
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Experiences

Incoming Electrical Engineering Intern
May – Aug 2024
Zipline
South San Francisco, California, US

Electrical Engineering Intern
May – Aug 2023
Level Home
Redwood City, California, US

- Engineered a dev board from circuit to PCB that reduced workload, resulting in **50 fixtures** made and distributed to teams.
- Designed the dev board to enable computer control via FTDI, JTAG programming, and a versatile power system with MOSFETs.
- Led the EE design for a cycle tester that achieved position sensing/control with Hall effect sensors, H-bridges, regulators, etc.
- Followed through projects by completing board bring-ups and software scripting (i.e. autonomous operation for cycle tester).
- Researched R&D topics (i.e. low power e-paper, capacitive touch, UWB, Bluetooth) and saw them through to functional prototypes demonstrated on Perf Boards and Arduinos.

R&D Hardware Engineering Intern
Jan – Apr 2020
Brickeye
Toronto, Ontario, Canada

- Designed a LoRaWAN-GPS signal strength mapper to fulfill customer needs that was demoed at an international conference.
- Ensured signal strength mapper functionalities by carrying out several tests and writing the data analysis tools in Python.
- Created the schematics & PCBs of 2 test jigs with AVR microcontrollers (with protocols like SPI, I2C) used for 100+ products.
- Modelled the Solidworks parts for both test jigs with MCOs for the PCBs.
- Researched, prototyped on Arduino, and created KiCad schematics & PCBs for CT sensor and lightning sensor.

R&D IoT Engineering Intern
May – Oct 2021, May – Aug 2023
LimeTac Corp
Oakville, Ontario, Canada

- **CTO's letter - "Demonstrated exceptional creative problem-solving skills that surprised & impressed me on multiple occasions."**
- Deployed in warehouses & spearheaded a real-time indoor vehicle tracking system on an Edge server with 200+ socket clients.
- Led all tracking system logic (i.e., position calculations, computer vision, concurrency) done in Python with OOP for maintainability.
- R&D for a forklift collision detector from sensor testing to recording and automatically syncing accidents to Azure storage.
- Followed through the collision detector by taking on the full stack dev of a video player that auto synced with Azure blob storage.

Software Intern
Sept – Dec 2020
Ontario Ministry of Health
Toronto, Ontario, Canada

- **Supervisor's letter - "Always performed exceptionally and had significantly contributed to the organization through her works."**
- Completed multiple automation scripts in Python that positively impacted several teams across the organization.
- Improved company workflow by initiating a Jira plugin in Java and Atlassian SDK using Servlets.

Back-end Python Engineering Intern
Jan – Apr 2022
Nuvation Engineering
Waterloo, Ontario, Canada

- Improved CPU usage by 25% on customer site to eliminate crashes by optimizing data transfers.
- Created backend OOP architecture in Python and unit tests for a new product building on existing frameworks.
- Wrote a Python script that tested product efficiency by sending CSV data to Redis Database with adjustable rates.

Skills

Schematic design, electrical circuit, PCB Layout, bring-up, circuit protection, Python, C++, MOSFET, Arduino, Raspberry pi, microcontrollers, MATLAB, Solidworks, Diptrace, Altium, KiCad, SPI, I2C, SWD, regulators, JTAG, H-bridge, FTDI, CMOS, ADC, soldering, CAD, 3D printing, Java, Linux, Oscilloscope, HTML, CSS, Azure Blob, Git, SSH, Inventor, AutoCAD, Redis, UWB, analog design, digital design, power electronics, circuit simulation.

Notable Projects

CODIA – modulated robotic assistant

- **Received national recognition at a Canada-wide event with a bronze medal.**
- Built a modulated robot (with an alterable configuration using an Arduino) designed to adapt to perform various tasks.
- Controlled through an original low-cost wireless RF hand-gesture controller.
- Designed and soldered all Schematics & PCBs from drivers to automatic configuration recognition.
- 3D modelled and constructed parts with SolidWorks, 3D printing, and shop tools.