Ella Yan

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Education

University of British Columbia 09/2022 - 05/2027
BASc, Engineering Physics
Sessional Standing: Dean's Honour List

Skills

Software
Python, C/C++, Java, OpenCV, Git, Matplotlib, MATLAB, Linux

Electrical
Altium Designer, LTSpice, Oscilloscope, Soldering, Logic Analzyer

Mechanical
Onshape, Solidworks, 3D Printing, Machining, Laser Cutting

Work Experience

Lab Diagnostics Engineer Richmond, BC
General Fusion 01/2024 – 04/2024

- Designed data analysis pipelines for high-precision calibration and characterization of plasma diagnostics in state-of-the-art fusion reactor
- Applied **Python**-based data analysis techniques using **Scipy** and **Matplotlib** to extract Compton edges used to calibrate neutron scintillator energy spectra
- Utilized **OpenCV** to extract ROIs from 1000fps spectrometer image data to calculate ion temperature
- Used **Tkinter** to streamline data collection for ion Doppler spectroscopy, saving $20k by reducing reliance on external software

Technical Experience

Sensors and Communications Co-Lead 05/2023 - Present
UBC AeroDesign

- Leading a team of 9 members in the design and testing of an avionics sensor system involving IMUs, barometers, GNSS modules, and radio communication
- Using **Altium** to design an airspeed sensor **PCB** using an **STM32** microcontroller, and **CAN Protocol** for noise resistant communication
- Set up **RTK** on ZED-F9P GNSS modules, achieving 1.4 cm accuracy and 0.1 mm precision on positional data

Power and Controls Co-Lead 04/2023 - 04/2024
UBC AeroDesign

- Directed a team of 8 members in the design and testing of aircraft propulsion, power distribution, and flight control systems as entries for the SAE AeroDesign competition
- Utilized **Altium Designer** and **LTSpice** to design custom wiring hubs and **power distribution boards**, streamlining wiring layout and cutting our avionics setup time by 80%
- Selected shunt resistors and Hall effect sensors for power sensing circuits capable of handling up to 750 watts
- Coordinated meetings between avionics and mechanical teams, ensuring smooth integration while adhering to project deadlines

Autonomous "Cooking" Robot Competition 06/2024 - 08/2024
UBC Engineering Physics

- Built two autonomous robots capable of collaborating to assemble toy burgers, successfully reaching semi-finals
- Used Onshape to CAD both robots while creating detailed assemblies for smooth integration
- Designed and soldered **H-bridge** and reflectance sensor **PCBs**, using oscilloscopes for debugging
- Utilized LM2596 buck converters and **LM7805/LM7833 LDOs** to power sensors and actuators, calculating expected power losses and junction temperatures to ensure reliable performance
- Developed a real-time WiFi-based GUI for on-the-fly parameter tuning, increasing testing efficiency by 85%
- Used **C** to implement PID line following and utilized a state machine to control robot's flow of tasks

Multistage Coil Gun 01/2023 - 05/2023

- Built a multistage coil gun using **ESP32s**, 400V capacitors, and solenoids, able to fire projectiles at 17 m/s
- Selected **thyristors** for high voltage/current handling and used **optocouplers** to isolate voltage sections