Varun Rana **Electrical Engineering Student**

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TECHNICAL SKILLS

Computing:
- C, Python
- MATLAB
- SystemVerilog, Verilog (Quartus, ModelSim)
- 8051 and ARM Assembly
- Altium Designer (PCB)
- Solidworks/AutoCAD
- PLC Programming (LL and FB)
- Wonderware (Application Server and Intouch)
- Microsoft Office
- Linux OS / Terminal

Equipment:
- Microcontrollers (STM32, Arduino)
- DE1-SoC FPGA
- Multimeter
- Breadboard
- Oscilloscope
- Soldering iron
- Reflow oven
- PLC and HMI Hardware

Other Skills:
- Class 5 Driver's License

EDUCATION

University of British Columbia - UBC Present - May 2022
Bachelor of Applied Science - Electrical Engineering: Year 3 (Completed 1st Semester)

WORK EXPERIENCE

Syncrude Canada Ltd, Fort McMurray, AB January 2020-Present
Process Control & Automation: PLC Support Electrical Co-op Student
- In Extraction team, updating legacy PLC software to newer versions for Schneider PLCs. Upgraded Tailings Booster pump program from Concept to Unity Pro.
- Carrying out Management of Change (MOC) procedures on systems drawings and software for implementation of newer functions requested by other teams. Conducted complete overhaul of FFT truck loading logic in Unity Pro.
- Furthering understanding of automation logic by working with a variety of PLC and HMI systems.
- Troubleshooting issues and conducting on-site work while following strict safety procedures.

Your Independent Grocer (Loblaws), Fort McMurray, AB May 2017-August 2017
Grocery and Dairy Clerk
- Stocking and maintaining shelves and assisting customers to ensure a pleasant shopping experience.

TECHNICAL EXPERIENCE

UBC Supermileage Vancouver, BC
Electrical Team - Project Lead September 2018-Present
- Using Altium Designer in improving PCB design on multiple Prototype vehicle boards.
- Reduction of Main PCB footprint by over 30% than the previous year and planning further reductions.
- Troubleshooting errors affecting vehicle uptime and assist in setting up vehicle wiring for tests and final assembly. Simulating circuits to test correct functionality and prevent problems after fabrication.
- Co-ordinating with other divisions to implement changes needed to meet competition requirements.
- Competing at annual Shell Eco Marathon (2019- 2nd place) and SAE Supermileage (2019- 2nd place) events. More information about the team available at supermileage.ca

UBC Chem-E-Car Vancouver, BC

Junior Team Member January 2017-April 2017

- Using Solidworks and other CAD modelling tools to begin use of teams' first 3D Printer and creating mounting mechanisms for a variety of parts.
- Providing technical assistance with set up of software on member devices during shift towards new programs.

Robotics Fort McMurray, AB

Lego, Vex, Skills tournament team member 2012-2016

- Machining parts to improve space constraints as well as acting as bridge between hardware and software teams.
- Developing technical thinking and problem-solving skills to draft innovative design ideas to face new challenges on a yearly basis, set up by organizers. Getting introduced to Hardware-Software interaction through programming.
- Competing in various competitions and learning to effectively work in a team environment.

VOLUNTEER EXPERIENCE

Multicultural Association of Wood Buffalo, Fort McMurray, AB 2013-2016

- Helping in setup of shows and events. Setup greeter tables and help backstage.
- Greeter- Welcome all guests and distribute tickets during events.
- Providing backstage assistance.

Western Canada Summer Games, Fort McMurray, AB August 2015

- Badminton judging
- Guest hospitality
- Backstage show runner for Opening and Closing Ceremonies

PROJECTS

Personal Website: www.varunrana.ca

Coin Picker Robot **Languages: C, Python**

Using STM32F051 Microcontroller System to build a coin picking robot that can detect a perimeter and coins using inductor coils and picking coins up using servos and electromagnets. Additionally, a light sensor mechanism that can identify coins as well as wireless control from a PC was implemented.

Reflow Oven **Languages: ARM Assembly, Python**

Building a reflow over controller that uses Pulse Width Modulation to control oven temperature according to specifications. Using a thermocouple, keeping track of oven temperature and plotting the graph over time. Sending phone alerts using Python when process is complete.

DE1-SoC ARC4 Decryption and VGA Core Systems **Language: SystemVerilog**

Creating a design that uses several on-chip memories to perform ARC4 decryption. Creating Datapaths and State machines to use an embedded VGA adapter core in order to output to a display. Implementing efficient code that can reduce clock time for displaying as well as using parallel cracking to cut time to decipher in half.