Cole Haraga

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Engineering Co-op Program

Academic & Co-op Status:

Computer Engineering, BSc Co-op, University of Alberta	Class of 2024
Completed Academic Terms	5 of 8
Completed Co-op Terms	1 of 5
Availability Starting January 2023	8 months

Work Experience:

Automation and Data Science Engineer | Agriculture and Agri-Food Canada, NanoLab May-Aug. 2022

- Programmer and data scientist for a Government of Canada lab with several ongoing projects that range across nanochemistry, spectroscopy, and automation of experimental methods. With security clearance of reliability and effectively worked in a hybrid remote/onsite position.
- The multi-disciplinary nature of the lab resulted in me collaborating and coordinating with all members of this team, including the lab supervisor to program and design protocols/experiments in Python for lab robots. Created excel spreadsheets that aided in the computation of nanoparticle and macromolecule molar concentrations and optimized data manipulation using Python SQL. This process ended up saving 80 hours a week of manual labor.
- In coordination with the Principle Investigator and Lab Manager, prototyped a SharePoint website to automate and lighten administrative burden. Used Microsoft Office apps such as SharePoint, Power Automate, Power Apps, Excel and Forms to build and automate systems such as incident reporting. Gave live demonstrations of the website to local, regional, and national AAFC OHS committees and garnered validation that the website is very useful and will be used across Canada in nine different labs.
- Designed and created machine learning neural network training and validation sets in Python for high-throughput experiments. Designed to handle over 100,000 data inputs. The NN aims to facilitate optimization and prediction of nanotechnology systems that are being developed in the lab. Leveraged an open source data science platform called Knime to create an efficient data acquisition, and data processing flow that is integrated into the NN.

Farm Hand | Skiff AB. On-going

- Grew up Independently maintaining multiple farms simultaneously. Mainly solo effort, for larger jobs in collaboration with other farmers. Operating and maintaining heavy machinery, some of which are over half a century old.
- Construction skills exercised such as: building planning, electrical work, plumbing and carpentry.
- Time management being an important skill in order to schedule projects into the time frame of a single farm season and long term goals.

Personal Projects:

Personal Website | HTML5, CSS, Java Script

- Using HTML5, CSS and Java Script, created a personal website to learn these skills and learn how domain and web service operations work: coleharaga.ca

Road Map of Edmonton | C++

- Using images of Edmonton AB and coordinates of the road, a GPS map of Edmonton for the shortest path between points, multiple paths can be displayed at one time. Used Breadth First Search algorithm, Dijkstra algorithm

Display and Sort | ARM Thumbset2

- Using ARM Thumbset2 built a display and sorter to display and sort ASCII characters in order of their hex/decimal chart order.

Traffic Light | VHDL

- Implemented VHDL code into a zybo board to display red or green lights that would swap colours, ‘emergency vehicle’ button to swap the lights instantly and a 7-segment display on clock time to count-down to light switch.

Additional Information:

- Team Canada and academy baseball throughout highschool.
- Class 5 drivers license (graduated or non GDL).
- PADI Rescue Scuba Diver.
- Certified sailor for lakes and oceans.