Cole Haraga

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Engineering Co-op Program

Academic Status:

Computer Engineering, BSc Co-op, University of Alberta — Class of May 2025

Availability Starting: May 2024 — 8 months

Work Experience:

DCS Product Design/Validation Engineer | Microchip, Burnaby B.C. — Jan.-Sep. 2023

- Engineer in the validation team for the leading company in Data Center Solutions for PCIe technology. Working in a team of 27 engineers and a sub-team of 6 engineers.
- Independently contributed towards a new test suite API through Python and utilized for future product testing:
  - voltages across the validation board.
  - connection/traffic through different endpoints/hosts up to 100 lanes of bus connected through PCIe.
  - configure or manipulate the FPGA and CPU of the Switchtec device.
  - open IP connections to external boards.
- With C, created commands used in the Windows cmd terminal to check devices connected through PCIe and setting configurations for the PCIe, recreating the Linux and Unix commands “lspci” and “setpci” entirely.
- Created tools to open private connections to html sites and manipulate the input fields through Python requests.
- Designed a PCB schematic for tier-1 datacenter clients. Improved upon 3 different aspects; modularity of certain features, updated different parts to save size and cost, re-mapped the GPIO for FPGA allowing for smaller pin count. These contributions saved over $200 per board production, lowering the cost to $3,800 for fabrication.
- Utilizing Python to engineer 4 new API tools for the mentioned above. This was versioned and peer reviewed in a small sub-team of 6 through Git and followed strict pep8 guidelines.
- Improved upon and debugged Tcl scripts that are currently used for testing of current gen and last gen Switchtec products. Discovered issues in the past scripts and re-created them, saving roughly 2 hours per test on some setups.
- Collaborated with international teams in India, working on firmware bugs of the CPU and FPGA proactively identified and resolved post launch bugs, meeting all deadlines for production.

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

- Programmer and data scientist for a Government of Canada lab, foundation member of a team that ranges across automation of experimental methods in the nano-science space.
- Performed in a multidisciplinary Government of Canada lab (reliability status) that required collaboration with six doctorate level researchers.
- Designed and created machine learning neural network training and validation sets using Python Tensorflow package for high-throughput over 10,000 experiments.
- Coordinated with the lab supervisor to program and design protocols in Python for lab robots that saved 10 hours per week of manual labour and reduced the error percentage to ±5% for each experiment.
- Automated the upload of daily reports of 15,000 data points, automated the data cleaning process using Python Pandas and calculated new concentrations for nanoparticle molar concentration to be fed back into the process.
- In coordination with the Principle Investigator and Lab Manager prototyped a SharePoint website to automate and lighten administrative burden. Early adopter and self learner of M365.
- Gave live demonstrations of the SharePoint website to local, regional, and OHS committees and garnered validation that the website is usable for all AAFC labs.

Personal Projects:

Road Map of Edmonton | C++

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

Music database, artists and users | SQLite and Python

- Implemented SQLite and Python to create a listening and posting service, used multiple tables and joins to allow users/artists to login or create new profiles that have different privileges. Create/share songs and playlists, artists can see the playlists' participation and how many likes their songs have. Also have experience in MongoDB

Personal Website | HTML5, CSS, JavaScript

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

Additional Information:

- Own and manages a consulting company helping businesses transfer from IT internal tools to using the Office365 suite automation tools, and has worked with companies across 6 countries. Saving them over $50,000 in subscription fees per year.
- Represented Canada in Baseball throughout highschool, played academy and lived independently during this time.
- Have completed 15 levels of Scuba training and achieved PADI Rescue Scuba Diver.
- Certified sailing for lakes, oceans and leisure craft (boat) licenses.