Andrew Munro-West

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KEY SKILLS

Languages:	Python, C/C++, SQL, Javascript, Assembly, Verilog, RUBY, Golang
Skills/Concepts:	DSA, OOP, ML, DSP, Git, CI/CD, Unit-Testing, Operating Systems, Multi-threading, Databases, PostgreSQL, Docker, AWS, Node.JS, Jekyll Matlab/Simulink, Microsoft Office, LaTex, Spice, Blender, Solidworks

EDUCATION

The University of British Columbia, GPA : 4.0 **Vancouver, BC**
Bachelor of Applied Science in Electrical Engineering with Distinction *June 2023*

Relevant course work: Data Structures and Algorithms, Digital signal and Image Processing, Power Electronics.

EXPERIENCE

Cadex Electronics **Richmond, BC**
Research Software Engineer - 8 Month Contract *Jan 2022 - Aug 2022*

- Adopted and reorganized several codebases for in-house research tools applying **OOP** principles and writing comprehensive documentation increasing organization, maintainability and ensuring smoother hand off.
- Developed user friendly **data acquisition and processing** tools deployed to custom hardware streamlining testing procedures and reducing testing time from months to weeks, cutting estimated test time by 85%.
- Researched and applied **machine learning** algorithms utilizing SKlearn and Tensorflow python libraries, analyzing trends, building pipelines improving efficiency 200% and laying the foundations for new customer facing products.
- Wrote and integrated Python code to safely interact with **AWS secure cloud PostgresSQL databases** into existing projects, facilitating efficient and safe data sharing and collaboration among team members.

PROJECTS

Auto Testing Application With Graphical Interface
Cadex Electronics *June 2022*

- Designed and implemented an application in python to streamline battery testing.
- The application would connect with the company's custom hardware over USB, control the device using **custom API commands**, and monitor the device's status and logs for errors.
- Created repetitive testing behaviour to run multiple tests back to back rather than manually initializing the next test, **dramatically increasing testing efficiency** and productivity of research engineers.
- Built a responsive **multi threaded GUI** with read/write access and **cloud capabilities** to name and catalogue data, removing the need for scripting knowledge to run tests.

Personal Website
Personal Project *Aug 2023-Present*

- Built a personal website built and maintained to act as a portfolio and personal professional record.
- Utilized the Jekyll static website builder to automate implementation.
- Hosted on GitHub pages and maintained using a CI/CD workflow to automatically rebuild the site and keep it live.
- Debugged obscure HTML and JavaScript bugs related to the kramdown markdown processor.

Movie Genre Classification using NLP

UBC Project *Nov 2022*

- A self-guided term project exploring multi-label genre classification of movies comparing accuracy metrics of several common machine learning classifier algorithms.
- Cleaned a dataset of 40,000 movies with over 100 unique genre tags using Natural language processing to remove redundant tags and stop words from the data set reducing the complexity of the task significantly.
- Compared the accuracy, training time, and perceived biases of random forest, logistic regression, and multinomial naive Bayes classification algorithms, determining the optimal choice of algorithm for the task to be multinomial naive Bayes.
- Recorded the findings and procedure in a comprehensive research report providing insights into the strengths and shortcomings of each algorithm for NLP classification.

SCARA Robot Simulation

UBC Project *Mar 2021*

- Designed and simulated a SCARA 3.5 DOF robotic arm.
- Used 3d simulation software in combination with Matlab to simulate the mechanical model and control system for demonstration.
- Worked in a team of 3 to design a working electrical system, control system and mechanical model.

Discord Chatbot

Personal Project *June 2020*

- Hosted a discord bot written using the discord.js module to interact with the discord API.
- Designed and built a simple bot to monitor server channels for input and react to simple commands.
- Built a small server with Node.js to periodically ping the bot keeping it active.

Talking Calculator

UBC Project *April, 2021*

- Programmed a DE1-Soc FPGA to take keyboard inputs, perform basic calculations, and utilize a speech synthesizer to parrot back the inputs and results as audio.
- Programmed entirely in Verilog and gained experience interfacing a Picoblaze processor with FSM's that would read data out of flash.

PUBLICATIONS

Conference	Paper Title	Publication Date
PHM2023	"Electrochemical Impedance Spectroscopy and Machine Learning based Battery State of Health Estimation" **https://ieeexplore.ieee.org/document/10194065**	05 June 2023