

Arjun Swani

Third Year | Engineering Physics

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EXPERIENCE

Timia Capital , Vancouver — Systems Engineering CO-OP

JAN 2020 - APRIL 2020

- Made procedures in Salesforce to facilitate administrative tasks such as compiling reports/dashboards.
- Wrote scripts to clean, sort and compile marketing data. Eg - removing spam leads, generating list of target cities by population etc
- Built a web scraper in Python to compile data for marketing
- Performed live maintenance and troubleshooting for the Salesforce platform with consideration of user experience

Bliss Aerospace, Bangalore (India) — Quality Control Assistant

MAY 2018 - Aug 2018

- Analysed production data to propose improvements for the machining facility to handle higher volumes.
- Implemented a real-time excel based data collection system to improve inventory control.
- Helped with the review of quality control procedures to adhere to ISO 9001 and NADCAP certifications.

PROJECTS

ML Driven Robot Sim , Project Course/Competition

Winter 2021 (Ongoing)

- Implemented functionality for autonomous bot (in a physics simulator) to report license plates in a parking-lot.
- Trained a Convolutional Neural Network for license plate digit recognition using TensorFlow
- Developed driving procedures using PID and Imitation Learning
- Used a mix of classical ML techniques to reduce run time
- Built nodes in Python to implement scripts in a subscriber/publisher model (ROS)

SKILLS

Understanding of OOP

Proficient in JAVA , Python

Literacy in Node.js and
Front-end Frameworks

Microcontroller programming
with C

Experience with Machine
Learning and Keras

Familiar with Shell Scripting

VOLUNTEER

Author, IBM Cognitive Class

Contributed to the 'Python 101' course by adding exercises and content

Mentor, Engineering Physics

Part of a faculty mentorship group for incoming students during online semester

Founder, FUFA

Founded and oversaw a student volunteer organisation to promote cleanliness and sustainable practices.

Treasure Map , Course Deliveriable

Winter 2021

- Implemented a bit based encryption protocol to encrypt one PNG with another using C++ (GCC and GDB debugging)
- Wrote appropriate data classes with appropriate memory management to give a faster runtime
- Compiled a comprehensive testing suite to evaluate and test the submission

Canvas Video Downloader, Personal Project

Fall 2020

- Wrote a python script to download streamed video content hosted on Canvas
- Analysed network requests and source code to understand streaming protocol
- Used Python's multi-thread functionality for faster downloads

Can Collection Bot, Project Course

Summer 2020

- Designed, prototyped and built an autonomous can collecting robot during an online semester with a team
- Programmed a microcontroller in C++ to develop a state based model to integrate various sensors (SONAR, IR and Tape) with servos and motors
- Abstracted complex tasks such as picking up cans into data classes with a focus on efficiency
- Made and tested various homing algorithms to locate the can
- Resulting robot picked up one can despite a critical systems failure

UBC Rocket, Design Team

Sept 2019 - Present

- Tasked with ensuring a smooth recovery of a liquid fuel rocket from outer space
- Developed the recovery system including mechanical bay, drag bodies and deployment systems as a part of the team
- Made a resource friendly parachute behaviour simulation toolkit based on research
- Designed a reefing system - a highly robust microcontroller controlled cutter to aid parachute deployments

Education

The University of British Columbia

Sept 2018 - May 2023
(Expected)

Bachelors of Applied Science,
Engineering Physics.

Hobbies

Cooking. Music. Design.

Soundwave Player, Course Deliverable

Sept 2019 - Oct 2019

- Effectively performed functions such as amplification, superposition, echoes and splicing in JAVA.
- Devised algorithms out of existing mathematical functions for operations such as Fourier transformations (for time-frequency transformations) and High Pass filter (to remove low frequency noise).
- Successfully wrote a function to quantify similarity between waves, while accounting for scaling factors.
- Wrote a comprehensive testing suite to check for reliability while working with source control (Git)

The Kamino Game, Course Deliverable

Sept 2019 - Oct 2019

- Achieved 95% branch coverage while testing and wrote appropriate specifications, rep invariants and abstraction functions.
- Created a Graph data type capable of manipulating vertices and edges which formed the basis of the in-game map
- Implemented fast and highly responsive graphing algorithms such as Kruskal's minimum spanning tree and Dijkstra's shortest path
- Effectively used subtyping to maximize the utility of code