

FRANCISCO FARINHA

4th Year Engineering Physics

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SKILLS

- Python
- Experience with Linux and Bash
- Machine Learning (CNNs, DNNs, Tensorflow/Keras, scikit-learn)
- NumPy, Pandas, OpenCV, Matplotlib
- Experience with ROS and Gazebo
- MATLAB/Octave, OnShape, Blender

TECHNICAL WORK EXPERIENCE

2020/09 – 2021/04

MACHINE LEARNING SPECIALIST, FLASH FOREST INC.

- Developed Machine Learning segmentation pipeline to aid in planting missions.
- Compiled, cleaned, and maintained dataset of orthomosaic images.
- Implemented efficient inference scripts to run in QGIS.

2020/07 – 2020/11

MACHINE LEARNING INTERN, LONGERVISION TECHNOLOGY

- Cleaned, labelled, and augmented client image dataset. Trained YOLOv4 model with high accuracy for train platform passenger/uniformed worker detection and implemented TensorRT model on NVIDIA Jetson Nano platform.
- Established SFM pipeline for 3D reconstruction of client drone footage using OpenMVG and OpenMVS.

2019/01 – 2019/04

COMPUTATIONAL PLASMA ENGINEER/PROGRAMMER, GENERAL FUSION

- Integrated Magnetohydrodynamics stability framework OMFIT into physics workflow.
- Developed additional functionality for OMFIT – visualization tools, PBS/Torque server compatibility, parallel job submission – which decreased timeline processing by over 100%.
- Presented DCON Stability Analysis reports to the MHD team weekly.

TECHNICAL PROJECT EXPERIENCE

2021

TACTILE SENSING CAPSTONE PROJECT, SANCTUARY AI

- Created mechanical testing platform for Sanctuary AI's tactile sensors.
- Researched and developed Tactile Classification Machine Learning algorithms, such as Tactile-SIFT, to classify objects based on a series of tactile samples.

2020

EECE 571T ADVANCED MACHINE LEARNING TOOLS, UBC

- Implementing ML algorithms including unsupervised (KMeans, GMMs), supervised (SVM, random forests, DNNs, CNNs) and reinforcement learning.
- Aiding BC Cancer Agency by implementing segmentation and classification techniques in biomarker scoring and classification, specifically detecting distributions and patterns of FOXP3+ T-Cells in follicular lymphomas.
- Developed pipeline for artifact removal of TMA core images using UNETs and OpenCV.

2019 - Present

OPENROBOTICS SOFTWARE TEAM LEAD, UBC

- Machine Learning Research Team Lead developing software to allow a robot to perform a variety of complex tasks and compete in the 2021 RoboCup@Home Education competition.
- Overseeing research and implementation of person tracking, pose recognition, speech recognition, and object detection.
- Utilizing ROS and Gazebo to test and debug software.

2019

ENPH 353 MACHINE LEARNING COMPETITION, UBC

- Developed algorithm in ROS to autonomously navigate a robot around a parking lot and collect license plate information, achieving the maximum score.
- Trained CNNs for numerical classification and used YOLOv3 for accurate and fast object detection and localization.
- Applied OpenCV algorithms for license plate and character segmentation.

2019

ENPH 253 ROBOT COMPETITION, UBC

- Worked in a team to design and construct a robot to navigate a course and use fine motion to lift and deposit loads.
- Used Onshape to develop CAD model of the robot, as well as manufacturing equipment – 3D Printers, Laser Cutter, Waterjet Cutter – to build main arm.
- Implemented PID control to achieve precise line-following.

EDUCATION

2017/09 – 2022/05 (EXPECTED)

ENGINEERING PHYSICS, BASC, UNIVERSITY OF BRITISH COLUMBIA

- Dean's Honour List
- Cumulative Average 85%