ubc science co-op
T: 604.822.9677 | F: 604.822.9676 | science.coop@ubc.ca | www.sciencecoop.ubc.ca

FRANCISCO **FARINHA**

3rd Year Engineering Physics
franciscofarinha@alumni.ubc.ca · (778) 840-9541

SKILLS

- Python, C, Java
- 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

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

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

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

OPENROBOTICS SOFTWARE TEAM, UBC

- Currently developing software to allow a robot to perform a variety of complex tasks and compete in the 2020 RoboCup@Home Education competition.
- Experimenting with speech synthesis and recognition using CNNs, LSTMs and open-source APIs.
- Utilizing ROS and Gazebo to test and debug software.

Developed facial detection and recognition algorithms using CNNs and facial feature encodings.

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 84%

VOLUNTEER EXPERIENCE

2016/09 – 2017/05

VOLUNTEER TUTOR, WESTBROOK EDUCATION FUND

- Tutored secondary school students in Maths, English, Sciences.
- Effectively used constructive practices and techniques learned in professional training and developmental workshops.
- Increased pupils' grades by an average of 10% by creating customized modules and study plans designed according to individual needs and goals.

2015/10 – 2015/11

SERVICE PROJECT LEADER, TRADITIONAL LEARNING ACADEMY

- Worked in a service team in several projects to aid the local communities of Guatemala.
- Conducted on-site school infrastructure development, stressing safety initiatives, such as: land assessment for flooding and other natural calamities, etc.
- Educated children in a rural primary school, aged six to thirteen, on invaluable health and hygiene knowledge.
- Supported indigenous homemakers with housework and quotidian tasks.