Curriculum Vitae

Rodrigue de Schaetzen

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citizenship: Canada/Belgium
languages: English/Français

Education

September 2015—Present

Degree: BSc in Combined Honours Computer Science and Physics
Where: University of British Columbia (UBC), Vancouver, BC
Thesis: Exploring Machine Learning Models to Improve the Classification of Displaced Hadronic Jets in the ATLAS Calorimeter
Advisor: Alison Lister
Contributions:

- Determined the optimal sequence ordering of jet constituent momenta for a recurrent network
- Augmented a multi-class classifier with 1D convolutional layers which achieved 97% accuracy, a 3% improvement over the previous model
- Ran a grid search to validate dimensionality reduction of the 1D CNNs

Research

September 2020—December 2020

Project: Smoke Detection Model via Fire Cameras
Where: University of British Columbia, Vancouver, BC
Advisor: Vaden Masrani
Contributions:

- Participated in the ProjectX international machine learning research competition, hosted by the University of Toronto
- Presented a multi-label image classifier to predict forest fire smoke based on Pan-Tilt-Zoom (PTZ) image data
- Applied a gridded image approach where the model predicts the cells of a KxK grid containing smoke
- Achieved a 3-4% accuracy improvement over baseline for a 4x4 mesh
- Recruited volunteers to annotate frames containing smoke using the Computer Vision Annotation Tool (CVAT)
- Released the first smoke-annotated video dataset which consisted of 139 hours of footage from PTZ cameras across 678 videos

May 2020—August 2020

Project: Framework to add MPPI Support for Different Dynamics Models
Where: University of British Columbia, Vancouver, BC
Advisor: Ian M. Mitchell
Contributions:

- Built a scalable pipeline to train a feedforward neural network for a nonlinear system dynamics model in the Model Predictive Path Integral (MPPI) control algorithm
- Configured an overhead vision system to collect robot truth state data and evaluated the sensor noise
- Decreased coupling between the AutoRally self-driving vehicle platform and ROS
- Learned how to optimize and analyze CUDA code using the CUDA Toolkit including the NVIDIA Visual Profiler

May 2018—July 2019

Project: Extending the Cloud Robotics Platform
Where: Zurich University of Applied Sciences, Winterthur, Switzerland
Advisor: Giovanni Toffetti Carughi
Contributions:

- Demonstrated the effectiveness of the Enterprise Cloud Robotics Platform (ECRP) by offloading the SLAM algorithm Google cartographer to the cloud, removing the dependence of powerful on-board hardware
- Developed a registration script to streamline the initialization of the robots' connection to the cloud platform, shortening configuration time from hours to minutes
- Implemented a text-to-speech functionality accessible through a web interface, giving users remote access and control of the speech capabilities of the robots
- Configured the ROS navigation stack on the Summit-XL robot and wrote a blog post describing how certain challenges were addressed

Teaching

September 2020—Present

Position: Teaching Assistant
Where: Department of Computer Science, University of British Columbia
Tasks:

- Working as an undergraduate teaching assistant in a second year software construction course (CPSC 210)
- Lead weekly office hours and laboratory sessions for groups of 8 students
- Mentor throughout the semester 16 students working on their personal projects

January 2017—April 2020

Position: Teaching Assistant
Where: Department of Computer Science, University of British Columbia
Tasks:

- Worked as an undergraduate teaching assistant in an introductory course on computation, programs, and programming (CPSC 110)
- Assisted with labs, invigilated exams, and held office hours

Technical experience

Hardware
Microcontrollers, single-board computers, LiDAR and ultrasonic sensors

Software
PyTorch/Keras, Python, MATLAB, C/C++, CUDA, ROS

Honours and Awards

- Science Undergraduate Research Experience (SURE) Award (2020)
- Dean's Honour List (2020)
- Go Global Self-Initiated Research Award (2018)
- Dr. Hal Weinberg Scholarship (2015)