GABRIEL DESCÔTEAUX

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Portfolio : seelio.com/gabrieldescoteaux **Github: https://github.com/gadese**

Relevant information

- Knowledge in controls, artificial intelligence, computer vision, robotics, deep learning, ROS, etc.
- Fluent in French and English, and eager to learn and face new challenges
- Demonstrated excellent organizational, teamwork and project management skills as project leader

Education

Master of Science in Mechanical Engineering – Robotics and Mechatronics systems — 2018-Today

Research Group in Design, Machine Learning and Optimization for Mechatronic Systems, Polytechnique Montréal

GPA: 4.00/4.00

- Recipient of the J.A. DeSève award for Academic Achievements & Extracurricular Involvement — 2019

Bachelor of Science in Electrical Engineering — 2015-2018

Polytechnique Montréal – Montréal, Quebec

GPA: 3.84/4.00

- Recipient of the *CMC Electronique* award for Academic Achievements & Extracurricular Involvement — 2017 & 2018
- Recipient of the *Vedel* award for Academic Achievements & Extracurricular Involvement — 2016
- Recipient of the *Hatch Ltd.* award for Academic Achievements & Extracurricular Involvement — 2015
- Recipient of the *Entry Scholarship at Polytechnique Montreal* for Academic Achievements — 2014
- Polytechnique Engineering Competition: 2nd Place (2015), 2nd Place (2016)

Engineering Experience

Master of Science in Mechanical Engineering — 2018-Today

Recipient of the prestigious and competitive FRQNT research grant for M.Sc. students — 2019
Recipient of the prestigious and competitive NSERC research grant for M.Sc. students — 2018

Polytechnique Montreal

- Developed an autonomous feeding system for people with disabilities using the MICO arm by Kinova
- Implemented a food detection algorithm with Tensorflow & Python to classify and locate food in 3D
- Setup a ROS(Robot Operating System) environment for the lab and a simulation environment for the system in Gazebo with MoveIt! For inverse kinematics
- Tested and compared classical path planning methods to modern methods using deep learning

Intern – Software developer — 2018

Analogic Canada

- Developed defect detection algorithms for X-ray images with Python
- Automated the approval process of an X-ray detector following test results to speed up production
- Converted existing C++ algorithms to Python
- Organized and managed the project using the *Scrum* method, as well as *Sprints* with weekly team meetings

Research intern — 2015-2017

Recipient of the competitive NSERC Summer research grant for undergraduate research — 2016-2017
Recipient of the competitive UPIR Research grant for undergraduate research — 2015, 2016, 2017

Research Group in Design, Machine Learning and Optimization for Mechatronic Systems, Polytechnique Montreal

- Robust design project 2017-2018

  Internship done at the Royal Melbourne Institute of Technology, Australia
  - Tested and characterized various optimisation algorithms for the physical parameters of a drone in order to reduce energy consumption (genetic algorithm, latin hypercube, particle swarm, etc.)
  - Implemented a sensitivity analysis and contributed to the redaction of a conference article
- Control – Facial recognition project 2015-2017
  - Controlled a 6 DoF robotic arm using only an open source facetracking interface
  - Adapted the interface for the JACO robotic arm by Kinova

Research intern 2015

Recipient of the competitive NSERC Summer research grant for undergraduate research 2015

Laboratoire d'Optique Diagnostique et d'Imagerie, École Polytechnique de Montréal

- Designed and assembled a variable length reference arm for an Optical Coherence Tomography (OCT) system. Significantly reduced noise in an OCT image without the use of software corrections.

Personal Projects / Student Groups

Rubik's cube solving robot 2019

- Implemented a solving algorithm with computer vision using a USB camera and a KNN classifier
- Developed the robot and packages in ROS Indigo
- Designed the hardware using CATIA and 3D printing

Wearable glove to measure forces within fingers for rock-climbers 2017-2018

- Designed a system to measure the relative position of every phalanx using Inertial Measurement Units
- Developed a system to measure the pressure at the fingertips and compute the corresponding tension in the various muscles and tendons
- Lead and managed weekly team meetings as well as assigned tasks to team members
- Lead the meetings with the Client while correctly assessing his needs and demands

Self-balancing robot 2017-2018

- Designed a self-balancing robot from scratch, including CAD design, electrical circuits, Arduino code, PID controller, Simulink model and mathematical model.

PolyProject (Engineering student club) 2014-2018

- Developed an interactive control system for a robotic hand using an innovative fiber optic sensory glove
- Treasurer 2016-2017
  - Managed the group's finances. Upped the disposable income by over 4000$ compared to the previous year by finding new sponsors and funding opportunities.
- Director of Communications 2015-2016
  - Managed recruitment of new members, publicity, social media and visibility for the group

Professional Skills

Programming:

Python	★★★★½	Matlab	★★★★½	C/C++	★★★★☆
Robot Operating System (ROS)	★★★★☆	Tensorflow	★★★½☆	Simulink	★★★★½

Others:

LaTeX	★★★★☆	Arduino	★★★★½	CATIA	★★★☆☆
MS Office	★★★★★	Git	★★★★☆	AtlassianSuite	★★★★☆

Additionnal classes: *Coursera's* Machine learning, Coursera's Deep Learning Specialization, Udacity's Artificial Intelligence for Robotics