

Oliver Limoyo

CONTACT INFORMATION

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EDUCATION

University of Toronto, Toronto, Canada 2017 - Present
PhD on Learning for Robotics GPA: 4.00/4.00

University of Toronto, Toronto, Canada 2016 - 2017 (Transferred)
MAsc on Manipulator Self-calibration GPA: 4.00/4.00

McGill University, Montreal, Canada 2011 - 2016
B.Eng. Mechanical Engineering. GPA: 3.79/4.00

PUBLICATIONS

- [1] O. Lamarre, O. Limoyo, F. Maric, and J. Kelly, "The canadian planetary emulation terrain energy-aware rover navigation dataset," *The International Journal of Robotics Research*, 2019, manuscript # IJR-19-3688, Submitted.
- [2] O. Limoyo, T. Ablett, F. Maric, L. Volpatti, and J. Kelly, "Self-calibration of mobile manipulator kinematic and sensor extrinsic parameters through contact-based interaction," in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA'18)*, Brisbane, Queensland, Australia, May 21–25 2018. [Online]. Available: <https://arxiv.org/abs/1803.06406>
- [3] F. Maric, O. Limoyo, L. Petrovic, I. Petrovic, and J. Kelly, "Manipulability maximization using continuous-time gaussian processes," in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'18) Workshop Towards Robots that Exhibit Manipulation Intelligence*, Madrid, Spain, Oct. 1 2018. [Online]. Available: <https://arxiv.org/abs/1803.09493>
- [4] F. Maric, O. Limoyo, L. Petrovic, T. Ablett, I. Petrovic, and J. Kelly, "Fast manipulability maximization using continuous-time trajectory optimization," in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'19)*, Macau, China, Nov. 4–8 2019, to Appear. [Online]. Available: <https://arxiv.org/abs/1908.02963>

RESEARCH & TEACHING

AI Research Intern, Kindred S2019 - F2019
Learning to Scan and Sort, Supervisor: Dr. James Bergstra and Prof. Rupam Mahmood

- Analyze the effect of delays and action magnitudes on reinforcement learning algorithms
- Formulate detecting unscannable items from images as a classification or contextual bandit problem and investigate network architectures for this task.
- Investigate the use of contrastive losses for learning a representation of multiple camera viewpoints which can then be used for a downstream classification tasks.

Teaching Assistant, University of Toronto 2016 - Present

- **ROB501** - *Computer Vision for Robotics* (Fall 2017, Fall 2018, Fall 2019): Grade projects on vision algorithms. Generate scripts to automate the grading of computer vision problems for robotics.
- **AER521** - *Mobile Robotics and Perception* (Winter 2018): Lead weekly tutorials on basic mobile robotic concepts implemented on Qbot2 with Quarc, Matlab and Simulink

Research Assistant, McGill - Centre for Intelligent Machines F2015 - S2016
Dynamic Balancing of a Pick-and-Place Robot, Supervisor: Prof. Jorge Angeles

- Maintain the electronics and implement a PID controller on Simulink and RT-LAB
- Demo the robot running industry test cycles to visitors
- Conceptualize designs in CAD software to increase the test cycles per second.
- Research, find and read articles on the topic of dynamic balancing and Schönflies motion generator for the principal PhD researcher's literature review.

Research Assistant, McGill - Biomedical Microsystems Laboratory F2014 - W2015
3D Printing of an Embedded Strain Gauge Sensor, Supervisor: Prof. Xinyu Liu,

- Set up and use an open source 3D printer to simultaneously print two different materials
- Research methods to print strain gauge sensors embedded within flexible structures
- Design two proofs of concepts: a glove sensor and buttons for a keyboard

Research Assistant, McGill - Biomechanics Laboratory S2012
Cyclical Test Frequency Dependence of Aortic Tissue, Supervisor: Prof. Rosaire Mongrain

- Investigate the effect of cyclical loading frequency on aortic tissue in order to be able to run accelerated tests simulating physiological loadings
- Collect and prepare samples of porcine aorta tissue to be installed on a bi-axial tensile test machine
- Measure the stress and strain properties from data

REVIEWING

ICRA 2018, ICRA 2020

HONORS & AWARDS

Ontario Graduate Scholarship, University of Toronto 2019
MIP President's Fund: Education Scholarship, MIP 2019
APSC GSEF Award, University of Toronto 2018
Ontario Graduate Scholarship, University of Toronto 2017
NSERC Industrial Undergraduate Student Research Award, McGill University 2015
Golden Key International Honour Society Invitation, McGill University 2012
Summer Undergraduate Research in Engineering Award, McGill University 2012

VOLUNTEER SERVICE

Tester for SenseAct (a real-time reinforcement learning framework), Kindred F2018

- Reproduce Kindred's experiments on our lab's robot.
- Document findings as a blog post on Kindred's official website.
- Submit a pull request on the SenseAct repository with related fixes.

Self-Driving Car Autonomy Team Advisor, aUToronto F2017 - S2018

- Advise the autonomy team for stop sign and lane detection
- Work on calibrating LiDAR and camera extrinsics on the car

Main Lab Demonstrator, STARS lab F2016 - present

- Prepare demonstrations and presentations for visitors include professors, industrial researchers, politicians and government officials, industry representatives, donors, and high-school, undergraduate and graduate students.
- Program and prepare robotic demonstrations to showcase our robots.
- This role is shared by one other student.

- Lab Representative**, Aerospace Students Association F2017 - S2018
 - Act as my research group’s primary point of contact with the Executive Committee
- Athletics Coordinator**, Aerospace Students Association F2016 - F2017
 - Coordinate athletic activities
 - Upkeep the athletic equipment and venues
- Autonomous Underwater Vehicle Software Developer**, McGill Robotics F2015 - F2016
 - Refactor the PID control and thrust mapper nodes to be object oriented and more intuitive
 - Implement the option of dynamic reconfigurable PID gains
 - Participate in weekly pool tests to debug and test software on the robot
- Autonomous Underwater Vehicle Section Leader**, McGill Robotics F2014 - S2015
 - Lead and manage the group members of the auxiliary pressure vessels team
 - Design and manufacture the pressure vessels which would house the batteries and hydrophones along with their various electronics and connectors.
- National Conference Delegate Experience Member**, EWB McGill Chapter F2014
 - Attend weekly meeting discussing the logistics and planning of the conference
 - Organize the “Delegate Experience” room, where the delegates rested and networked between talks and workshops in a casual atmosphere.

MISC. INDUSTRY
EXPERIENCE

- Customer Engineering Intern**, Pratt and Whitney Canada, R&D S2015
Supervisor: Aline Miquet, PhD
 - Program scripts on VBA to track, visualize and analyze various metrics on the auxiliary power units of the airplane fleet to guide the redesign of parts and efficiently plan repairs
 - Accurately automate various weekly processes such as warranty and coverage calculations on exce
- Technical Coordinator**, Mercedes Textiles S2014
Supervisors: Duane Leonhardt and Soroush Nobari, PhD
 - Take part in the development of a new portable three stage fire pump from the initial design to the assembly of the first model
 - Create the accompanying operator and shop manual with assembly drawings and instructions.
- Manufacturing Supervisor Intern**, Pratt and Whitney Canada, Plant 1 F2013
Supervisor: Michel Roch
 - Coordinate with maintenance, logistics and other department supervisors to ensure a timely delivery of shafts and turbine blades
 - Motivate and work with unionized workers in a struggling department to reduce the high amount of overdue parts.
- Technical Coordinator**, Mercedes Textiles S2013
Supervisor: Duane Leonhardt
 - Install and program a Dot Peen marking machine station and train operators to use the machine
 - Design a Jerry can fuel cap adaptor, now patented and sold as a product
 - Draw and design mechanical components using 3D solids and 2D detailed drawings.

SKILLS &
LANGUAGES

Systems: Linux, Windows

Software: PyTorch, PyBullet, Simulink, AutoDesk Inventor, Solidworks, Git

Languages & Frameworks: Python, C/C++, ROS, Matlab, Fortran, VBA

Languages: Mauritian Creole (Native), English (Fluent), French (Fluent)