

# Oliver Limoyo

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## Work Experience

**Jan 2023 - Samsung AI Centre, Montreal**

**Sep 2023** *Research Scientist Intern, Foundation Models for Robotics*

- Developed a framework for automated robotic photo acquisition using a combination of a large language model (LLM), visual language models (VLMs), and classical computer vision.
- Integrated LLMs and VLMS on a physical robotic system for a live demo.

**May 2022 - Samsung AI Centre, Montreal**

**Dec 2022** *Research Scientist Intern, Visuotactile Manipulation*

- Developed software to support and integrate a novel visuotactile sensor on the robot manipulators in the lab.
- Demonstrated the use of a novel visuotactile sensor for imitation learning and object grasping.

**May 2019 - OCADO Intelligent Automation (formerly Kindred AI)**

**Sep 2019** *Research Scientist Intern, Reinforcement Learning*

- Analyzed the effects of action delays and magnitudes on common reinforcement learning algorithms deployed on production robots.
- Formulated detecting unscannable items from images as a contextual bandit problem and developed a model that improved the pick rate of a robot that grasps, scans, and sorts parcels.

## Education

**2017-2024 Doctor of Philosophy - University of Toronto**

Advised by Prof. Jonathan Kelly

Thesis: "Self-Supervised and Generative Learning from Structure in Robotic Problems"

**2011-2016 Bachelor of Engineering - McGill University**

Mechanical Engineering, GPA: 3.79/4.00

## Honours & Awards

**2020 - 2023 Alexander Graham Bell Canada Graduate Scholarship-Doctoral**

*CGS-D3, 3 years, \$105,000 total value*

**2020 - 2022 Vector Institute Postgraduate Affiliate**

*Access to research and computing facilities, \$12,000 total value*

**2017 & 2019 Ontario Graduate Scholarship**

*\$30,000 total value*

**2015 NSERC Industrial Undergraduate Student Research Award**

*For research at Pratt & Whitney, \$4,500 total value*

**2012 NSERC Undergraduate Research in Engineering Award**

*For research in the Biomaterials and Biomechanics Lab, \$4,500 total value*

## Selected Publications

- [1] **O. Limoyo**, A. Konar, T. Ablett, J. Kelly, F. R. Hogan, and G. Dudek, “Working backwards: Learning to place by picking,” in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Abu Dhabi, United Arab Emirates, Oct. 14–18 2024, submitted.
- [2] **O. Limoyo**<sup>†</sup>, J. Li<sup>†</sup>, D. Rivkin, J. Kelly, and G. Dudek, “Photobot: Reference-guided interactive photography via natural language,” in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Abu Dhabi, United Arab Emirates, Oct. 14–18 2024, submitted.
- [3] —, “Reference-guided robotic photography through natural language interactions,” in *Proceedings of the Human-Robot Interaction (HRI) Workshop on Human – Large Language Model Interaction*, Boulder, Colorado, USA, Mar. 11 2024.
- [4] T. Ablett, **O. Limoyo**, A. Sigal, A. Jilani, J. Kelly, K. Siddiqi, F. Hogan, and G. Dudek, “Multimodal and force-matched imitation learning with a see-through visuotactile sensor,” *IEEE Transactions on Robotics (T-RO): Special Section on Tactile Robotics*, 2024, submitted.
- [5] **O. Limoyo**<sup>†</sup>, F. Maric<sup>†</sup>, M. Giamou, P. Alexson, I. Petrovic, and J. Kelly, “Generative graphical inverse kinematics,” *IEEE Transactions on Robotics (T-RO)*, 2023, submitted.
- [6] —, “Euclidean equivariant models for generative graphical inverse kinematics,” in *Proceedings of the Robotics: Science and Systems (RSS) Workshop on Symmetries in Robot Learning*, Daegu, Republic of Korea, Jul. 10 2023.
- [7] **O. Limoyo**, B. Chan, F. Maric, B. Wagstaff, R. Mahmood, and J. Kelly, “Heteroscedastic uncertainty for robust generative latent dynamics,” *IEEE Robotics and Automation Letters (RA-L)*, 2020.

## Skills

**Programming:** Python, C/C++, MATLAB

**Software:** PyTorch, TensorFlow, PyBullet, ROS, ROS2, NumPy, SciPy, Pandas, Gazebo, Docker, Git, Linux

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

## Volunteer Service

**Sep 2017 - aUToronto**

**May 2018** *Autonomy Team Advisor*

- Advised the autonomous vehicle student team on lidar and camera calibration.

**Sep 2016 - Aerospace Students Association**

**Sep 2017** *Athletics Coordinator*

- Organized various athletic events, and upkeep or improved athletic facilities.

**Sep 2014 - McGill Robotics**

**Sep 2016** *Team Lead*

- Led and managed three members to design and manufacture the pressure vessels that house the batteries and hydrophones.
- Refactored the controller and participated in weekly pool tests to debug and test software on the robot.