Oliver Limoyo

Email: oliver.limoyo@gmail.com
Website: https://limoyo.ca/

Work Experience

Jan 2023 - Sep 2023 **Samsung AI Centre, Montreal**
Research Scientist Intern, Foundation Models for Embodied AI

- 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 - Dec 2022 **Samsung AI Centre, Montreal**
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 - Sep 2019 **OCADO Intelligent Automation** (formerly Kindred AI)
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, GPA: 4.00/4.00
Thesis: "Generative and Self-Supervised Learning for Robotics Problems"

2011-2016 **Bachelor of Engineering - McGill University**
Mechanical Engineering, GPA: 3.79/4.00

Honours & Awards

2023 **IAS-17 Best Paper Finalist**

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, 2024.

[2] **O. Limoyo**†, J. Li†, 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, 2024.

[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, 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**†, F. Maric†, M. Giamou, P. Alexson, I. Petrovic, and J. Kelly, "Generative graphical inverse kinematics," *IEEE Transactions on Robotics (T-RO)*, 2023, to be published.

[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, 2023.

[7] **O. Limoyo**, T. Ablett, and J. Kelly, "Learning sequential latent variable models from multimodal time series data," in *Intelligent Autonomous Systems 17 (IAS)*, Zagreb, Croatia, 2023, Best Paper Finalist.

[8] **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.

[9] **O. Limoyo**, T. Ablett, F. Marić, 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)*, Brisbane, Queensland, Australia, 2018.

Skills

Programming: Python, C, C++, MATLAB
Software: PyTorch, TensorFlow, PyBullet, ROS, ROS2, NumPy, SciPy, Pandas, Gazebo, Docker, Git, Linux, Slurm
Languages: English (Native), Mauritian Creole (Native), French (Fluent)

Volunteer Service

Sep 2017 - May 2018 **aUToronto**
Autonomy Team Advisor

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

Sep 2016 - Sep 2017 **Aerospace Students Association**
Athletics Coordinator

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

Sep 2014 - Sep 2016 **McGill Robotics**
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.