

Matthew Lisondra Research – Robotics & Physics, AI and Computer Vision

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Research interests Robotics, Simultaneous Localization and Mapping (SLAM), State Estimation, Computer Vision, Autonomous Systems, Deep/Reinforcement Learning

Education **Toronto Metropolitan University** Toronto, ON
MAsc Master's in Mechanical Engineering Sep 2022 – Present
(Mechatronics, MEMS and Robotics Engineering)
Supervised by: Profs. Dr. Sajad Saeedi, Dr. Kourosh Zareinia

University of Toronto, St. George Toronto, ON
HBSc Honours Bachelor's in Physics/Mathematics Sep 2017 – June 2021
Collaborated with: Prof. Dr. Dylan Jones

Publications ***Visual Inertial Odometry using Focal Plane Binary Features (BIT-VIO)***
M. Lisondra^{1,*}, J. Kim^{1,*}, R. Murai², K. Zareinia¹, S. Saeedi¹ - [In Review](#)
(¹Toronto Metropolitan University, ²Imperial College London)
Submitted The International Conference on Robotics and Automation (ICRA) 2024

Research experience **Robotics and Computer Vision Laboratory (RCVL)** Toronto, ON
Toronto Metropolitan University by Dr. Sajad Saeedi Sep 2022 – Present
Worked on Visual-Inertial Sensor Fusion (VIO and SLAM), Autonomous Driving Algorithms, Focal-Plane Sensor-Processor (FPSP) Chips, Reinforcement Learning Pose-Graph Optimization (RL-PGO) research

Haptics and Telerobotics Laboratory (HapTel) Toronto, ON
Toronto Metropolitan University by Dr. Kourosh Zareinia Sep 2022 – Present
Worked on Image-Based Force Estimation in Medical Applications research

Reviewer (Conference) for ICRA 2024 Fall 2023
International Conference on Robotics and Automation (ICRA) 2024

Reviewer (Conference) for IEEE CCECE 2023 Winter 2023
2023 Canadian Conference On Electrical and Computer Engineering

Reviewer (Conference) for IROS 2023 Winter 2023
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

Teaching experience **Graduate/Teaching Assistant for MEC411** Winter 2023
Mechanics of Machines at Toronto Metropolitan University
Graduate/Teaching Assistant for BME/MEC323 Fall 2022
Statics and Mechanics of Materials at Toronto Metropolitan University

Industry experience	Virtute Innovation Academy	Richmond Hill, ON
	Department of Mathematics and Science Instructor	Sep 2023 – Present
	Taught online/in-person Physics, Calculus and Computer Science I, II instruction in class sessions of 20-40 students via lecture plans, assignments, examinations Collaborated with: Dr. Albert Jiang	
	Academic Horizons	Surrey, BC
	Senior Physics and Computer Science Instructor	Oct 2021 – Sep 2023
	Taught online 1-on-1 teaching sessions with students, Developed individualized, appropriate learning programs, assisted in collecting and maintaining learner records for the purpose of evaluating student progress	
	Lumist Educational Institution	Toronto, ON
	Lead Physics Instructor (+ Computer Science)	April 2021 – Oct 2021
	Taught online 1st-4th yr. students from UCLA, UC Berkeley, UCSD in class sessions of 40-50 students, delivered instruction in live/recorded/edited lecture video modules Collaborated with: Profs. Dr. Nathan Murray, Dr. Francisco Guevara Parra	
Skills	Coding: Python, PyTorch, keras, R, C/C++, Java, R, C#, Javascript, HTML, CSS Technologies: Windows, Linux, NXP MCUs based on Arm Cortex-M cores	
Extra-Curriculars	Toronto Metropolitan Aerial Vehicles - TMAV	Fall 2022
	Collaborated on Carbon-Cover, Inverse Kinematics of Robotic Arm Projects	

References available on request.