

Matthew Lisondra

MS, Mechatronics, MEMS and Robotics Engineering

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Toronto Metropolitan University, EPH Eric Palin Hall

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: Prof. Sajad Saeedi, Prof. Kourosh Zareinia

University of Toronto, St. George Toronto, ON
HBSc Honours Bachelor's in Physics/Mathematics Sep 2017 – June 2021
Collaborated with: Prof. 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 Prof. 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 Prof. Kourosh Zareinia Sep 2022 – Present
Worked on Image-Based Force Estimation in Medical Applications research

Reviewer (Journal) for RA-L 2024 Fall 2024
IEEE Robotics and Automation Letters (RA-L) 2024

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)

Industry experience	Rosor Exploration Toronto, ON Researcher - Robotics, Geoscientific UAVs and Drones Jan 2024 – Present Working on the research and development of Rosor's Active Terrain Following (ATR) system, Rosor is a near-surface geoscientific drone inspection company, Specializing in remotely piloted aircraft systems development and operations to carry out mineral exploration projects and investigate for new potential mining sites Collaborated with: Robel Efrem
Teaching experience	Graduate/Teaching Assistant for MEC411 Winter 2023 – Present Mechanics of Machines at <i>Toronto Metropolitan University</i> Graduate/Teaching Assistant for BME/MEC323 Fall 2022 – Present Statics and Mechanics of Materials at <i>Toronto Metropolitan University</i> 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 of Lumi Education Toronto, ON Lead Physics Instructor 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: Prof. 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.