Matthew Lisondra

Robotics Computer Vision Lab (RCVL) & University of Toronto

mattlisondra.com

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Research interests	Robotics, Simulation 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: Dr. S. Saeedi, Dr. K. Zareinia	
	University of Toronto, St. George	Toronto, ON
	HBSc Honours Bachelor's in Physics/Mathematics	Sep 2017 – June 2021
	Collaborated with: Dr. D. Jones	

Publications	***Visual Inertial Odometry using Focal Plane Binary Features (BIT-VIO)***
	M. Lisondra[1,*], J. Kim[1,*], R. Murai[2], K. Zareinia[1], S. Saeedi[1] - Accepted
	([1]Toronto Metropolitan University, [2]Imperial College London)
	Accepted The International Conference on Robotics and Automation (ICRA) 2024

Research experience	**Robotics and Computer Vision Laboratory (RCVL)**	Toronto, ON
	Toronto Metropolitan University by Dr. S. 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. K. Zareinia	Sep 2022 – Present
	Worked on Image-Based Force Estimation in Medical Applications research	
	Reviewer (Journal) for IROS 2024	Winter 2024
	IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)	
	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: R. Efrem

Teaching experience	**Graduate/Teaching Assistant for MEC411** Winter 2023 – Present
	Mechanics of Machines at *Toronto Metropolitan University*
	Graduate/Teaching Assistant for BME/MEC323 Fall 2022 – Present
	Statics and Mechanics of Materials at *Toronto Metropolitan University*
	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. A. 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: Dr. N. Murray, Dr. F. G. Parra

Skills	**Coding:** Python, PyTorch, Keras, R, C/C++, Java, 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.