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

matthew.lisondra@torontomu.ca (or @alum.utoronto.ca) (647)-821-8290
Toronto Metropolitan University, EPH Eric Palin Hall mattlisondra.com

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. Murai[2], K. Zareinia[1], S. Saeedi[1] - In Review
([1]Toronto Metropolitan University, [2]Imperial 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.