

LUKE ROWE

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EDUCATION

Mila / University of Montreal • Montreal, QC Sep 2023 – Present
Ph.D. Computer Science • **Advisors:** Prof. Chris Pal and Prof. Liam Paull

University of Waterloo • Waterloo, ON Sep 2021 – Aug 2023
MMath Computer Science • **Advisor:** Prof. Krzysztof Czarnecki
Thesis: FJMP: Factorized Joint Multi-Agent Motion Prediction

University of Victoria • Victoria, BC Nov 2020
BSc. (Hon) Computer Science and Mathematics • GPA: 8.96/9.0

EXPERIENCE

PhD Research Intern – Torc Robotics May 2024 – Aug 2024
Montreal, QC

- Designed a novel latent diffusion generative model for controllable vectorized driving scene generation (HD-Map, agent bounding boxes)

Research Assistant – REAL Lab, Mila Sep 2023 – Apr 2024
Montreal, QC

- Designed a controllable multi-agent simulation framework for autonomous driving scenarios with offline reinforcement learning, based on an encoder-decoder Transformer architecture.

Research Assistant – WISE Lab, Univ. of Waterloo Sep 2021 – Aug 2023
Waterloo, ON

- Designed a joint motion prediction framework for autonomous driving scenarios that ranks first on the multi-agent benchmark of the INTERACTION dataset.

Undergraduate Research Assistant, Tzanetakis Lab – Univ. of Victoria May 2020 – Apr 2021
Victoria, BC

- Designed Transformer architecture that performed state-of-the-art on the task of automatic chord recognition.

Junior Software Developer, Intern – Latitude Technologies Summer 2019
Victoria, BC

- Developed a system to support user-configurable aircraft event notifications in Latitude’s web applications.

PUBLICATIONS

CtRL-Sim: Reactive and Controllable Driving Agents with Offline Reinforcement Learning
*Luke Rowe**, Roger Girgis*, Anthony Gosselin, Bruno Carrez, Florian Golemo, Felix Heide, Liam Paull, Christopher Pal
CoRL, 2024

Amortizing intractable inference in diffusion models for vision, language and control
*Siddarth Venkatraman**, Moksh Jain*, Luca Scimeca*, Minsu Kim*, Marcin Sendera*, Mohsin Hasan, **Luke Rowe**, Sarthak Mittal, Pablo Lemos, Emmanuel Bengio, Alexandre Adam, Jarrid Rector-Brooks, Yoshua Bengio, Glen Berseth, Nikolay Malkin
NeurIPS, 2024

FJMP: Factorized Joint Multi-Agent Motion Prediction over Learned Directed Acyclic Interaction Graphs
Luke Rowe, Martin Ethier, Eli-Henry Dykhne, Krzysztof Czarnecki
CVPR, 2023

Out-of-Distribution Detection for LiDAR-based 3D Object Detection
*Chengjie Huang, Van Duong Nguyen, Vahdat Abdelzad, Christopher Gus Mannes, **Luke Rowe**, Benjamin Therien, Rick Salay, Krzysztof Czarnecki*
IEEE Intelligent Transportation Systems Conference, 2022

Curriculum Learning for Imbalanced Classification in Large Vocabulary Automatic Chord Recognition
Luke Rowe, George Tzanetakis
International Society for Music Information Retrieval Conference, 2021

TEACHING

Teaching Assistant – *Dept. of Computer Science, University of Waterloo* Fall 2021 – Present
CS 135 (Fall 2021), CS 360 (Winter 2022, Spring 2022, Fall 2022, Winter 2023, Spring 2023)

Teaching Assistant – *Dept. of Computer Science, University of Victoria* Fall 2019
CSC 320

AWARDS AND SCHOLARSHIPS

- NSERC Doctoral Scholarship (\$120,000 CAD) (Sep 2024 - Aug 2027)
- FRQNT Doctoral Scholarship (\$100,000 CAD) (Sep 2024 - Aug 2028)
- Ontario Graduate Scholarship (\$30,000 CAD) (Sep 2021, Sep 2022)
- President's Graduate Scholarship (\$20,000 CAD) (Sep 2021, Sep 2022)
- NSERC USRA (\$5,625 CAD) (May 2020)