Charlotte MORISSETTE

Masters Student in Computer Science

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Education

Present – Sept. 2023 | **Masters of Science - Thesis, School of Computer Science, McGill University, Montréal, Canada**
Degree : Computer Science
Thesis Topic : Tactile Sensing and Foundation Models for Robot Manipulation.
Supervisor : Gregory Dudek
CGPA : 4.00/4.00

May 2023 – Sept. 2019 | **Bachelor of Science, School of Computer Science, McGill University, Montréal, Canada**
Degree : Honours Computer Science & Biology, Minor in Statistics
CGPA : 3.79/4.00

Work Experience

May 2025 – Sept. 2024 | **Teaching Assistant, McGill University, Montréal, Canada**
- TA for COMP462 & COMP561, Computational Biology Methods and COMP421, Database System
- TA for COMP421, Database System

Aug. 2023 – May 2022 | **Research Intern, Samsung AI Centre, Montréal, Canada**
- Multimodal tactile sensors (working on software and hardware)
- Human-Robot interactions
- Zero-shot transfer in reinforcement learning using hypernetworks
- Contact shape estimation using visual-tactile sensors

Aug. 2021 – Sept. 2020 | **Research Assistant, McGill University, Montréal, Canada**
- Volunteer research position in Joseph Vybihal's lab at McGill University
- Neural network classification with limited training data and Research on image inpainting

Publications

2025 Abyaneh, A., **Morissette, C.**, Danesh, M., Houssaini, A., Meger, D., Dudek, G. and Lin, H. 2025. "Contractive diffusion policies : Robust action diffusion via contractive sampling with differential equations." *In Review at International Conference on Learning Representations (ICLR) 2026*.

2025 Wen, S., Meriaux, E., Guzmán, MS., **Morissette, C.**, Si, C., Baghi, B. and Dudek, G., "Scalable Aerial GNSS Localization for Marine Robots". In *IEEE International Conference on Robotics and Automation (ICRA), Robots in the Wild Workshop 2025*.

2024 Jilani, A., Hogan, F.R., **Morissette, C.**, Dudek, G., Jenkin, M. and Siddiqi, K. 2024. "Visual-Tactile Inference of 2.5D Object Shape from Marker Texture". In *IEEE Robotics and Automation Letters, presented at ICRA 2025*.

2023 Rezaei-Shoshtari, S., **Morissette, C.**, Hogan, F.R., Dudek, G. and Meger, D., 2023. "Hypernetworks for Zero-shot Transfer in Reinforcement Learning". In *Proceedings of the AAAI Conference on Artificial Intelligence* (Vol. 37).

2022 **Morissette, C.**, Baghi, B.H., Hogan, F.R. and Dudek, G., 2022. "A Study of Human-Robot Handover through Human-Human Object Transfer". In *Advances in Neural Information Processing Systems, Human in the Loop Learning (HiLL) Workshop (NeurIPS) 2022*.

Patents

2024 Jilani, A., Hogan, F.R., **Morissette, C.**, Dudek, G., Jenkin, M. and Siddiqi, K. "Optical tactile sensor and method for estimating shape from touch". United States Patent US 18,378,447. United States Patent and Trademark Office. 19 Sept. 2024

2024 Rezaei-Shoshtari, S., **Morissette, C.**, Hogan, F.R., Dudek, G. and Meger, D. "Hypernetworks for Zero-shot Transfer in Reinforcement Learning". United States Patent US 18,385,696. United States Patent and Trademark Office. 20 Juin. 2024

Select Honors and Awards

2024 –Present Fonds de Recherche du Quebec - Nature et Technologies (FRQ-NT) Award.
2023 AAAI-23 Student Scholarship
2020 –2021 Faculty Of Science Scholarships, Top 5% of the Faculty

Skills

Programming	Python, Java, C++, C, C#, MATLAB
Machine Learning Frameworks	PyTorch, TensorFlow
Platforms	ROS, Docker
Robotic Software	Mujoco, Bullet, MoveIt, OpenCV
Other Software	onShape, LaTeX

Research Interests

- Robotics
- Haptics/Manipulation/Tactile Sensing
- Human-Robot Interactions
- Representation Learning
- Reinforcement Learning
- Robot Learning
- Foundation Models for Robot Learning
- Biomechanics

Relevant Courses

COMP 514 - Applied Robotics, McGill
COMP 550 - Natural Language Processing, McGill
COMP 551 - Applied Machine Learning, McGill
COMP 558 - Fundamentals of Computer Vision, McGill
Coursera - Neural Networks & Deep Learning, Coursera
COMP 765 - Intelligent Robotics, McGill
COMP 417 - Robotics and Intelligent Systems, McGill
COMP 424 - Artificial Intelligence, McGill
IFT 6135B - Representation Learning, UdeM

Select Projects

Modality Fusion for VLA Models — 2025

› Developed a tactile-augmented VLA model.
› Examined application of pre-trained tactile representation.

Visual-Tactile Inference of 2.5D Object Shape from Marker Texture — 2024

Paper
› Developed a contact shape estimation approach for visual-tactile sensors.
› Created a 2.5D Shape from Marker Texture algorithm

HyperZero — 2023

Paper SAIC-MONTREAL/hyperzero
› Developed a framework that allows for approximating RL solutions by learning the mapping between the MDP specifics and the near-optimal policy.
› Created the method HyperZero using hypernetworks for zero-shot transfer.

Contextual Control Suite — 2023

SAIC-MONTREAL/contexual-dm-control
› Built upon DeepMind control suite & allowed dynamics/rewards changes

A Study of Human-Robot Handover through Human-Human Object Transfer — 2022

Paper
› Investigated changes in handover behaviour when transferring hazardous objects.
› Designed and adapted a version of the See-Through-vour-Skin (STS) visuotactile sensor.

Languages

French Native/First Language
English Native/First Language

Extracurricular Activities

Present – May 2024 | **Volunteer, PSSAR Network : Supporting Students and Scholars at Risk, Montréal, Canada**
› Match students with professors and graduate programs in Canada.
› Assist with graduate school applications.

Jan. 2024 – Jun. 2022 | **Volunteer, Women in AI & Robotics, Montréal, Canada**
› Core member of the Women in AI and Robotics (WAIR) group.
› Helped found the WAIR Youth Group.
› Organized & Participated in Robotics Hackathons.

Feb. 2023 | **Session Chair, AAAI conference on artificial intelligence, Washington DC, USA**
› Chaired two sessions on *ML : Deep Neural Architectures* during 2023 conference