

# Charlotte MORISSETTE

## Masters Student in Computer Science

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### EDUCATION

Present Sept. 2023	<b>Masters of Science - Thesis, SCHOOL OF COMPUTER SCIENCE, MCGILL UNIVERSITY, Montréal, Canada</b> <b>Degree :</b> Computer Science <b>Thesis Topic :</b> Tactile Sensing and Foundation Models for Robot Manipulation. <b>Supervisor :</b> Gregory Dudek <b>CGPA :</b> 4.00/4.00
May 2023 Sept. 2019	<b>Bachelor of Science, SCHOOL OF COMPUTER SCIENCE, MCGILL UNIVERSITY, Montréal, Canada</b> <b>Degree :</b> Honours Computer Science & Biology, Minor in Statistics <b>CGPA :</b> 3.78/4.00

### WORK EXPERIENCE

May 2025 Sept. 2024	<b>Teaching Assistant, MCGILL UNIVERSITY, Montréal, Canada</b> <ul style="list-style-type: none"><li>TA for COMP462 &amp; COMP561, Computational Biology Methods</li><li>TA for COMP421, Database System</li></ul>
Aug. 2023 May 2022	<b>Research Intern, SAMSUNG AI CENTRE, Montréal, Canada</b> <ul style="list-style-type: none"><li>Multimodal tactile sensors (working on software and hardware)</li><li>Human-Robot interactions</li><li>Zero-shot transfer in reinforcement learning using hypernetworks</li></ul>
Aug. 2021 Sept. 2020	<b>Research Assistant, MCGILL UNIVERSITY, Montréal, Canada</b> <ul style="list-style-type: none"><li>Volunteer research position in Joseph Vybital's lab at McGill University</li><li>Neural network classification with limited training data</li><li>Research on image inpainting</li></ul>

### 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 Jilani, A., Hogan, F.R., **Morissette, C.**, Dudek, G., Jenkin, M. and Siddiqi, K. 2025. "Visual-Tactile Inference of 2.5D Object Shape from Marker Texture". In *IEEE Robotics and Automation Letters, presented at ICRA 2025*.
- 2025 Wen S., Meriaux E., Guzmán MS., **Morissette C.**, Si C., Baghi B., Dudek G., "Scalable Aerial GNSS Localization for Marine Robots". In *IEEE International Conference on Robotics and Automation (ICRA), Robots in the Wild Workshop 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 Affan, Hogan, F.R., **Morissette, C.**, Dudek, G., Jenkin, Michael and Siddiqi, Kaleem. "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 Trade-mark 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
- 2021 -2022 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 765 - Intelligent Robotics, McGill
COMP 550 - Natural Language Processing, McGill	COMP 417 - Robotics and Intelligent Systems, McGill
COMP 551 - Applied Machine Learning, McGill	COMP 424 - Artificial Intelligence, McGill
COMP 558 - Fundamentals of Computer Vision, McGill	IFT 6135B - Representation Learning, UdeM
Coursera - Neural Networks & Deep Learning, Coursera	

## SELECT PROJECTS

<b>MODALITY FUSION FOR VLA MODELS</b>	2025
<ul style="list-style-type: none"><li>› Developed a tactile-augmented VLA model.</li><li>› Examined application of pre-trained tactile representation.</li></ul>	
<b>VISUAL-TACTILE INFERENCE OF 2.5D OBJECT SHAPE FROM MARKER TEXTURE</b>	2024
 Paper <ul style="list-style-type: none"><li>› Developed a contact shape estimation approach for visual-tactile sensors.</li><li>› Created a 2.5D Shape from Marker Texture algorithm</li></ul>	
<b>HYPERZERO</b>	2023
 Paper  SAIC-MONTREAL/hyperzero <ul style="list-style-type: none"><li>› Developed a framework that allows for approximating RL solutions by learning the mapping between the MDP specifics and the near-optimal policy.</li><li>› Created the method HyperZero using hypernetworks for zero-shot transfer.</li></ul>	
<b>A STUDY OF HUMAN-ROBOT HANDOVER THROUGH HUMAN-HUMAN OBJECT TRANSFER</b>	2022
 Paper <ul style="list-style-type: none"><li>› Investigated changes in handover behaviour when transferring hazardous objects.</li><li>› Designed and adapted a version of the See-Through-your-Skin (STS) visuotactile sensor.</li></ul>	
<b>CONTEXTUAL CONTROL SUITE</b>	2022
 SAIC-MONTREAL/contextual-dm-control <ul style="list-style-type: none"><li>› Built upon DeepMind control suite &amp; allowed dynamics/rewards changes</li></ul>	

## LANGUAGES

French	Native/First Language
English	Native/First Language

## EXTRACURRICULAR ACTIVITIES

Jan. 2024	Volunteer, WOMEN IN AI & ROBOTICS, Montréal, Canada
Jun. 2022	<ul style="list-style-type: none"><li>› Core member of the Women in AI and Robotics (WAIR) group.</li><li>› Helped found the WAI Youth Group.</li><li>› Organized &amp; Participated in Robotics Hackathons.</li></ul>
Feb. 2023	Session Chair, AAAI CONFERENCE ON ARTIFICIAL INTELLIGENCE, Washington DC, USA <ul style="list-style-type: none"><li>› Chaired two sessions on <i>ML : Deep Neural Architectures</i> during 2023 conference</li></ul>