

# Julie Alhosh

📍 Montréal, QC, Canada

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🌐 <https://juliealhosh.github.io/>

## PROFESSIONAL PROFILE

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- Extensive experience in robotics and machine learning (ML), specifically in reinforcement learning (RL)
- MSc student in computer science and a holder of a BSc in math and computer science
- In-depth experience in continuous-time RL and distributional RL
- Highly competent in Python, C/C++, NumPy, PyTorch, TensorFlow, Hydra, Matplotlib, ROS
- Strong sense of responsibility and organization, attention to detail, and analytical ability
- English and French

## EXPERIENCE

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### Robotics Research

*Graduate Researcher*, Mobile Robotics Lab, McGill University, Montréal, QC

JUN 2023 – PRESENT

- Built “BoatGym”, an OpenAI Gym environment to simulate active sampling and reconstruction of aquatic phenomena
- Trained a DQN agent to plan a sampling path which results in higher episodic returns compared to a boustrophedon agent with double the number of steps
- Implemented multi-resolution feature aggregation to improve the performance of the path planner
- Supervisor: Prof. David Meger

### Reinforcement Learning Research

*Research Assistant*, Mobile Robotics Lab (MRL), McGill University

SEP 2021 – PRESENT

- Proved the convergence of the quantile imputation strategy
- Proved the convergence of the statistical HJB loss function introduced in a recent ICML paper
- Studied state-of-the-art Distributional RL methods: statistical functionals including quantiles, existence and convergence analysis, empirical performance
- Studied continuous-time RL: the approach of numerical approximation methods such as finite difference (FD) and finite element (FE) and convergence analysis
- Studied optimal control: Hamilton-Jacobi-Bellman (HJB) equation, its extension to stochastic problems, and stochastic partial differential equations
- Supervisor: Prof. David Meger

### Mathematical Research

*Research Assistant*, McGill University

MAY – AUG 2020, 2021

- Proved that Kontsevich’s flows on two-dimensional quasi-homogeneous Poisson structures are trivial
- Further developed the “starproduct” SageMath software package for calculations with Poisson brackets and their quantizations, by implementing the action of GRT on Poisson structures
- Supervisor: Prof. Brent Pym

## TECHNICAL SKILLS

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**Programming Languages:** Python, C/C++, Java, OCaml

**Libraries:** NumPy, PyTorch, TensorFlow, Hydra, Matplotlib, Mujoco

**Software:** ROS, Gazebo, SageMath, L<sup>A</sup>T<sub>E</sub>X, MATLAB, Git

## EDUCATION

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### MSc in Computer Science

SEP 2022 – DEC 2024

Mobile Robotics Lab at McGill University, Montréal, QC

- CGPA: **4.0**/4.0

### BSc in Honours Mathematics and Computer Science

SEP 2018 – APR 2021

McGill University, Montréal, QC

- First Class Honours and distinction
- CGPA: **3.87**/4.0

## PROFESSIONAL ACTIVITIES

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### Field Trials, Workshops, and Professional Development

- Reinforcement Learning Conference (RLC), Amherst, MA, USA AUG 2024
- NSERC Canadian Robotics Network (NCRN) Field Trials, Gull Lake, ON, Canada JUN 2023, 2024
- IEEE International Conference on Robotics and Automation (ICRA), Yokohama, Japan MAY 2024
- Trustworthy and Responsible AI Learning Certificate (TRAIL Certificate) MAR 2024
- Barbados Marine Field Trials, Bellairs Research Institute, Holetown, Barbados FEB 2023, 2024
- The Cornell, Maryland, Max Planck Pre-doctoral Research School (CMMRS),  
Max Planck Institute for Software Systems, Saarbrücken, Germany AUG 2020
- CVR - VISTA Vision Science Summer School, Centre for Vision Research (CVR),  
York University, Toronto, ON, Canada JUL 2020

### Posters, Presentations, and Publications

- Presentation: “*Active Sampling, Modeling and Estimation in Aquatic Environments*” AUG 2024  
Université de Sherbrooke, QC, Canada
- Poster: “*Active Sampling, Modeling and Estimation of Thermoclines in Aquatic Environments*” JUN 2024  
NSERC Canadian Robotics Network (NCRN) AGM, Toronto, ON, Canada
- Poster: “*The Convergence of the Statistical HJB Loss for Policy Evaluation*” JUN 2023  
NSERC Canadian Robotics Network (NCRN) AGM, Toronto, ON, Canada

### Awards and Scholarships

- Excellence Bursary for Computer Science, awarded by the Ministère de l'Enseignement  
supérieur (MES) to graduates based on their CGPA JUN 2021
- ISM Undergraduate Summer Scholarship MAY 2021
- FRQNT Supplement to the NSERC USRA AUG 2020
- NSERC Undergraduate Student Research Award (USRA) MAY 2020
- Heather Munroe-Blum Leadership Award SEP 2018

### Teaching and Mentorship

- Artificial Intelligence (AI) Teaching Assistant, McGill University SEP – DEC 2023
- Computational Perception Teaching Assistant, McGill University SEP – DEC 2022
- Computer Science Tutor, McGill University SEP 2019 – JAN 2021
- TEAM Mentor for COMP302, McGill University SEP – DEC 2020