Jean-François Tremblay

Ph.D. candidate (final year), AI and robotics researcher
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EDUCATION

McGill University *September 2019 - Spring 2025 (Expected)*
Ph.D., computer science
Thesis: Active robot perception in the deep learning age
Supervised by Prof. David Meger
Committee: Prof. Joelle Pineau and Prof. Liam Paull

Université Laval *September 2017 - August 2019*
Research M.Sc., computer science GPA: 4.11/4.33
Thesis: Forest inventory with lidar-equipped robot for difficult environments
Supervised by Professor Philippe Giguère and Professor Martin Béland

Université Laval *September 2014 - May 2017*
B.Sc., mathematics and computer science GPA: 3.20/4.33

JOURNAL PUBLICATIONS

F. Hogan, J.-F. Tremblay, B. H. Baghi, M. Jenkins, K. Siddiqi, and G. Dudek. "Finger-STS: Combined Proximity and Tactile Sensing for Robotic Manipulation". In: *IEEE Robotics and Automation Letters* 7.4 (2022), pp. 10865–10872

J.-F. Tremblay, M. Béland, R. Gagnon, F. Pomerleau, and P. Giguère. "Automatic 3D Mapping for Tree Diameter Measurements in Inventory Operations". In: *Journal of Field Robotics* 37 (8 Dec. 2020). Special issue on Field and Service Robotics (FSR) 2019, pp. 1328–1346

J.-F. Tremblay and M. Béland. "Towards operational marker-free registration of terrestrial lidar data in forests". In: *ISPRS Journal of Photogrammetry and Remote Sensing* 146 (2018), pp. 430–435

PEER-REVIEWED CONFERENCE PUBLICATIONS

Under review: J. Alhosh, J.-F. Tremblay, H. Wiltzer, E. Bodzay, L. Petit, and D. Meger. "Active Sampling, Modeling and Estimation in Aquatic Environments". In: *Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS)*. Hanzhou, China, 2025

J.-F. Tremblay, J. Alhosh, L. Petit, F. Lotfi, Lara Landauro, and D. Meger. "Topological mapping for traversability-aware long-range navigation in extreme off-road terrain". In: *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*. Atlanta, USA, 2025

J.-F. Tremblay, D. Meger, F. Hogan, and G. Dudek. "Learning active tactile perception through belief-space control". In: *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*. Atlanta, USA, 2025

M. Jenkin, F. R. Hogan, K. Siddiqi, J.-F. Tremblay, B. H. Baghi, and G. Dudek. "Interacting with a Visuotactile Countertop". In: *Proceedings of the International Conference on Robotics, Computer Vision and Intelligent Systems (ROBOVIS)*. Rome, Italy, 2024

F. Hogan, J.-F. Tremblay, B. H. Baghi, M. Jenkins, K. Siddiqi, and G. Dudek. "Finger-STS: Combined Proximity and Tactile Sensing for Robotic Manipulation". In: *Proceedings of the IEEE/ RSJ International Conference on Intelligent Robots and Systems (IROS)*. Kyoto, Japan, 2022

J.-F. Tremblay, T. Manderson, A. Noca, and D. Meger. "Multimodal dynamics modeling for off-road autonomous vehicles". In: *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*. Xi'an, China, 2021

T. Manderson, J. C. Gamboa Higuera, S. Wapnick, J.-F. Tremblay, F. Shkurti, D. Meger, and G. Dudek. "Vision-based goal-conditioned policies for underwater navigation in the presence of obstacles". In: *Proceedings of Robotics: Science and Systems (RSS)*. Corvallis, USA, 2020

Invited to a special issue of the Journal of Field Robotics J.-F. Tremblay, M. Béland, F. Pomerleau, R. Gagnon, and P. Giguère. "Automatic 3D Mapping for Tree Diameter Measurements in Inventory Operations". In: *Proceedings of the 12th Conference on Field and Service Robotics (FSR)*. Tokyo, Japan, 2019.

PATENTS APPLICATIONS - WITH SAMSUNG ELECTRONICS

J.-F. Tremblay, F. Hogan, D. Meger, and G. Dudek. *Learning active tactile perception through belief-space control.* US Patent App. 18/141,031. Nov. 2023

F. Hogan, J.-F. Tremblay, B. H. Baghi, M. Jenkin, K. Siddiqi, and G. Dudek. *Visuotactile operators for proximity sensing and contact control.* US Patent App. 18/103,825. Aug. 2023

ACADEMIC EXPERIENCE

McGill University *September 2019 - Present*
Graduate student - Mobile robotics laboratory

- Robot programming with ROS (Python/C++)
- Research in reinforcement learning for robot navigation
- Machine learning programming in PyTorch
- C++ – Python – PyTorch – ROS – Supercomputing clusters with Slurm

Université Laval *September 2017 - August 2019*
Graduate student - Northern robotics laboratory

- Led and organized a project involving a forest technician and engineers
- Studied GPS-denied 3D mapping algorithms for mobile robots
- Studied tree diameter estimation methods from 3D points clouds
- A video of the 3D mapping results is available here
- C++ – Python – ROS

Université Laval *May 2019 - August 2019*
Graduate researcher - Digital forest laboratory

- Designed a wood-leaf lidar segmentation algorithm using machine learning
- Oversaw a team doing data labeling of lidar & satellite remote sensing data
- Python – TensorFlow – Keras – Scikit-Learn – Git – Supercomputing clusters with Slurm

INDUSTRIAL EXPERIENCE

Samsung AI Center Montreal *September 2021 - June 2023*
Research intern

- Projects in machine learning for tactile sensors
- Machine learning for real-time robot control
- PyTorch – ROS – Robot arms

CRiQ (Québec's center for industrial research) *May 2018 - December 2018*
Mitacs intern, technology transfer

- C++ – Python – ROS

InnovMetric Software Inc. *May 2017 - August 2017*
C++ software developer, 3D scanning

- C++11 – Visual Studio – MFC – .NET – Mercurial – Continuous integration – Multithreaded code

TECHNICAL STRENGTHS

Computer Languages	C++, Python, Julia, MATLAB, Java, Bash scripting
Software & Tools	PyTorch, Hydra, Slurm, Docker, AppTainer, Robot Operating System, NumPy, Ceres, Eigen, Point Cloud Library, CMake, Linux