Curriculum Vitae
Liam Paull

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Languages:	English and French

Education

2008 - 2013	Ph.D., Electrical and Computer Engineering University of New Brunswick Advisors: Dr. Mae Seto and Dr. Howard Li Thesis Title: "Robust Online Adaptive Sensor-Driven Survey Planning for Single and Multiple Autonomous Vehicles"
2007 - 2008	M.Sc., Electrical and Computer Engineering (Not Completed) University of New Brunswick Advisor: Dr. Liuchen Chang Note: Fast-tracked to Ph.D. Results were published in [J17].
2001 - 2004	B.Sc., Computer Engineering McGill University

Professional Appointments

2023 - present	Associate Professor - Université de Montréal
2023 - present	Member of the Courtois Institute
2021 - present	Core Acadmic Member of the Quebec Artificial Intelligence Institute (Mila)
2017 - present	Director and President (since 2019) - Duckietown Foundation
2020 - present	Chief Science and Education Officer - Duckietown Engineering
2017 - 2023	Assistant Professor - Université de Montréal
2017 - 2021	Associate Academic Member of the Quebec Artificial Intelligence Institute (Mila)
2017 - 2021	Faculty Fellow - Element AI
2015 - 2017	Research Scientist - MIT (MIT/CSAIL Driverless car project technical lead)
2013 - 2015	Postdoctoral Associate - MIT (Marine robotics group)

Teaching Experience

2018-23	Université de Montréal IFT2245 Systèmes d'exploitation (Operating Systems) - Lecturer
2017-22	Université de Montréal IFT6757 Autonomous Vehicles (a.k.a. "Duckietown") - Developer and lecturer

Spring 2016	MIT 2.166 Aunonomous Vehicles (a.k.a. "Duckietown") - Developer and lecturer
Spring 2014-15	MIT 2.680 Marine Vehicle Autonomy - Teaching assistant

Advisory Experience

Leadership:

2017-present	Founding member of the Montreal Robotics and Embodied AI Lab (REAL)
2017-present	Founding member of the Duckietown Project
2015-17	Lead of a team of postdoctoral associates, graduate students, and engineers for the Toyota Research Institute funded CSAIL autonomous car project (J8,C28,C29,C30,C32,C33)
2013-14	Co-led the MIT RobotX team that won 1st place at the inaugural RobotX competition in Singapore in Oct. 2014 (C41).

Mentor / Advising Graduate Students and Postdocs:

(degree, location, advising status) indicated for each person followed by project title if available

2023 - present	Samer Nashed (Postdoc, Montreal, advisor)
2023 - present	Luke Rowe (PhD, Montreal, co-advisor with Chris Pal) - Multi-agent trajectory prediction for autonomous driving
2023 - present	Sacha Morin (PhD, Montreal, co-advisor with Guy Wolf) [C4][C11] [C2]
2023 - present	Charlie Gauthier (PhD, Montreal, co-advisor with Glen Berseth)
2023 - present	Miguel Saavedra-Ruiz (PhD, Montreal, advisor)
2023 - present	Ria Arora (MSc, Montreal, co-advisor with Guy Wolf) - Applications of the harmonic filter [W1][J19]
2022 - present	Mahtab Sandhu (MSc, Montreal, advisor) - Continual object detection
2022 - 2023	Steven Parkison (Postdoc, Montreal, advisor) - Harmonic filter [W1][J19]
2022 - present	Kaustubh Mani (PhD, Montreal, advisor) - Risk-aware exploration in RL
2021 - present	Alihusein Kuwajerwala (MSc, Montreal, advisor) Learning vision-language representations for robotics [C5] [C2]
2021 - 2023	Miguel Saavedra-Ruiz (MSc, Montreal, advisor) Self-supervised learning for visual navigations [C4][C11][J19]
2020 - 2022	Charlie Gauthier (MSc, Montreal, advisor) - Fearful goal generation for robust policy learning [W3]
2020 - present	Mostafa Elaraby (PhD, Montreal, advisor) - Detecting distributional shift and its application to online interactive imitation learning [W4][C57]
2020 - 2023	Dishank Bansal (MSc, Montreal, advisor) - Uncertainty-aware object SLAM
2021 - 2022	Ali Harakeh (Postdoc, Montreal, advisor) - Uncertainty quantification for learning-based robotics [C9] [C6]
2020 - 2021	Anthony Courchesne (MSc, Montreal, advisor) - A framework for evaluating the usefulness of proxy environments [C16]
2019 - 2022	Florian Golemo (Postdoc, Montreal, co-advisor with Chris Pal) [W2]
2019 - present	Zhen Liu (PhD, Montreal, co-advisor with Yoshua Bengio) [C15][C17][C10][C7]
2019 - 2021	Rey Reza Wiyatno (MSc, Montreal, advisor) - Topological navigation [J2]
2019 - 2021	Dhaivat Bhatt (MSc, Montreal, advisor) - Probabilistic object detection [W9][C12]
2018 - 2023	Vincent Mai (PhD, Montreal, advisor) - Uncertainty for efficient reinforcement learning [C13][W8][C1]

2018 - 2023	Ruixiang Zhang (PhD, Montreal, co-advisor with Yoshua Bengio) - Learning controllable and generalizable representations with generative models [C24][C23][C8]
2018 - present	Manfred Diaz (PhD, Montreal, advisor) - Generalization in Reinforcement Learning [W7][W5]
2018 - 2022	J. Krishna Murthy (PhD, Montreal, advisor) - Differentiable World Programs [C25][C20][C14]
2019 - 2020	Bhairav Mehta (MSc, Montreal, co-advisor with Chris Pal) - Sim2real transfer [C26][W13]
2018 - 2020	Gunshi Gupta (MSc, Montreal, advisor) - Look-ahead meta-Learning [C22]
2017 - 2020	Nithin Visisth (MSc, Montreal, advisor) - Task Decomposition using skills
2017 - 2020	Breandan Considine (MSc, Montreal, co-advisor with Michalis Famelis) - Programming tools for intelligent systems with a case study in autonomous robotics [C18] [C15]
2017 - 2019	Sai Krishna Gottipati (MSc, Montreal, advisor) - Learning map representations for active SLAM [C5]
2016 - 2020	Teddy Ort (PhD, MIT, mentor) - "Maplite" - Autonomous vehicle navigation without dense maps [C29] [J3]
2017-18	Manfred Diaz (MSc, Concordia, co-advisor with Thomas Fevens) - Interactive and Uncertainty-aware Imitation Learning: Theory and Applications [C19]
2017	Veronica Lane (MEng MIT, mentor) - Obstacle Detection and Tracking in an Urban Environment Using 3D LiDAR and a Mobileye 560
2017	Bethany LaPenta (MEng MIT, advisor) - The Ducklingbot – a Self-Driving Robot on a Pi Zero
2014-16	Beipeng Mu (MEng MIT, mentor) - Task-driven Navigation and Mapping with Resource Constraints [J9][C35][C36][C40]
2013-15	Ross Finman (Ph.D. MIT, mentor) - 3D object-based mapping [W22][W23]
2013-15	Janille Maragh (MSc MIT, mentor) - Cooperative localization of AUVs

Mentor / Advisor Undergraduate Students:

2023 - 2023	Aditya Agarwal (intern, Montreal, advisor) - Robotics vision-language representations
2023 - 2023	Bipasha Sen (intern, Montreal, advisor) - Robotics vision-language representations
2022 - 2023	Atharva Chandak (intern, Montreal, advisor) - Continual object detection
2022 - 2023	Van Nam Vu (intern, Montreal, advisor) - Open-set object detection
2020 - 2021	Kaustubh Mani (intern, Montreal, advisor) - Probabilistic object detection [W9][C12]
2021 - 2021	Nikhil Keetha (intern, Montreal, advisor) - GradSLAM
2020	Charlie Gauthier (intern, Montreal, advisor) - NSERC Undergraduate Student Research Award (USRA)
2019 - 2020	Waleed Khamies (intern, Montreal, advisor) - Inverse variance weighting for reinforcement learning
2019 - 2020	Dishank Bansal (intern, Montreal, advisor) - Probabilistic object detection
2019 - 2020	Amrut Sarangi (intern, Montreal, advisor) - Intention prediction for autonomous driving
2019 - 2020	Mark Van der Merwe (intern, Montreal, advisor) - Dense semantic completion
2019 - 2019	Rohan Raj (intern, Montreal, advisor)
2019 - 2019	Sharath Chandra (intern, Montreal, advisor) - Residual self-play for RL [W12]
2018 - 2019	Dhaivat Bhatt (intern, Montreal, advisor) - Probabilistic object detection
2018	Zihan Wang (intern, Montreal, co-advisor with Yoshua Bengio) - Domain adversarial transfer [C27]

2018	Bhairav Mehta (intern, Montreal, co-advisor with Chris Pal) - Active domain randomization
2018	Sarthak Sharma (intern, Montreal, advisor) - Deep visual odometry
2018	Homanga Bharadhwaj (intern, Montreal, co-advisor with Yoshua Bengio) - Domain adversarial transfer [C27]
2018	Adam Sigal (intern, Montreal, advisor) - IVADO Undergraduate Research Scholarship
2018	Abdelhakim Qbaich (intern, Montreal, advisor) - NSERC Undergraduate Student Research Award (USRA)
2016 - 2017	Alexander Amini (Undergrad, MIT, mentor) - Distributed end-to-end deep learning for autonomous driving [C28]
2016 - 2017	Tom Yan (Undergrad, MIT, advisor) - Road segmentation with deep learning
2016	Chandon Subedi (Undergrad, MIT, advisor) - Autonomous Duckiebot detection
2014 - 2015	Ernesto Ramirez (Undergrad, MIT, advisor) - Multi-robot mapping with turtlebots
2012	Denise Sweet (Undergrad, UNB, mentor) - Fusing RGB and thermal imagery
2011	Scott Mallais (Undergrad, UNB, mentor) - Underwater acoustic communications
2010	Yao Kok and Shang Yang (Undegrad, UNB, mentor) - Hexagon cell decomposition for convex polygons
2009	Derek McKay (Undergrad, UNB, mentor) - Domestic electric water heater modeling

Funded Grants

[G1] "Generalization and Planning in Robotics." *NSERC Research Tools and Instruments (RTI).* Co-Principal Investigator with Glen Berseth. 2024. $ 150 000.

[G2] "Learning Actionable and Semantic Representations that Enable Autonomous Mobile Robots to Complete Complex Tasks." *NSERC Discovery Grant.* Principal Investigator. April 2024 - March 2029. $205 000.

[G3] "Deep neural network uncertainty estimation for safe integration into autonomous driving autonomy systems." NSERC Alliance (ALLRP 580895 – 22) with Denso. May 2023 - May 2025. $160 800

[G4] "Continual Few-shot Learning for Autonomous Robots." Samsung. Co-Principal investigator with Glen Berseth. Aug. 2022 - Aug. 2023. $56 000.

[G5] "Developing General Purpose Robots for Planning in Unstructured Environments." Mila internal funding - Program P2-V5 - Technology Maturation Work with Glen Berseth. Jan. 2022 - Dec. 2024. $450 000.

[G6] "Self-supervised representation learning for autonomous driving perception." Samsung. Co-Principal investigator with Derek Nowrouzezahrai. $60 000.

[G7] Fonds d'urgence pour la continuité de la recherche au Canada. Dec. 2020. $5602.

[G8] Samsung-Mila Partnership. Co-Principal investigator with Yoshua Bengio, Aaron Courville, Ioannis Mitliagkas,Simon Lacoste-Julien, Guillaume Lajoie, Laurent Charlin, Jian Tang, Jackie Cheung, and Will Hamilton. Sept. 2020 - Sept. 2025. Total value $4 466 700 split evenly amongst Co-PIs.

[G9] "Differentiable perception, graphics, and optimization for weakly supervised 3D perception." *IVADO Fundamental Research Grant.* Co-Principal investigator with James Forbes and Derek Nowrouzezahrai. Sept. 2020 - Sept. 2022. Total Value $224 598.

[G10] "Modeling Embodied Agents with Koopman Embeddings." *CIFAR Catalyst program.* Co-Principal investigator with James Forbes. Sept. 2020 - Sept. 2021. Total value $50 000. Press release.

[G11] "Learning Representations from Physical Interaction." *Microsoft Research.* Co-Principal investigator with Devon Hjelm, Mihai Jalobeanu, Yonatan Bisk, Florian Golemo and Aaron Courville. May 2020 - May 2022. Total value $112 000.

[G12] "Exploiting Experiences and Priors in Semantic Visual Navigation." *Mitacs Accelerate.* Principal investigator. Partner organization Element AI. June 2020 - Dec. 2020. Total value $30 000.

[G13] "DEEL - DEpendable & Explainable Learning" *CRIAQ DEEL – NSERC.* Co-Principal investigator and Leader for theme "Robustness". Jan. 2020 - Jan. 2025. Total value $5 905 510. $465 056 allocated to University of Montreal.

[G14] Canadian CIFAR AI Chair. 2019 - 2024. Total value $1 050 000.

[G15] "Unified Hardware Evaluation with Pyrobot and Duckietown" *Facebook PyRobot: Democratizing Robotics.* Principal investigator. Oct. 2019. In-kind contribution of a LoCoBot (value = $5000 USD).

[G16] "Uncertainty estimation of perceptual tasks for autonomous vehicles." Denso research collaboration. Principal Investigator. 2019-2021. Total value $280 000.

[G17] NSERC Discovery Launch Supplement (DGECR). 2018-19. Total value $12 500.

[G18] "Teaching Robots How to Build Maps with Deep Reinforcement Learning." *Fonds de recherche nature et technologies Québec (FRQNT) – Établissement de nouveaux chercheurs et de nouvelles chercheuses universitaires.* 2018-2020. Total value $50 800.

[G19] "Learning Representations for Autonomous Mobile Robotics to Enable Complex Tasks." *NSERC Discovery Grant.* Principal investigator. 2018-2023. Total value $140 000.

[G20] "Autonomous Mobile Robotics" *Canadian Foundation for Innovation.* Principal investigator. 2018-2023. Total value $372 230.

[G21] "Next Generation Deep Learning: from pattern recognition to AI - Lifelong SLAM for Indoor and Autonomous Vehicle Navigation" *Samsung Advanced Institute of Technology.* Co-Principal investigator with Yoshua Bengio (lead PI), Aaron Courville, Pascal Vincent, Christopher Pal, Simon Lacoste-Julien, and Laurent Charlin. 2018- 2021. Total value for entire project $1 650 000. $300 000 allocated to Liam Paull.

[G22] "Resource Constrained Cooperative Underwater Localization and Mapping." *Office of Naval Research.* 2016. Co-written with Prof. John J. Leonard.

Publications

NB: Lead student's academic advisor is typically listed last.

Graduate Thesis

[T1] "Robust Online Adaptive Sensor-Driven Survey Planning for Single and Multiple Autonomous Underwater Vehicles." University of New Brunswick. November 2013.

Book Chapters

[B1] **Liam Paull**, Mae Seto, Sajad Saeedi, John Leonard. "Navigation for Underwater Vehicles" in Encyclopedia of Robotics. Springer 2018.

[B2] **Liam Paull**, Sajad Saeedi, Howard Li. "Path Planning for Autonomous Underwater Vehicles." in *Autonomy for Marine Robots*. Springer 2012. Editor: Dr. Mae Seto. p177-224.

[B3] Mae Seto, **Liam Paull**, Sajad Saeedi. "Introduction to Autonomy for Marine Robots." in *Autonomy for Marine Robots*. Springer 2012. Editor: Dr. Mae Seto. p1-46.

Journal Articles

[J1] Vincent Mai, Philippe Maisonneuve, Tianyu Zhang, Hadi Nekoei, **Liam Paull**, Antoine Lesage-Landry. "Multi-Agent Reinforcement Learning for Fast-Timescale Demand Response of Residential Loads". *Machine Learning*. 2023. https://doi.org/10.1007/s10994-023-06460-4.

[J2] Rey Reza Wiyatno, Anqi Xu, **Liam Paull**. "Lifelong Topological Visual Navigation". *IEEE Robotics and Automation Letters*. vol. 7, no. 4, p9271-9278, Oct. 2022.

[J3] Teddy Ort, Krishna Murthy, Rohan Banerjee, Sai Krishna Gottipati, Dhaivat Bhatt, Igor Gilitschenski, **Liam Paull**, Daniela Rus. "Maplite: Autonomous Intersection Navigation without a Detailed Prior Map." *IEEE Robotics and Automation Letters*. vol. 5, no. 2, p556-563, April 2020. **Winner of 2020 IEEE Robotics and Automation Letters Best Paper Award**.

[J4] Julian Zilly, Jacopo Tani, Breandan Considine, Bhairav Mehta, Andrea F Daniele, Manfred Diaz, Gianmarco Bernasconi, Claudio Ruch, Jan Hakenberg, Florian Golemo, A Kirsten Bowser, Matthew R Walter, Ruslan Hristov, Sunil Mallya, Emilio Frazzoli, Andrea Censi, **Liam Paull**. "The AI Driving Olympics at NeurIPS 2018" *Springer NeurIPS 2018 competition proceedings*. p37-68. 2020.

[J5] Sai Krishna, Keehong Seo, Dhaivat Bhatt, Vincent Mai, Krishna Murthy, **Liam Paull**. "Deep Active Localization". *IEEE Robotics and Autonomation Letters*. vol. 4, no. 4, p4394-4401, Oct. 2019.

[J6] Vincent Mai, Mina Kamel, Matthias Krebs, Andreas Schaffner, Daniel Meier, **Liam Paull**, Roland Siegwart. "Local Positioning System Using UWB Range Measurements for an Unmanned Blimp." *IEEE Robotics and Automation Letters*. vol. 3, no. 4, p2971-2978. Oct. 2018.

[J7] **Liam Paull**, Mae Seto, John J. Leonard, Howard Li. "Probabilistic Cooperative Mobile Robot Area Coverage and its Application to Autonomous Seabed Mapping." *International Journal of Robotics Research*. 37(1). p21-45. 2018.

[J8] Wilko Schwarting, Javier Alonso-Mora, **Liam Paull**, Sertac Karaman, Daniela Rus. "Safe Nonlinear Trajectory Generation for Parallel Autonomy with a Dynamic Vehicle Model." *IEEE Transactions on Intelligent Transportation Systems*. vol. 19, no. 9, p2994-3008. 2018.

[J9] Beipeng Mu, **Liam Paull**, Aliakbar Agha-Mohammadi, John J. Leonard, Jonathan P. How. "Two-Stage Focused Inference for Resource-Constrained Collision-Averse Navigation." *IEEE Transactions on Robotics*. 33(1). p124-140. 2017.

[J10] **Liam Paull**, Carl Thibault, Amr Nagaty, Howard Li. "Sensor-Driven Area Coverage for an Autonomous Fixed-Wing Unmanned Aerial Vehicle." *IEEE Transactions on Cybernetics*. 44(9). p1605-1618. 2014.

[J11] **Liam Paull**, Sajad Saeedi, Mae Seto, Howard Li. "AUV Navigation and Localization - A Review." *IEEE Journal of Oceanic Engineering*. 39(1). p131-149. 2014.

[J12] Sajad Saeedi, **Liam Paull**, Michael Trentini, and Howard Li. "Group Mapping: A Topological Approach to Map Merging for Multiple Robots." *IEEE Robotics and Automation Magazine*. 21(2). p60-72. 2014.

[J13] Sajad Saeedi, **Liam Paull**, Michael Trentini, Mae Seto and Howard Li. "Map Merging for Multiple Robots Using Hough Peak Matching." *Robots and Autonomous Systems*. 62(10). p1408-1424. 2014.

[J14] Sajad Saeedi, **Liam Paull**, Michael Trentini, and Howard Li. "Map Merging for Multiple Robot Simultaneous Localization and Mapping." *International Journal of Robotics and Automation*. 30(2). p149-157. 2014.

[J15] **Liam Paull**, Sajad Saeedi, Mae Seto, Howard Li. "Sensor-Driven Online Coverage Planning for Autonomous Underwater Vehicles." *IEEE/ASME Transactions on Mechatronics*. 18(6). p1827-1838. 2013.

[J16] Sajad Saeedi, **Liam Paull**, Mike Trentini, Howard Li. "Neural Network-based Multiple Robot Simultaneous Localization and Mapping". *IEEE Transactions on Neural Networks*. 22(12), p2376-2387. 2012.

[J17] **Liam Paull**, Howard Li, Liuchen Chang. "A Novel Domestic Electric Water Heater Model for a Multi-Objective Demand Side Management Program." *Electric Power Systems Research*. 80(12), p1446-1451. 2010.

[J18] Howard Li, **Liam Paull**, Yevgen Biletskiy, Simon Yang. "Document Classification Using Information Theory and a fast Back-Propagation Neural Network." *Intelligent Automation and Soft Computing*. 16(1), p25-38. 2010.

Refereed Conference Publications

[C1] Mostafa ElAraby, Ali Harakeh, **Liam Paull**. "BACS: Background Aware Continual Semantic Segmentation". *IEEE Conference on Robots and Vision*. 2024. Accepted.

[C2] Qiao Gu, Alihusein Kuwajerwala, Sacha Morin, Krishna Murthy Jatavallabhula, Bipasha Sen, Aditya Agarwal, Corban Rivera, William Paul, Kirsty Ellis, Rama Chellappa, Chuang Gan, Celso Miguel de Melo, Joshua B Tenenbaum, Antonio Torralba, Florian Shkurti, **Liam Paull**. "ConceptGraphs: Open-Vocabulary 3D Scene Graphs for Perception and Planning". *IEEE International Conference on Robotics and Automation (ICRA)*. 2024. Accepted. project page.

[C3] Zhen Liu, Yao Feng, Yuliang Xiu, Weiyang Liu, **Liam Paull**, Michael J. Black, Bernhard Schölkopf. "Ghost on the Shell: An Expressive Representation of General 3D Shapes". *International Conference on Learning Representations (ICLR)*. 2024. **Accepted for Oral Presentation (top 1.2%)**.

[C4] Sacha Morin, Miguel Saavedra-Ruiz, **Liam Paull**. "One-4-All: Neural Potential Fields for Embodied Navigation". *IEEE/RSJ International Conference on Intelligent Robots and Systems*. 2023. project page.

[C5] Krishna Murthy Jatavallabhula, Alihusein Kuwajerwala, Qiao Gu, Mohd Omama, Tao Chen, Shuang Li, Ganesh Iyer, Soroush Saryazdi, Nikhil Keetha, Ayush Tewari, Joshua B Tenenbaum, Celso Miguel de Melo, Madhava Krishna, **Liam Paull**, Florian Shkurti, Antonio Torralba. "Conceptfusion: Open-set multimodal 3D mapping". *Robotics: Science and Systems (RSS)*. 2023. project page.

[C6] Anas Mahmoud, Jordan SK Hu, Tianshu Kuai, Ali Harakeh, **Liam Paull**, Steven L Waslander. "Self-Supervised Image-to-Point Distillation via Semantically Tolerant Contrastive Loss". *IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR)*. 2023.

[C7] Zhen Liu, Yao Feng, Michael J. Black, Derek Nowrouzezahrai, **Liam Paull**, Weiyang Liu. "MeshDiffusion: Score-based Generative 3D Mesh Modeling". *International Conference on Learning Representations (ICLR)*. 2023. **notable-top-25%**. project page.

[C8] Ruixiang Zhang, Tong Che, Boris Ivanovic, Renhao Wang, Marco Pavone, Yoshua Bengio, **Liam Paull**. "Robust and Controllable Object-Centric Learning through Energy-based Models". *International Conference on Learning Representations (ICLR)*. 2023.

[C9] Ali Harakeh, Jordan Sir Kwang Hu, Naiqing Guan, Steven L. Waslander, **Liam Paull**. "Estimating Regression Predictive Distributions with Sample Networks". *Conference on Artificial Intelligence (AAAI)*. 2023.

[C10] Weiyang Liu, Zhen Liu, **Liam Paull**, Adrian Weller, Bernhard Schölkopf. "Structural Causal 3D Reconstruction". *European Conference on Computer Vision*. 2022.

[C11] Miguel Saavedra-Ruiz, Sasha Morin, **Liam Paull**. "Monocular Robot Navigation with Self-Supervised Pretrained Vision Transformers". *19th Conference on Robots and Vision*. 2022.

[C12] Dhaivat Bhatt, Dishank Bansal, Kaustubh Mani, Hanju Lee, Krishna Murthy Jatavallabhula, **Liam Paull**. " f-Cal: Variational calibration of aleatoric uncertainty in neural regression". *International Conference on Robotics and Automation (ICRA)*. 2022. project page.

[C13] Vincent Mai, Kaustubh Mani, **Liam Paull**. "Sample Efficient Deep Reinforcement Learning via Uncertainty Estimation". *The Tenth International Conference on Learning Representations (ICLR)*. 2022. **Presented as spotlight**. project page.

[C14] Christopher Agia, Krishna Murthy Jatavallabhula, Mohamed Khodeir, Ondrej Miksik, Vibhav Vineet, Mustafa Mukadam, **Liam Paull**, Florian Shkurti. "Taskography: Evaluating robot task planning over large 3D scene graphs". *Conference on Robot Learning (CoRL)*. 2022. project page.

[C15] Weiyang Liu, Zhen Liu, Hanchen Wang, **Liam Paull**, Bernhard Schölkopf, Adrian Weller. "Iterative Teaching by Label Synthesis". *Neural Information Processing Systems (NeurIPS)*. 2021. **Presented as spotlight**.

[C16] Anthony Courchesne, Andrea Censi, **Liam Paull**. "On Assessing the Usefulness of Proxy Domains for Developing and Evaluating Embodied Agents". *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. 2021.

[C17] Weiyang Liu, Rongmei Lin, Zhen Liu, James M Rehg, **Liam Paull**, Li Xiong, Le Song, Adrian Weller. "Orthogonal over-parameterized training". *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*. 2021

[C18] Philippe Laferrière, Samuel Laferrière, Steven Dahdah, James Richard Forbes, **Liam Paull**. "Deep Koopman Representation for Control over Images (DKRCI)". *18th Conference on Robots and Vision (CRV)*. 2021.

[C19] Manfred Diaz, Thomas Fevens, **Liam Paull**. "Uncertainty-Aware Policy Sampling and Mixing for Safe Interactive Imitation Learning". *18th Conference on Robots and Vision (CRV)*. 2021.

[C20] J. Krishna Murthy, Miles Macklin, Florian Golemo, Vikram Voleti, Linda Petrini, Martin Weiss, Breandan Considine, Jérôme Parent-Lévesque, Kevin Xie, Kenny Erleben, **Liam Paull**, Florian

Shkurti, Derek Nowrouzezahrai, Sanja Fidler. "gradSim: Differentiable simulation for system identification and visuomotor control". *International Conference on Learning Representations (ICLR)*. 2021. project page.

[C21] Jacopo Tani, Andrea F Daniele, Gianmarco Bernasconi, Amaury Camus, Aleksandar Petrov, Anthony Courchesne, Bhairav Mehta, Rohit Suri, Tomasz Zaluska, Matthew R Walter, Emilio Frazzoli, **Liam Paull**, Andrea Censi. "Integrated Benchmarking and Design for Reproducible and Accessible Evaluation of Robotic Agents". *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. 2020. project page.

[C22] Gunshi Gupta, Karmesh Yadav, **Liam Paull**. "La-MAML: Look-ahead Meta Learning for Continual Learning". *Neural Information Processing Systems (NeurIPS)*. 2020. project page. **Accepted for oral presentation (top 1.1%)**.

[C23] Tong Che, Ruixiang Zhang, Jascha Sohl-Dickstein, Hugo Larochelle, **Liam Paull**, Yuan Cao, Yoshua Bengio. "Your GAN is Secretly an Energy-based Model and You Should Use Discriminator Driven Latent Sampling". *Neural Information Processing Systems (NeurIPS)*. 2020.

[C24] Zijun Zhang, Ruixiang Zhang, Zongpeng Li, Yoshua Bengio, **Liam Paull**. "Perceptual Generative Autoencoders". *International Conference on Machine Learning (ICML)*. 2020.

[C25] Krishna Murthy Jatavallabhula, Ginesh Iyer, **Liam Paull**. "∇SLAM: Dense SLAM meets Automatic Differentiation." *IEEE International Conference on Robotics and Automation (ICRA)*. 2020. project page.

[C26] Bhairav Mehta, Manfred Diaz, Florian Golemo, Christopher J Pal, **Liam Paull**. "Active Domain Randomization". *Conference on Robot Learning*. 2019.

[C27] Homanga Bharadhwaj, Zihan Wang, Yoshua Bengio, **Liam Paull**. "A Data-Efficient Framework for Training and Sim-to-Real Transfer of Navigation Policies." *IEEE International Conference on Robotics and Automation (ICRA)*. 2019.

[C28] Alexander Amini, **Liam Paull**, Thomas Balch, Sertac Karaman, Daniela Rus. "Learning Steering Bounds for Parallel Autonomous Systems" *IEEE International Conference on Robotics and Automation (ICRA)*. 2018.

[C29] Teddy Ort, **Liam Paull**, Daniela Rus. "Autonomous Vehicle Navigation in Rural Environments without Detailed Prior Maps." *IEEE International Conference on Robotics and Automation (ICRA)*. 2018.

[C30] Guy Rosman, **Liam Paull**, Daniela Rus. "Hybrid Control and Learning with Coresets for Autonomous Vehicles" *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. 2017.

[C31] **Liam Paull**, Jacopo Tani, Heejin Ahn, Javier Alonso-Mora, Luca Carlone, Michal Cap, Yu Fan Chen, Changhyun Choi, Jeff Dusek, Daniel Hoehener, Shih-Yuan Liu, Michael Novitzky, Igor Franzoni Okuyama, Jason Pazis, Guy Rosman, Valerio Varricchio, Hsueh-Cheng Wang, Dmitry Yershov, Hang Zhao, Michael Benjamin, Christopher Carr, Maria Zuber, Sertac Karaman, Emilio Frazzoli, Domitilla Del Vecchio, Daniela Rus, Jonathan How, John Leonard, Andrea Censi. "Duckietown: an Open, Inexpensive and Flexible Platform for Autonomy Education and Research" *IEEE Conference on Robotics and Automation (ICRA)*. 2017.

[C32] Wilko Schwarting, Javier Alonso-Mora, **Liam Paull**, Sertac Karaman, Daniela Rus "Parallel Autonomy in Automated Vehicles: Trajectory Generation with Real-time Obstacle Avoidance and Human Input Optimization" *IEEE Conference on Robotics and Automation (ICRA)*. 2017.

[C33] Felix Naser, David Dorhout, Stephen Proulx, Scott Drew Pendleton, Hans Andersen, Wilko Schwarting, **Liam Paull**, Javier Alonso-Mora, Marcelo H. Ang Jr., Sertac Karaman, Russ Tedrake, John Leonard, Daniela Rus. "A Parallel Autonomy Research Platform." *IEEE Intelligent Vehicles Symposium.* 2017.

[C34] Jacopo Tani, **Liam Paull**, Andrea Censi, Maria Zuber, Daniela Rus, Jonathan How and John Leonard. "Duckietown: an Innovative Way to Teach Autonomy." *EduRobotics Conference.* 2016.

[C35] Beipeng Mu, Matthew Giamou, **Liam Paull**, Ali-akbar Agha-mohammadi, John J. Leonard, Jonathan P. How. "Information-based Active SLAM via Topological Feature Graphs." *IEEE Conference on Decision and Control.* 2016.

[C36] Beipeng Mu, Shih-Yuan Liu, **Liam Paull**, John Leonard, Jonathan How. "SLAM with Objects using a Nonparametric Pose Graph." *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).* 2016.

[C37] Kevin Eckenhoff, **Liam Paull**, Guoquan Huang. "Decoupled, Consistent Node Removal and Edge Sparsification for Graph-based SLAM." *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).* 2016.

[C38] **Liam Paull**, Guoquan Huang, John Leonard. "A Unified Resource-Constrained Framework for Graph SLAM." *IEEE International Conference on Robotics and Automation (ICRA).* 2016.

[C39] Hsueh-Cheng Wang, Chelsea Finn, **Liam Paull**, Michael Kaess, Ruth Rosenholtz, Seth Teller, and John Leonard. "Bridging Text Spotting and SLAM with Junction Features." *IEEE/RSJ International Confer- ence on Intelligent Robots and Systems (IROS).* 2015.

[C40] Beipeng Mu, Ali Agha, **Liam Paull**, Matt Graham, Jonathan How, John J Leonard. "Two-Stage Focused Inference for Resource-Constrained Collision-Free Navigation." *Robotics: Science and Systems (RSS).* 2015.

[C41] Arthur Anderson, Erin Fischell, Thom Howe, Tom Miller, Arturo Parrales-Salinas, Nick Rypkema, David Barrett, Michael Benjamin, Alex Brennen, Michael Defillipo, John Leonard, **Liam Paull**, Henrik Schmidt, Nick Wang, and Alon Yaari. "An Overview of MIT-Olin's Approach in the AUVSI RobotX Competition." *Field and Service Robotics (FSR).* 2015.

[C42] **Liam Paull**, Guoquan Huang, Mae Seto, John Leonard. "Communication-Constrained Multi-AUV Cooperative SLAM." *IEEE International Conference on Robotics and Automation (ICRA).* 2015.

[C43] **Liam Paull**, Mae Seto, John Leonard. "Decentralized Cooperative Trajectory Estimation for Autonomous Underwater Vehicles." *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).* 2014.

[C44] **Liam Paull**, Mae Seto, Howard Li. "Area Coverage Planning that Accounts for Pose Uncertainty with an AUV Seabed Surveying Application." *IEEE International Conference on Robotics and Automation (ICRA).* 2014.

[C45] **Liam Paull**, Sajad Saeedi, Mae Seto, Howard Li. "Sensor Driven Online Coverage Planning for Autonomous Underwater Vehicles." *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).* 2012.

[C46] **Liam Paull**, Gaetan Severac, Guilherme V. Raffo, Julian M. Angel, Harold Boley, Maki K. Habib, Bao Nguyen, Veera R. S. Kumar, Sajad Saeedi G., Ricardo Sanz, Mae Seto, Aleksandar

Stefanovski, Michael Trentini, Howard Li. "Towards An Ontology for Autonomous Robots." *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).* 2012.

[C47] Sajad Saeedi Gharahbolagh, **Liam Paull**, Michael Trentini, Mae Seto, Howard Li. " Map Merging Using Hough Peak Matching." *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).* 2012.

[C48] Sajad Saeedi Gharahbolagh, **Liam Paull**, Michael Trentini, Mae Seto, Howard Li. "Efficient Map Merging Using a Probabilistic Generalized Voronoi Diagram." *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).* 2012.

[C49] Sajad Saeedi Gharahbolagh, **Liam Paull**, Michael Trentini, Howard Li. "Neural Network-based Multiple Robot Simultaneous Localization and Mapping." *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).* 2011.

[C50] Sajad Saeedi Gharahbolagh, **Liam Paull**, Michael Trentini, Howard Li. "Multiple Robot Simultaneous Localization and Mapping." *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).* 2011.

[C51] **Liam Paull**, Sajad Saeedi G., Mae Seto, Howard Li. "A Multi-Agent Framework with MOOS-IvP for Autonomous Underwater Vehicles with Sidescan Sonar Sensors." *International Conference on Autonomous and Intelligent Systems.* p. 41-50. 2011.

[C52] **Liam Paull**, Sajad Saeedi, Howard Li, Vincent Myers. "An Information Gain Based Adaptive Path Planning Method for an Autonomous Underwater Vehicle Using Sidescan Sonar." *IEEE Conference on Automation Science and Engineering (CASE).* p. 835-840. 2010.

[C53] Arnaldo Sepulveda, **Liam Paull**, Walid G. Morsi, Howard Li, Chris P. Diduch, Liuchen Chang. "A Novel Demand Side Management Program Using Water Heaters and Particle Swarm Optimization." *Electric Power and Energy Conference (EPEC).* 2010.

[C54] **Liam Paull**, Derek MacKay, Howard Li, Liuchen Chang. "A Water Heater Model for Increased Power System Efficiency." *Canadian Conference on Electrical and Computer Engineering (CCECE).* p. 731-734. 2009.

[C55] **Liam Paull**, Howard Li, Liuchen Chang. "The development of a fuzzy neural system for load forecasting." *Canadian Conference on Electrical and Computer Engineering (CCECE).* p. 923-926. 2008.

Refereed or Abstract Refereed Workshop Publications

[W1] Steven A. Parkison, Miguel Saavedra-Ruiz, Ria Arora, James Richard Forbes, and **Liam Paull**. "The Harmonic Exponential Filter for Recursive Nonparametric Estimation on Motion Groups". *IROS 2023 Workshop on Robotic Perception and Mapping: Frontier Vision & Learning Techniques.* 2023.

[W2] Florian Golemo, Simon Chamorro, Martin Weiss, **Liam Paull**, Christopher Pal. "A Hierarchical Reinforcement Learning Approach to Control Legged Mobile Manipulators". *Learning for Agile Robotics Workshop at CoRL 2022.* 2023.

[W3] Charlie Gauthier, Florian Golemo, Glen Berseth, **Liam Paull**. "Fearful Goal Generation for Reliable Policy Learning". *Learning for Agile Robotics Workshop at CoRL 2022.* 2022.

[W4] Mostafa ElAraby, Ali Harakeh, **Liam Paull**. "Continual Semantic Segmentation with Background Shift Correction". *Workshop track of the Conference on Lifelong Learning Agents.* 2022.

[W5] Manfred Diaz, Charlie Gauthier, Glen Berseth, **Liam Paull**. "Generalization Games for Reinforcement Learning". *ICLR 2022 Workshop on Gamification and Multiagent Solutions* and *ICLR 2022 Workshop on Agent Learning in Open-Endedness*. 2022.

[W6] Vincent Mai, Kaustubh Mani, **Liam Paull**. "IV-RL: Leveraging Target Uncertainty Estimation for Sample Efficiency in Deep Reinforcement Learning". *Reinforcement Learning for Real Life Workshop at ICML 2021*. 2021.

[W7] Manfred Diaz, **Liam Paull**, Pablo Samuel Castro. "LOCO: Adaptive exploration in reinforcement learning via local estimation of contraction coefficients". *Self-Supervision for Reinforcement Learning Workshop - ICLR 2021*. 2021.

[W8] Vincent Mai, Waleed Khamies, **Liam Paull**. "Batch Inverse-Variance Weighting: Deep Heteroscedastic Regression". *Uncertainty in Deep Learning (UDL) workshop at ICML 2021*.

[W9] Dhaivat Bhatt, Dishank Bansal, Gunshi Gupta, Hanju Lee, Krishna Murthy Jatavallabhula, **Liam Paull**. "Probabilistic Object Detection: Strengths, Weaknesses, Opportunities". *ICML Workshop on AI for Autonomous Driving*. 2020. project page.

[W10] **Liam Paull**, Anthony Courchesne. "On Assessing the Value of Simulation for Robotics". *RSS 2020 Workshop on Closing the Reality Gap in Sim2Real Transfer for Robotics*. 2020. Paper video.

[W11] Sharath Chandra Raparthy, Melissa Mozifian, **Liam Paull**, Florian Golemo. "CuNAS - CUriosity-driven Neural-Augmented Simulator". *RSS 2020 Workshop on Closing the Reality Gap in Sim2Real Transfer for Robotics*. 2020. Video

[W12] Raparthy, Sharath Chandra; Mehta, Bhairav J; Golemo, Florian; **Liam Paull**. "Generating Automatic Curricula via Self-Supervised Active Domain Randomization." *ICLR 2020 Workshop on Beyond "Tabula Rasa" in Reinforcement Learning (BeTR-RL)*.

[W13] Mehta, Bhairav J; Deleu, Tristan; Raparthy, Sharath Chandra; Pal, Chris J; **Liam Paull**. "Curriculum for Gradient-Based Meta-Learners." *ICLR 2020 workshop on Beyond "Tabula Rasa" in Reinforcement Learning (BeTR-RL)*.

[W14] Andrea Censi, **Liam Paull**, Jacopo Tani, Matthew R. Walter. "The AI Driving Olympics: An Accessible Robot Learning Benchmark." *NeurIPS 2019 workshop on Machine Learning Competitions for All (CiML 2019)*. Accepted for oral.

[W15] Breandan M Considine, Michalis Famelis, **Liam Paull**. "Kotlin∇: A Shape Safe eDSL for Differentiable Functional Programming." *NeurIPS 2019 workshop on Program Transformations*. Accepted as Poster.

[W16] Zijun Zhang, Ruixiang Zhang, Zongpeng Li, Yoshua Bengio, **Liam Paull**. "Perceptual Generative Autoencoders." *ICLR Workshop on Deep Generative Models for Highly Structured Data*. 2019.

[W17] Bhairav Mehta, Manfred Diaz, Florian Golemo, Chistopher Pal, **Liam Paull**. "Active Domain Randomization" *The 4th Multidisciplinary Conference on Reinforcement Learning and Decision Making*. 2019.

[W18] Breandan Considine, Ruslan Hristov, **Liam Paull**. "Duckietown: Software Infrastructure for Autonomous Robotics." *IROS 2018 Workshop: Automating Robot Experiments*. 2018.

[W19] Andrea Censi, **Liam Paull**, Jacopo Tani, Thomas Ackermann, Oscar Beijbom, Berabi Berkai, Gianmarco Bernasconi, Anne Kirsten Bowser, Simon Bing, Pin-Wei David Chen, Yu-Chen Chen,

Maxime Chevalier- Boisvert, Breandan Considine, Justin De Castri, Maurilio Di Cicco, Manfred Diaz, Paul Aurel Diederichs, Florian Golemo, Ruslan Hristov, Lily Hsu, Yi-Wei Daniel Huang, Chen-Hao Peter Hung, Qing-Shan Jia, Julien Kindle, Dzenan Lapandic, Cheng-Lung Lu, Sunil Mallya, Bhairav Mehta, Aurel Neff, Eryk Nice, Yang-Hung Allen Ou, Abdelhakim Qbaich, Josefine Quack, Claudio Ruch, Adam Sigal, Niklas Stolz, Ale- jandro Unghia, Ben Weber, Sean Wilson, Zi-Xiang Xia, Timothius Victorio Yasin, Nivethan Yogarajah, Julian Zilly, Yoshua Bengio, Tao Zhang, Hsueh-Cheng Wang, Stefano Soatto, Magnus Egerstedt, Emilio Frazzoli. "The AI Driving Olympics at NIPS 2018" *Robotics: Science and Systems Workshop on New Benchmarks, Metrics, and Competitions for Robotic Learning.* 2018.

[W20] Ganesh Iyer, J. Krishna Murthy, Gunshi Gupta, K. Madhava Krishna, **Liam Paull**. "Geometric Consistency for Self-Supervised End-to-End Visual Odometry" *Computer Vision and Pattern Recognition 1st International Workshop on Deep Learning for Visual SLAM.* 2018. project page.

[W21] **Liam Paull**, Mae Seto, John Leonard. "Cooperative Area Coverage." *RSS Workshop on Principles of Multi-Robot Systems.* 2015

[W22] Ross Finman, **Liam Paull**, John Leonard. "Toward Object-based Place Recognition in Dense RGB-D Maps." *IEEE International Conference on Robotics and Automation (ICRA) Workshop on Place Recognition in Changing Environments.* 2015.

[W23] Ross Finman, Thomas Whelan, **Liam Paull**, John Leonard. "Physical Words for Place Recognition in RGB-D Maps." *International Conference on Robotics and Automation Workshop on Place Recognition in Changing Environments.* 2014.

Manuscripts Preprints and Submissions

[J19] Miguel Saavedra, Steven Parkison, Ria Arora, James Richard Forbes, **Liam Paull**. "The Harmonic Exponential Filter for Nonparametric Estimation on Motion Groups". *IEEE Robotics and Automation Letters (RA-L).* Under Review.

[J20] Manfred Diaz, **Liam Paull**, Andrea Tacchetti. "Rethinking Teacher-Student Curriculum Learning through the Cooperative Mechanics of Experience". *Transactions on Machine Learning Research.* Under Review.

[C56] Luke Rowe, Roger Girgis, Anthony Gosselin, Bruno Carrez, Florian Golemo, Felix Heide, **Liam Paull**, Christopher Pal. "CtRL-Sim: Reactive and Controllable Driving Agents with Offline Reinforcement Learning." *Reinforcement Learning Conference.* 2024. Submitted

[C57] Mostafa ElAraby, Sabyasachi Sahoo, Yann Batiste Pequignot, Paul Novello, **Liam Paull**. "GROOD: GRadient-aware Out-Of-Distribution detection in interpolated manifolds". *European Conference on Computer Vision.* 2024. Submitted.

Academic Services

Conference / Challenges / Workshops Organized

- Driving SMARTS (NeurIPS) 2022 - led by Amir Rasouli
- The AI Driving Olympics VI live competition at Neural Information Processing Systems (NeurIPS) 2021
- IROS 2021 Workshop on Evaluating the Broader Impacts of Self-Driving Cars

- IJCAI 2021 Reinforcement Learning for Intelligent Transportation Systems (RL4ITS) Workshop
- NeurIPS 2020 Workshop on Differentiable Computer Vision, Graphics, and Physics in Machine Learning
- IROS 2020 Workshop on Benchmarking Progress in Autonomous Driving (Deferred from ICRA 2020 due to COVID-19)
- The AI Driving Olympics V live competition at Neural Information Processing Systems (NeurIPS) 2020
- The AI Driving Olympics IV live competition at the International Conference on Robotics and Automation (ICRA) 2020 (Canceled due to COVID-19)
- The AI Driving Olympics III live competition at Neural Information Processing Systems (NeurIPS) 2019
- The AI Driving Olympics II live competition at the International Conference on Robotics and Automation (ICRA) 2019
- The AI Driving Olympics I live competition at the Neural Information Processing Systems (NeurIPS) 2018
- RSS 2016 Workshop organizer: Geometry and Beyond - Representations, Physics, and Scene Understanding for Robotics
- ICRA 2016 Workshop organizer: Marine Robot Navigation and Localization
- Northeastern Robotics Colloquium 2015 co-organizer
- MOOS-DAWG 2015 co-organizer

Grant Review Services

- IVADO Postdoctoral Scholarship Award selection committee 2020
- NSERC Discovery Grant reviewer 2019-2022
- Canadian Foundation for Innovation John R. Evans Leaders Fund reviewer 2019, 2021
- IVADO Fundamental Resesarch Grant selection committee 2017
- NSERC Mitacs Accelerate reviewer 2017-2022
- NSF Ocean Technology and Interdisciplinary Coordination Program reviewer 2016

Conference Program / Editorial Committees

- Program Committee: CIFAR DLRL Summer School 2021 and 2023
- General Chair: CS-CAN / CRV / CANAI (2023) led by Dave Meger
- Area Chair: Robotics: Science and Systems (2023)
- Editor: IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2022-2023)
- Program Chair: IEEE Conference on Computer and Robot Vision (CRV) 2020 and 2021
- Area Chair: International Conference on Computer Vision (ICCV) 2021
- Area Chair: Conference on Robot Learning (CoRL) 2019
- Associate Editor: IEEE/RSJ International Conference on Intelligent Robots and Systems IROS 2017-19
- Associate Editor: Robotics and Automation Letters (RA-L) 2017-22
- Associate Editor: IEEE International Conference on Robotics and Automation (ICRA) 2016

- Program Committee: Neural Information Processing Systems (NeurIPS) 2020-21
- Program Committee: Conference on Robot Learning (CoRL) 2022
- Program Committee: Robotics: Science and Systems (RSS) 2015-18
- Program Committee: IEEE Conference on Computer and Robot Vision (CRV) 2018-19

Selected Journals and Conferences Reviewed

- Conference on Robot Learing (CoRL)
- IEEE Transactions on {Robotics, Neural Networks and Learning Systems, Controls Systems Technology, Cybernetics, Aerospace and Electronic Systems}
- International Journal of Robotics Research
- Journal of Field Robotics
- IEEE Control Systems Magazine
- Journal of Guidance, Control, and Dynamics
- IEEE Journal of Oceanic Engineering
- IEEE International Conference on Robotics and Automation (ICRA)
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- Robotics: Science and Systems (RSS)

Graduate Thesis Committees (not including own graduate students)

- Jean-François Tremblay "Active robot perception in the deep learning age." Doctoral Thesis Proposal Committee. McGill University. 2023.
- Lea Demeule "Deep Learning on Signals: Discretization Invariance, Lossless Compression and Nonuniform Compression." Masters Thesis Committee. DIRO. 2023.
- Pascal Archambault "Co-Simulation for Controlled Environment Agriculture." Masters Thesis Committee. DIRO. 2023.
- David Bertoin "Representations for generalization in Reinforcement Learning." Doctoral Thesis Committee. ISAE-Supaero. 2023.
- Tong Che "Contributions to Generative Models and Their Applications." Doctoral Thesis Committee. DIRO. 2022.
- Rishabh Agarwal "Towards Deep Reinforcement Learning for the Real World." Predoc Exam. DIRO. 2022.
- Pierre-Andre Brousseau "A Self-Supervised Permutation Approach to the Stereo Matching Problem." Predoc Exam. DIRO. 2021.
- Joshua Arvind Holla "On the Off-Dynamic approach to Reinforcement Learning." Masters Thesis Evaluator. McGill. 2021.
- Nitarshan Rajkumar "Self-Supervision for Data Interpretability in Image Classification and Sample Efficiency in Reinforcement Learning." Masters Thesis Committee. DIRO. 2021.
- Akilesh Badrinaaraayanan "Continuous Coordination As a Realistic Scenario for Lifelong Learning." Masters Thesis Committee. DIRO. 2021.
- Tristan Sylvain "Locality and Compositionality in Representation Leraning for Complex Visual Tasks." Doctoral Thesis Committee. DIRO. 2021.

- Roger Girgis "Exploring the utility of attention in mult-agent interactions and future prediction." Predoc Exam. Ecole Polytechnique. 2021.
- Pravish Sainath "Modeling functional brain activity of human working memory using deep recurrent neural networks." Masters Thesis Committee. DIRO. 2020.
- Seyed Ehsan Marjani Bajestani "Event-Based Mobile Robot Perception aided by Structured Light." Doctoral Thesis Committee. Ecole Polytechnique. 2020.
- Jean-Gabriel Simard "Learned Image Compression for Machine Visual Perception." Masters Thesis Committee. Ecole Polytechnique. 2020.
- Marie-Eve Malette-Campeau "Estimating the probability of a fleet vehicle accident: A deep learning approach using Conditional Variational Auto-Encoders." Masters Thesis Committee. DIRO. 2020.
- Bhargav Kanuparthi "Towards Better Understanding and Improving Optimization in Recurrent Neural Networks." Masters Thesis Committee. DIRO. 2020.
- Erick Raelijohn "Vérification des patrons temporels d'utilisation d'API sans exécution du code: une approche et un outil." Master Thesis Committee. DIRO. 2020.
- Mohammad Amini "An Empirical Analysis of Model-based Deep Reinforcement Learning." Masters Thesis Evaluator. McGill. 2020.
- Manouchehr Zadahmad Jafarlou "Domain Specific Version Control Systems." Predoc Exam. DIRO. 2020.
- Jae Hyun Lim "Embodied Generative Agents." Predoc Exam. DIRO. 2019.
- Alexandre Piche "Online Planning and Probabilistic Inference in Deep Reinforcement Learning." Predoc Exam. DIRO. 2019.
- Yaroslav Ganin "Natural Image Processing and Synthesis Using Deep Learning." Doctoral Thesis Committee. DIRO. 2019.
- Philip Paquette "No Press Diplomacy." Masters Thesis Committee. DIRO. 2019.
- Saizheng Zhang "Recurrent Neural Models and Related Problems in Natural Language Processing." Doctoral Thesis Committee. DIRO. 2019.
- Sanjay Thakur "Uncertainty Aware Behavioral Cloning using Bayesian Neural Networks." Masters Thesis Evaluator. McGill. 2019.
- Asma Ben Khedher "Analyse visuelle et cérébrale de l'état cognitif d'un apprenant." Doctoral Thesis Committee 2019.
- Guillaume Alain "Auto-Encoders, Distributed Training and Information Representation in Deep Neural Network." Doctoral Thesis Committee. DIRO. 2019.
- Navpreet Kaur "Modelling and Reasoning with Software Product Lines with Design Choices." Masters Thesis Committee. DIRO. 2019.
- Tong Che "Generative Adversarial Networks and Few-shot Learning." Predoc Exam. DIRO. 2019.
- Marcel Kaufman "Symbiotic Human and Multi-Robot Planetary Exploration Systems." Predoc Exam. Ecole Polythechnique. 2019.
- Arnaud Shoentgen "Tools for Liquid Control in Computer Graphics." Predoc Exam. DIRO. 2018
- Kyle Kastner "Sequential Decision Modeling In Uncertain Conditions." Predoc Exam. DIRO. 2018
- Andre Phu-van Nguyen "Méthodes d'inspection automatique d'infrastructure par robot mobile." Masters Thesis Committee. Ecole Polytechnique. 2017.
- Beipeng Mu "Task-driven Navigation and Mapping with Resource Constraints." Doctoral Thesis Committee. MIT. 2016.

- Matthew Graham "Robust Bayesian state estimation and mapping." Doctoral Thesis Committee. MIT. 2015.
- Theodore Steiner "Utility-based map reduction for ground and flight vehicle navigation." Doctoral Thesis Committee. MIT. 2015.

Other Committees and Service

- Member of the Courtois Institute Management Committee (2023-present)
- Member of DEEL Scientific Committee 2021-present
- CIFAR Deep Learning Reinforcement Learning Summer School Program Committee 2021, 2023
- DIRO Faculty Recruitement Committee 2020-present
- Presenter at Séjour informatique (undergraduate recruiting event) 2018, 2019
- DIRO Student Recruitement Committee 2017-2020
- MIT EECS Graduate Admissions Committee 2017

Outreach

2021	Parlons IA
2020	Mount Pleasant elementary
2019	Selwyn House high school career day
2019-2020	Hudson CodeClub
2019	Robotics Week - Our Lady of Peace elementary
2018	Let's Talk Science - Canada2067

Recent Invited Talks and Panels

06/2023	NSERC Canadian Robotics Network (NCRN) Annual General Meeting
06/2023	Mila Robotics Summer School
07/2022	RSS Workshop on Robot Learning in the Cloud
06/2022	CMU RISS RoboLaunch
06/2022	Technical Committee on Verification of Autonomous Systems monthly webinar
05/2022	Robohub Podcast
12/2021	Deep RL Workshop at NeurIPS 2021. "The AI Driving Olympics."
06/2021	Candian Mathematical Society 75+1 Anniversary Summer Meeting. "Training Robots in Simulators."
05/2021	MobiliT.ai "Quantifying Uncertainty in Deep Learning Based Perception Systems."
03/2021	IVADO Cafe Scientifique.
12/2020	Reinforcement Learning Algorithms & Applications Virtual Seminar Series [video]
11/2020	iMLSE. "Robotics, Deep Learning, and Software 2.0."
08/2020	Workshop on Benchmarking in Robotics
06/2020	Mila Tea Talk. "Some Challenges for Efficiently Deploying Robots in Unstructured Environments."
04/2020	NCRN Distal Fellows Web Seminar
05/2019	Computer and Robot Vision Conference Keynote
04/2019	Sommet Immobilier de Montreal panel on AI
04/2019	Rendez-vous IA Québec Keynote

10/2018	DIRO Alumni Keynote
06/2018	Element AI, Toronto
05/2018	Honneywell Symposium Keynote Address, Atlanta
04/2018	Fourth IEEE Research Boost, Montreal
04/2018	Google Brain, Montreal
01/2018	Université de Laval, Quebec City
12/2017	McGill University SOCS Colloquium
04/2017	University of Massachusetts Boston MassIntelligence Conference
04/2017	University of Toronto Department of Computer Science
04/2017	Massachusetts Institute of Technology Mechanical Engineering Special Seminar
02/2017	MIT Technology Conference Moderator
01/2017	Stanford University Workshop on Human-Centric AI for Intelligent Machines

Media Coverage

- Learn to Program Self-Driving Cars (and Help Duckies Commute) With Duckietown - IEEE Spectrum (Aug 20, 2018)
- La Fondation canadienne pour l'innovation annonce un nouvel appui pour la recherche à l'UdeM - U de M Nouvelles (April 11, 2018)
- Une ville de canards pour tester les véhicules - La Presse + (April, 8, 2018)
- En voiture, les canards! - U de M nouvelles (April 4, 2018)
- Why MITs Duckietown uses adorable rubber toys to research self-driving cars - Boston.com (June 2, 2016)
- A tiny town of rubber ducks is laying the groundwork for the next generation of self-driving cars - Quartz (April 29, 2016)
- Meet the self-driving rubber duckie taxis of Duckietown - Popular Science (April 20, 2016)
- Self-driving cars, meet rubber duckies - CSAIL News (April 20, 2016)

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