Lynn Cherif

lynn.cherif@gmail.com | lc-dev.github.io | GitHub | LinkedIn | Google Scholar

Education

McGill University and Mila - Quebec AI Institute *Montreal, Canada*
M.Sc., Computer Science (Thesis) | CGPA: 4.00/4.00 *Aug. 2023 – Expected Apr. 2025*
***Co-supervisors**: Prof. Doina Precup, Dr. Khimya Khetarpal*

McGill University *Montreal, Canada*
B.Eng., Honours Mechanical Engineering, minor in Computer Science | CGPA: 3.73/4.00 *Sep. 2018 – May 2023*
***Supervisor**: Prof. Yaoyao Fiona Zhao*

Publications and Scientific Works

1. ‡ **L. Cherif***, F. Kondrup*, D. Venuto, A. Anand, D. Precup, K. Khetarpal, "Cracking the Code of Action: a Generative Approach to Affordances for Reinforcement Learning," [OpenReview] Accepted at *The Third Deep Learning for Code Workshop at The Thirteenth International Conference on Learning Representations (ICLR 2025).* Under review at *The Forty-Second International Conference on Machine Learning (ICML 2025).*

2. ‡ W. Chung, **L. Cherif**, D. Meger, and D. Precup, "Parseval Regularization for Continual Reinforcement Learning," arXiv preprint arXiv:2412.07224. Accepted at *The Thirty-eighth Annual Conference on Neural Information Processing Systems (NeurIPS 2024).*

3. ‡ S. Lee, M. Kim, **L. Cherif**, D. Dobre, J. Lee, S. J. Hwang, K. Kawaguchi, G. Gidel, Y. Bengio, N. Malkin, and M. Jain, "Learning diverse attacks on large language models for robust red-teaming and safety tuning," arXiv preprint arXiv:2405.18540. Accepted to *Red Teaming GenAI Workshop (NeurIPS 2024)* and at *The Thirteenth International Conference on Learning Representations (ICLR 2025).*

4. ‡ **L. Cherif**, E. Meriaux*, J. Qin*, V. Patel, M. Klissarov, D. Precup, and K. Khetarpal "Leveraging Affordances for Reinforcement Learning in Large Discrete Action Spaces," In *Women in Machine Learning (WiML) Symposium at The Forty-first International Conference on Machine Learning (ICML 2024).* [*Poster*]

5. ‡ **L. Cherif***, M. Safdar*, G. Lamouche, P. Wanjara, P. Paul, G. Wood, M. Zimmermann, F. Hannesen, and Y. Zhao, "Evaluation of Key Spatiotemporal Learners for Print Track Anomaly Classification Using Melt Pool Image Streams," *IFAC-PapersOnLine*, vol. 56, no. 2, pp. 4733–4739, Jan. 2023.

6. **L. Cherif**, Y. Zhao, "Development and Implementation of Computer-Vision-Based Deep Learning Models for Anomaly Classification in Laser Powder Bed Fusion," *McGill Univ.*, Dec. 2022. [*Undergraduate thesis*]

7. **L. Cherif**, E. Duplay, M. Larrouturou, Z. F. Bao, and A. Higgins, "Radiative Heat Transfer in Laser Thermal Propulsion for Rapid Spaceflight," McGill University Summer Undergraduate Research in Engineering Poster Presentations, Aug. 2020. [*Poster*]

* Equal Contribution ‡ Peer-reviewed

Research Experience

Reasoning & Learning Lab, McGill University/Mila - Quebec AI Institute *Aug. 2023 – Present*
Machine Learning Graduate Researcher | Advisors: Prof. Doina Precup, Dr. Khimya Khetarpal

- Leverage large generative models (e.g., LLMs/VLMs) to improve reinforcement learning agents' learning and performance, in collaboration with Google DeepMind

- Presented poster at ICML 2024 on 4x hit-rate prediction improvement over considered baseline on real-world Amazon recommender system data
- Co-authored two papers on a novel regularization technique for continual reinforcement learning (accepted to NeurIPS 2024) and automated red-teaming method (accepted to NeurIPS 2024 Red Teaming GenAI Workshop, under review at ICLR 2025)

Additive Design & Manufacturing Lab, McGill University *Jan. 2022 – Dec. 2022*
Machine Learning Undergraduate Researcher | Advisor: Prof. Yaoyao Fiona Zhao

- Researched and developed spatiotemporal convolutional neural networks for robust anomaly classification in laser powder bed fusion (a metal 3D printing process)
- Identified gaps in the literature, designed experiments, and created a large dataset
- Co-first authored a conference paper, wrote a thesis, and presented findings to 20+ academics

McGill Interstellar Flight Group, McGill University *May 2020 – Aug. 2020*
Laser-thermal Propulsion Undergraduate Researcher | Advisor: Prof. Andrew J. Higgins

- Investigated and optimized the mathematical model of a cooling system for a laser-thermal rocket's combustion chamber to allow travel from Earth to Mars in 45 days (instead of 6-8 months)
- Presented findings in a poster to the faculty of engineering, and a public preliminary design review of 40 academics and industry professionals
- Published work was widely covered by the press (e.g., Forbes)

Honours and Awards (*Currency in CAD*)

FRQNT - Master's Training Scholarship ($20,000, Ranked 4^{th} amongst candidates), *Quebec Nature and Technology Research Fund (Fonds De Recherche Du Québec Nature et Technologie), 2024*

Women in AI Excellence Scholarship ($10,000), *Mila - Quebec AI Institute, 2024*

Reinforcement Learning Conference - Conference Registration Funding ($631), *2024*

International Conference on Machine Learning - Conference Registration Funding ($728), *Women in Machine Learning, 2024*

Louis C. Ho Summer Undergraduate Research in Engineering Award ($2,812.5), *McGill University, 2020*

NSERC - Undergraduate Summer Research Award ($2,812.5), *Natural Sciences and Engineering Research Council of Canada, 2020*

French Baccalaureate Highest Honours (Mention Très Bien et Félicitations du Jury), *French Ministry of National Education (Ministère de l'Éduation Nationale), 2018*

Industry Experience

Dell Technologies – Secureworks, Montreal, Canada *May 2022 – Jul. 2023*
Data Scientist Intern | Scientific Advisors: Dr. François Labrèche, Serge-Olivier Paquette

- Improved vulnerability prioritization by ∼20% by researching and developing novel features for the product's language and machine learning models
- Extended data fetchers to include additional sources and adapted the deployed machine learning models
- Presented results regularly in monthly all-product team demos to engineering and product executives, and 200+ people
- Received full-time offer and repeated part-time offers

Acrylic Robotics (Startup), Montreal, Canada *May 2021 – Dec. 2021*
Software & Robotics Developer Intern

- Spearheaded the technical development of the 1^{st} and 2^{nd} robot prototypes able to autonomously paint art on canvas
- Presented weekly technical developments to the CEO and business development team
- Designed front- and back-end tools for the proprietary drawing application
- Tested the first partnership with a renowned artist

Teaching & Mentoring

McGill Artificial Intelligence Society (MAIS) Hacks Lecturer and Mentor *Oct. 2022*

- Presented beginner- and intermediate-level machine and deep learning tutorials at one of Canada's largest hackathons (150+ participants)
- Aided teams in technical tool selection and technical difficulties

Promoting Opportunities for Women in Engineering Conference Mentor, McGill University *Feb. 2022*

- Presented, guided, and answered technical questions during the design challenge of a conference for high school/CEGEP women$^+$ students
- Ensured the inclusion and active participation of all 8 students in the team

Leadership and Service

Volunteer, Reinforcement Learning Conference *Aug. 2024*

- Supported sponsors at the industry-academia mixer
- Promoted industry-academia mixer on social media

Volunteer, Women in Machine Learning Symposium ICML *Jul. 2024*

- Moderated breakout discussions with panelists and mentors

Lab Representative, Mila – Quebec AI Institute *Nov. 2023 – Present*

- Represent the student body during professor-admin discussions and decision-making processes
- Organize and support student-led events and initiatives

Co-founder and Head of Product Spirufoods, McGill Dobson X-1 Accelerator *Jun. 2023 – Aug. 2023*

- Created product and technical development plans
- Gathered and lead customer validation interviews
- Created pitch decks
- Supported the recruitment of engineering interns
- Developed intern's engineering project

Podcast Lead and Co-Producer McGill AI Podcast, McGill AI Society *May 2022 – May 2023*

- Grew number of downloads by +60% by leading* a team of 4 producers and democratizing critical AI discussions with top contributors in the field [Podcast Link]
- Themes: current and future AI research, applications, and ethical challenges
- Guests: ACM A.M. Turing award winner, research director at Google DeepMind, students, professors, principal industry researchers
- Promoted to senior advisor for the 2023-2024 academic year

  * *I was an acting lead as there was no designated leader*

Conference Moderator, Promoting Opportunities for Women in Engineering McGill University *Feb. 2022*

- Presented and moderated questions for a women$^+$ engineering student speaker panel as part of a conference for high school/CEGEP women$^+$ students

Competitor, McHacks 9 Hackathon McGill University *Jan. 2022*

- Co-developed a machine-learning-based web application in a team of 4 to provide policymakers a systematic way to recommend COVID-19 public health measures based on past policies and current public health indices
- Published and presented the web-application at the hackathon [GitHub]

Competitor, McHacks 8 Hackathon McGill University *Jan. 2021*

- Learned HTML and CSS programming languages and developed the front-end of a web-application for random exam generation based on the course, chapter, level of difficulty, and number of students, in under 36 hours
- Published the completed prototype web-application at the hackathon in a team of 3 people [GitHub]

Orientation Leader, Engineering Undergraduate Society McGill University *Aug. 2020*

- Guided and acquainted incoming engineering students to McGill, the faculty, and Montreal communities over four days, with a second orientation leader
- Ensured fun, safety, and inclusion of the team

Vice President of Finance, Sustainability in Engineering McGill University *May 2019 – May 2020*

- Created and distributed the annual budget
- Contributed to the organization of the team's events

Organizer, Mechanical Engineering First Year Committee McGill University *Sep. 2018 – Apr. 2019*

- Organized events for first-year mechanical engineering students to promote and facilitate connections

Scientific Presentations

1. *Reinforcement Learning with Large Changing Discrete Action Spaces using Affordances,* McGill Reasoning and Learning Lab, Apr. 2024.
2. *Development and Implementation of Computer-Vision-Based Deep Learning Models for Anomaly Classification in Laser Powder Bed Fusion,* McGill University Honours Mechanical Engineering Thesis Presentations, Dec. 2022.
3. *Radiative Heat Transfer in Laser Thermal Propulsion for Rapid Spaceflight,* McGill University Summer Undergraduate Research in Engineering Poster Presentations, Aug. 2020.
4. *Rapid Mars Transit with Laser Thermal Propulsion Preliminary Design Review,* McGill Interstellar Flight Group Public Online Presentation, Aug. 2020.
5. *Lasers,* McGill Interstellar Flight Group, May 2020.

Skills

Programming Languages: Python, Java, C, C++, MATLAB, Bash, SQL, HTML, CSS

Frameworks & Libraries: PyTorch, MXNet, OpenCV, Scikit-Learn, pandas, NumPy, NLTK, Gensim

Tools & Software: Amazon Web Services (AWS), Google Cloud Platform (GCP), Docker, Make, CUDA, Git, Unix, Linux/Ubuntu, CI/CD, Slurm, ROS, MoveIt

Languages: English (Fluent), French (Fluent), Arabic (Fluent), Spanish (Intermediate)

Advanced Coursework

Mathematics: Ordinary Differential Equations, Intermediate & Advanced Calculus, Probability, Linear Algebra & Partial Differential Equations

Computer Science: Applied Machine Learning, Reinforcement Learning, Engineering Systems Optimization, Numerical Methods, Natural Language Processing, Representation Learning, Intelligent Robotics