Mohamed Elsayed

University Avenue, Edmonton, AB

mohamedelsayed@ualberta.ca mohmdelsayed.github.io

Research Objective

Developing scalable general-purpose mechanisms for learning from continuous streams of experience, with a focus on streaming learning, reinforcement learning, and continual learning.

Education

Doctoral of Philosophy **GPA: 4.0/4.0**
University of Alberta, Canada *2022-Present*
Computing Science. *Advisor*: A. Rupam Mahmood

Master of Science **GPA: 3.9/4.0**
University of Alberta, Canada *2019-2022*
Computing Science. *Advisor*: A. Rupam Mahmood

Bachelor of Science **GPA: 3.7/4.0**
University of science and technology, Zewail City, Egypt *2014–2019*
Major: Communication and Information Engineering. Minor: Physics of the Earth and Universe.

Publications

Conferences and Journals:

1. Vasan, G., **Elsayed, M.**, Azimi, S. A., He, J., Shahriar, F., Bellinger, C., White, M., & Mahmood, A. R. (2024). Deep policy gradient methods without batch updates, target networks, or replay buffers. *Neural Information Processing Systems (NeurIPS)*.
2. **Elsayed, M.**, Lan, Q., Lyle, C., & Mahmood, A. R. (2024). Weight clipping for deep continual and reinforcement learning. *Reinforcement Learning Journal*, *5*(1), 2198–2217 (RLC).
3. **Elsayed, M.**, Farrahi, H., Dangel F., & Mahmood, A. R. (2024). Revisiting scalable Hessian diagonal approximations for applications in reinforcement learning. *International Conference on Machine Learning (ICML)*.
4. **Elsayed, M.**, & Mahmood, A. R. (2024). Addressing loss of plasticity and catastrophic forgetting in continual learning. *International Conference on Learning Representations (ICLR)*.
5. Zhou, M., Luo, J., Villella, J., Yang, Y., Rusu, D., Miao, J., ..., **Elsayed M.**, ..., & Wang, J. (2021). SMARTS: Scalable multi-agent reinforcement learning training school for autonomous driving. *Conference on robot learning (CoRL)*.
6. Elgammal, M. A., Elkhouly, O. A., Elhosary, H., **Elsayed, M.**, Mohieldin, A. N., Salama, K. N., & Mostafa, H. (2018). Linear and nonlinear feature extraction for neural seizure detection. *International Midwest Symposium on Circuits and Systems (MWSCAS)*.

Pre-prints and Workshops:

7. **Elsayed, M.**, & Mahmood, A. R. (2025). Multi-stream Sequence Learning. *ICML Workshop on Efficient Systems for Foundation Models*.
8. **Elsayed, M.**, Vasan, G., & Mahmood, A. R. (2024). Streaming deep reinforcement learning finally works. *arXiv preprint arXiv:2410.14606*.
9. **Elsayed, M.**, Vasan, G., & Mahmood, A. R. (2024). Deep reinforcement learning without experience replay, target networks, or batch updates. *NeurIPS Workshop on Fine-Tuning in Modern Machine Learning*.
10. **Elsayed, M.**, & Mahmood, A. R. (2022) Utility-based perturbed gradient descent: An optimizer for continual learning. *NeurIPS Workshop on Optimization for Machine Learning*.
11. **Elsayed, M.**, & Mahmood, A. R. (2022) HesScale: Scalable computation of Hessian diagonals. *NeurIPS Workshop on Higher-Order Optimization in Machine Learning*.
12. **Elsayed, M.**, Hassanzadeh, K., Nguyen, N. M., Alban, M., Zhu, X., Graves, D., & Luo, J. (2020). ULTRA: A reinforcement learning generalization benchmark for autonomous driving. *NeurIPS Workshop on Machine Learning for Autonomous Driving*.

Selected Invited Talks

The Untapped Potential of Streaming Deep RL Agents — **Aug 2025**
Huawei Canada Research Institute — *Edmonton, Canada*

Streaming Deep Reinforcement Learning Finally Works — **Jan 2025**
Google DeepMind Vision Reading Group — *Online*

The Potential of Streaming Learning Agents — **Dec 2024**
Scalable Next Generation AI for the Real World Retreat — *Sentosa, Singapore*

Streaming Deep Reinforcement Learning Finally Works — **Oct 2024**
Openmind Research Institute Retreat — *Banff, Canada*

Towards Continual Learning Optimizers — **April 2023**
RL Sofa at Mila — *Online*

Utility-based Perturbed Gradient Descent — **February 2023**
Lifelong Reinforcement Learning Workshop — *Holetown, Barbados*

Work Experience

Huawei — **Edmonton, Canada**
Research Intern — *May 2020 - Dec 2020*
- Worked on autonomous intersection navigation for the unprotected left turn problem with RL.
- Co-authored a workshop paper in NeurIPS ML4AD.

Nara Institute of Science and Technology — **Nara, Japan**
Robotics Research Intern — *Aug 2018 - Sep 2018*
- Worked on Semantic SLAM problem using deep learning techniques.
- Worked on map in-painting techniques.

Valeo — **Smart Village, Egypt**
Deep Learning Research Intern — *Jul 2018 - Aug 2018*
- Worked on automotive-related projects (classification, semantic segmentation, and detection).
- Handled new state-of-the-art network architectures and bench-marked on related works.

Teaching

University of Alberta — **Edmonton, Canada**
Graduate Teaching Assistant
- CMPUT 174: Introduction to the Foundations of Computation — Sep 2019 - April 2020
- CMPUT 365: Introduction to Reinforcement Learning — Sep 2022 - Dec 2022
- CMPUT 340: Introduction to Numerical Methods — Jan 2024 - April 2024

Zewail City of Science and Technology — **Cairo, Egypt**
Junior Teaching Assistant — *Sep 2018 - Dec 2018*
- CIE 417: Machine Learning

Service

- **Reviewer** at: ICLR 2023, CoLLAs 2024, RLC 2024, NeurIPS 2024 (Top Reviewer), AISTATS 2025, ICLR 2025, ICML 2025, RLC 2025, TMLR, and NeurIPS 2025.
- **Panelist**: Creating (Continual) Agents Panel Discussion at Scalable Next Generation AI for the Real World Retreat in Sentosa, Singapore.
- **Evaluator**: European Lab for Learning & Intelligent Systems (ELLIS) 2024.

Last updated on August 19, 2025