

Mohamed Elsayed

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Education

Doctoral of Philosophy

University of Alberta, Canada

Computing Science

GPA: 4.0/4.0

Expected Graduation: Sep 2026

Master of Science

University of Alberta, Canada

Computing Science [Thesis-based]

GPA: 3.9/4.0

2019-2022

Bachelor of Science

University of science and technology, Zewail City, Egypt

Major: Communication and Information Engineering. Minor: Physics of the Earth and Universe.

GPA: 3.7/4.0

2014 – 2019

Experience

Huawei Technologies Co., Ltd

Support Researcher, Intern

Edmonton, Canada

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

Robotics Research Intern

Nara, Japan

Aug 2018 - Sep 2018

- Worked on Semantic SLAM problem using deep learning techniques.
- Worked on map in-painting techniques.

Valeo

Deep Learning Research Intern

Smart Village, Egypt

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

Graduate Teaching Assistant

Edmonton, Canada

- CMPUT 174: Introduction to the Foundations of Computation
- CMPUT 365: Introduction to Reinforcement Learning
- CMPUT 340: Introduction to Numerical Methods

Sep 2019 - April 2020

Sep 2022 - Dec 2022

Jan 2024 - April 2024

Zewail City of Science and Technology

Junior Teaching Assistant

Cairo, Egypt

Sep 2018 - Dec 2018

- CIE 417: Machine Learning

Selected Projects

RL Algorithms on Real-world Robots

Oct 2019 – Sep 2020

- Improved docking and moving behaviors.
- Produced robust docking in Roomba with online RL.

Technical and Personal skills

- **Programming Languages:** Python, C/C++
- **Software Libraries:** OpenAI Gym, Pytorch, Jax
- **Technologies:** Git, Bash, L^AT_EX

Selected Publications

Conferences:

- **Elsayed, M.**, & Mahmood, A. R. (2024). Addressing loss of plasticity and catastrophic forgetting in continual learning. *International Conference on Learning Representations (ICLR)*.
- **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)*.
- **Elsayed, M.**, Lan, Q., Lyle C., Mahmood, A. R. (2024). Weight Clipping for Deep Continual and Reinforcement Learning. *Reinforcement Learning (RLC)*.

Pre-prints and Workshops:

- **Elsayed, M.**, Mahmood, A. R. (2022) Utility-based Perturbed Gradient Descent: An Optimizer for Continual Learning. *NeurIPS Workshop on Optimization for Machine Learning*, 2022.
- **Elsayed, M.**, Mahmood, A. R. (2022) HesScale: Scalable Computation of Hessian Diagonals. *NeurIPS Workshop on Higher-Order Optimization in Machine Learning*, 2022.
- **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*.

Talks

Utility-based Representation Search

Aug 2023

Tea Time Talk, University of Alberta

Towards Continual Learning Optimizers

April 2023

RL Sofa, Mila

Extracurricular Activities

- **Reviewer** at TMLR, ICLR 2023, NeurIPS 2022, CoLLAs 2024, RLC 2024.
- **President** of IEEE Zewail City Student Branch. (2017)
Being in this position for a year has given me good experience in building and working with teams as a leader in addition to some managerial and planning skills (Granted University Best Leader Award).
- **Director** of Walking Robots Competition in Zewail City. (2017)