

Meraj Hashemizadeh



merajhse@mila.quebec



+1 (438) 875-7623

EDUCATION

M.SC. | COMPUTER SCIENCE

Mila / University of Montreal

Sep 2019 - Present

- GPA: 4.23 / 4.00

B.SC. | ELECTRICAL ENGINEERING

Sharif University of Technology,

Tehran, Iran | Sep 2014 - Sep 2019

- GPA: 3.83 / 4.00

B.SC. | PHYSICS

Sharif University of Technology,

Tehran, Iran | Sep 2014 - Sep 2019

- GPA: 4.00 / 4.00

RESEARCH INTERESTS

- Deep Learning
- Tensor Methods
- Optimization in Machine Learning

COURSEWORK

Deep Self-supervised Learning **A**

Theory of Deep Learning **A+**

Probabilistic Graphical Models **A+**

Machine Learning Seminar **A**

Foundations of Machine Learning **A+**

TEACHING EXPERIENCE

MILA | FALL 2020

Teaching assistant, Foundations of Machine Learning, Prof. Rabusseau & Prof. Mitliagkas

SKILLS

MACHINE LEARNING LIBRARIES

PyTorch • JAX • scikit-learn

PROGRAMMING LANGUAGES

Python • R • $\text{T}_\text{E}_\text{X}$ / $\text{L}_\text{A}_\text{T}_\text{E}_\text{X}$

MATHEMATICAL SOFTWARES

Matlab • Mathematica

WORK EXPERIENCE

HUAWEI RESEARCH CANADA | ML RESEARCH INTERN

Sep 2020 – Jan 2021 | Montreal

- I worked with the compression team at Huawei Noah's Ark Lab on designing compressed transformer architectures using tensor decompositions.

PUBLICATIONS

- [1] M. Hashemizadeh, M. Liu, J. Miller, and G. Rabusseau. Adaptive tensor learning with tensor networks. In *First Workshop on Quantum Tensor Networks in Machine Learning at NeurIPS*, 2020.

PROJECTS AND RESEARCH EXPERIENCE

- Deep Self-supervised Learning:** "Shortcut Removal in Contrastive Methods." In this work, we studied an adversarial framework for automatically removing shortcut features in self-supervised contrastive methods.
- Theory of Deep Learning:** "Acceleration and variance reduction in min-max optimization." In this work, I reviewed existing algorithms for min-max optimization and proposed an accelerated method for stochastic min-max optimization with last-iterate convergence results.
- Probabilistic Graphical Models:** "Language Modeling with Spectral HMM Training." In this project, we explored the spectral method of training a Hidden Markov Model to predict sequences of emissions. We evaluated this approach compared to the more widely used expectation-maximization technique for training HMMs, and with a non-Markovian model for language modeling, the bidirectional LSTM.
- Foundations of Machine Learning:** "Deep Image Classification in Fourier Domain." Motivated by the success of CNNs in image classification and the fact that convolutions in the spatial domain are equivalent to multiplication in the Fourier domain. We proposed new architectures for image classification without relying on the computationally expensive convolution operation.

AWARDS

December 2020: **Microsoft Diversity Award**, University of Montreal, Canada
Worth \$4,000

Sep 2019: **M.Sc. scholarship**, Mila (Quebec Artificial Intelligence Institute)
Worth \$22,000 per annum

Sep 2019: **Tuition Exemption Scholarship**, University of Montreal, Canada

Dec 2017: Fourth prize in the First Iranian **BCI Competition**, National Brain Mapping Lab, Iran

Aug 2014: Passed the **national universities entrance examination** with overall rank 182 among 222,000 participants, Iran

Jul 2014: Passed Iran **pre university exams** with average score of 19.76 out of 20

Sep 2013: Silver medal in The Iranian **National Physics Olympiad**

Sep 2012: **National Elite Foundation Scholarship**

Awarded to olympiad medalists and the top 150 participants of the national universities entrance exam

Sep 2012: Bronze medal in The Iranian **National Physics Olympiad**