

Alireza Makhzani

CONTACT INFORMATION

[Machine Learning Group](#)
[Vector Institute for Artificial Intelligence](#)
University of Toronto
10 Kings College Road, Toronto, Ontario, Canada, M5S 3G4

Email: makhzani AT vectorinstitute DOT ai
Website: <http://www.alireza.ai>

RESEARCH INTERESTS

Machine Learning, Deep Learning, Generative Models, Reinforcement Learning

PROFESSIONAL EXPERIENCES

Vector Institute, University of Toronto
Faculty Member

Toronto, Canada
January 2018 - present

Google Inc., [DeepMind Team](#)

Research Intern

London, UK
Summer 2016

- *Collaborators:* Oriol Vinyals, Timothy Lillicrap, David Silver
- *Project:* [Deep Reinforcement Learning for StarCraft](#)

Collaborated with Blizzard Inc. and DeepMind software engineers to develop a reinforcement learning environment for StarCraft II, and performed all the reinforcement learning experiments of the project during the summer of 2016.

Google Inc., [Brain Team](#)

Research Intern

Mountain View, USA
Summer 2015

- *Collaborators:* Jon Shlens, Navdeep Jaitly, Ian Goodfellow
- *Project:* [Adversarial Autoencoders](#)

Developed a new generative model for images with applications for semi-supervised learning and dimensionality reduction.

EDUCATION

University of Toronto

PhD, Electrical & Computer Engineering

Toronto, Canada
2012 - 2017

- Thesis: Unsupervised Representation Learning with Autoencoders
- Advisor: Prof. Brendan Frey
- GPA: 4.0/4.0

University of Toronto

MASc, Electrical & Computer Engineering

Toronto, Canada
2010 - 2012

- Thesis: [Compressed Sensing for Jointly Sparse Signals](#)
- Advisor: Prof. Shahrokh Valaee
- GPA: 3.95/4.0

Amirkabir University of Technology (Tehran Polytechnic)

BSc, Electrical & Computer Engineering

Tehran, Iran
2006 - 2010

- GPA: 18.62/20 (~ 93/100)
-

PUBLICATIONS

[GOOGLE SCHOLAR](#)

1. [StarCraft II: A New Challenge for Reinforcement Learning](#)

Oriol Vinyals, Timo Ewalds, Sergey Bartunov, Petko Georgiev, Alexander Sasha Vezhnevets, Michelle Yeo, **Alireza Makhzani**, Heinrich Kuttler, John Agapiou, Julian Schrittwieser, Stephen Gaffney, Stig Petersen, Karen Simonyan, Tom Schaul, Hado van Hasselt, David Silver, Timothy Lillicrap, Kevin Calderone, Paul Keet, Anthony Brunasso, David Lawrence, Anders Ekeremo, Jacob Repp, Rodney Tsing

NIPS 2017, Deep Reinforcement Learning Symposium

2. [PixelGAN Autoencoders](#)
Alireza Makhzani, Brendan Frey
NIPS 2017, Neural Information Processing Systems
3. [Adversarial Autoencoders](#)
Alireza Makhzani, Jonathon Shlens, Navdeep Jaitly, Ian Goodfellow, Brendan Frey
ICLR 2016 Workshop, International Conference on Learning Representations
4. [Winner-Take-All Autoencoders](#)
Alireza Makhzani, Brendan Frey
NIPS 2015, Neural Information Processing Systems
5. [k-Sparse Autoencoders](#)
Alireza Makhzani, Brendan Frey
ICLR 2014, International Conference on Learning Representations
6. [Distributed Spectrum Sensing in Cognitive Radios via Graphical Models](#)
Alireza Makhzani, Shahrokh Valaee
CAMSAP 2013, IEEE International Conference on Computational Advances in Multi-Sensor Adaptive Processing
7. [Reconstruction of Jointly Sparse Signals using Iterative Hard Thresholding](#)
Alireza Makhzani, Shahrokh Valaee
ICC 2012, IEEE International Conference on Communications
8. [Reconstruction of a Generalized Joint Sparsity Model using Principal Component Analysis](#)
Alireza Makhzani, Shahrokh Valaee
CAMSAP 2011, IEEE International Conference on Computational Advances in Multi-Sensor Adaptive Processing

TEACHING
EXPERIENCES

Teaching Assistant, University of Toronto, Toronto, Canada.

- Inference Algorithms and Machine Learning (ECE521) **Winter 2016**
- Inference Algorithms and Machine Learning (ECE521) **Winter 2015**
- Probability and Stochastic Processes (ECE302) **Winter 2012**
- Probability and Stochastic Processes (ECE302) **Winter 2011**

HONORS AND
AWARDS

Ontario Graduate Scholarship (OGS), University of Toronto, 2015.

Queen Elizabeth II Graduate Scholarship, University of Toronto, 2014.

Edward S. Rogers Sr. Graduate Scholarship, University of Toronto in the years 2010 to 2017.

Ranked 2nd among 120 undergraduate students in the Department of Electrical Engineering, Amirkabir University of Technology, Iran, September 2010.

Ranked 3rd (bronze medal) among about 12500 national students of Iran in the university students Olympiad of Iran in the field of Electrical and Computer Engineering. (Because of this rank, I got exempted from national graduate entrance exam and compulsory military service of Iran), July 2009.

GRADUATE
COURSES

University of Toronto

- Large Scale Machine Learning (**A+**) Prof. Russ Salakhutdinov
- Advanced Machine Learning (**A+**) Prof. Brendan Frey
- GPU Programming (**A+**) Prof. Andreas Moshovos
- Natural Language Processing (**A+**) Prof. Frank Rudzicz

- Statistical Signal Processing (**A+**)
- Stochastic Process (**A+**)
- Digital Communication (**A+**)
- Communication Networks (**A+**)
- Advanced Algorithms and Data Structures (**A**)
- Information Theory (**A-**)

Prof. Dimitrios Hatzinakos
Prof. Raymond Kwong
Prof. Raviraj Adve
Prof. Shahrokh Valaee
Prof. Andreas Veneris
Prof. Wei Yu

REVIEWING

- NIPS 2017, Neural Information Processing Systems
- ICML 2017, International Conference on Machine Learning
- ICLR 2017, International Conference on Learning Representations
- ICLR 2016, International Conference on Learning Representations

REFERENCES

Available on request.