

Alireza Makhzani

CONTACT INFORMATION

Machine Learning Group
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RESEARCH INTERESTS

I have a broad set of interests within machine learning and deep learning, but I have specialized in generative models and deep reinforcement learning.

EDUCATION

- University of Toronto** Toronto, Canada
PhD, Electrical & Computer Engineering **2012 - present**
- Thesis: Unsupervised Representation Learning with Autoencoders
 - Advisor: Prof. Brendan Frey
 - GPA: 4.0/4.0
- University of Toronto** Toronto, Canada
MAsc, Electrical & Computer Engineering **2010 - 2012**
- Thesis: [Compressed Sensing for Jointly Sparse Signals](#)
 - Advisor: Prof. Shahrokh Valaee
 - GPA: 3.95/4.0
- Amirkabir University of Technology (Tehran Polytechnic)** Tehran, Iran
BSc, Electrical & Computer Engineering **2006 - 2010**
- GPA: 18.62/20 ($\sim 93/100$)
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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 Ekermo, Jacob Repp, Rodney Tsing
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
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WORK
EXPERIENCES

Google Inc., DeepMind Team

London, UK

Research Intern

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

Mountain View, USA

Research Intern

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.

TEACHING
EXPERIENCES

Teaching Assistant, University of Toronto, Toronto, Canada.

- Inference Algorithms and Machine Learning (ECE521)
- Inference Algorithms and Machine Learning (ECE521)
- Probability and Stochastic Processes (ECE302)
- Probability and Stochastic Processes (ECE302)

Winter 2016

Winter 2015

Winter 2012

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+**)
- Advanced Machine Learning (**A+**)
- GPU Programming (**A+**)
- Natural Language Processing (**A+**)
- Statistical Signal Processing (**A+**)
- Stochastic Process (**A+**)
- Digital Communication (**A+**)
- Communication Networks (**A+**)
- Advanced Algorithms and Data Structures (**A**)
- Information Theory (**A-**)

Prof. Russ Salakhutdinov
Prof. Brendan Frey
Prof. Andreas Moshovos
Prof. Frank Rudzicz
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 (6 papers)
 - ICML 2017, International Conference on Machine Learning (8 papers)
 - ICLR 2017, International Conference on Learning Representations (8 papers)
 - ICLR 2016, International Conference on Learning Representations (6 papers)
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REFERENCES

Available on request.