Alireza Makhzani

CONTACT
INFORMATION

Machine Learning Group
Vector Institute for Artificial Intelligence
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RESEARCH
INTERESTS

Machine Learning, Deep Learning, Generative Models, Reinforcement Learning

PROFESSIONAL
EXPERIENCES

Vector Institute, University of Toronto   Toronto, Canada
Faculty Member   **January 2018 - present**

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.

EDUCATION

University of Toronto   Toronto, Canada
PhD, Electrical & Computer Engineering   **2012 - 2017**
- 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

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 K uttler, 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

   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

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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+**)   Prof. Dimitrios Hatzinakos
- Stochastic Process (**A+**)   Prof. Raymond Kwong
- Digital Communication (**A+**)   Prof. Raviraj Adve
- Communication Networks (**A+**)   Prof. Shahrokh Valaee
- Advanced Algorithms and Data Structures (**A**)   Prof. Andreas Veneris
- Information Theory (**A**-)   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

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REFERENCES

Available on request.