Mahdieh Abbasi

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RESEARCH INTERESTS

- Machine Learning & Pattern Recognition
  - Dependable and Secure Deep Neural Networks
    - Uncertainty Estimation, Detection of adversarial examples & Out-of-Distribution samples
  - Adversarial Networks; Domain Adversarial Networks (DAN), Generative Adversarial Networks (GAN)
- Computer Vision
  - Robust Object Detection, 3D Human Pose Estimation

EDUCATIONS

- **PhD Candidate**, Computer Engineering, **Université Laval** (UL) 2015-2020
  Computer Vision and Systems Laboratory, Québec, Canada
  Thesis Title: *Toward Robust Deep Neural Networks*
  Supervisor: *Christian Gagné*

- **Master of Science**, Artificial Intelligence, **Alzahra University** 2010-2012
  Digital Media Lab, Tehran, Iran
  Thesis Title: *3D Human Pose Estimation*
  Supervisor: *H. Reza Rabiee (Sharif University of Technology)*

- **Bachelor of Science**, Computer Science, **Sharif University of Technology** (SUT) 2005-2010
  Digital Media Lab, Tehran, Iran
  B.Sc. Project: *Community Detection in Social Networks*
  Supervisor: *H. Reza Rabiee*

AWARDS & DISTINCTIONS

- **Best Paper Award**, 33rd Canadian Conference on Artificial Intelligence (CAI), 2020
  Ottawa, Canada
- **Travel Grant**, International Joint Conference on Artificial Intelligence (IJCAI), 2019
  Macao, China
- **Bourse du Fonds Otis-Lalonde en Vision Artificielle**, 2016,2017
  UL, Canada
  (Awarded two times for the papers published in 3DVision IEEE & ICLR-W)

- **MITACS Internship**, E Machine Learning 2017
  UMR (Unité Mixte de Recherche), Québec, Canada
- **Graduate Fellowship,** UL, Québec ,Canada 2015,2016
- **Granted to attend Deep Learning Summer School** 2016
  Université de Montreal, Montreal, Canada (**acceptance rate 30%**)

- Accepted in the best technoloy university in Iran (SUT) as ranked 2005
  among top 1% in the very competitive nationwide entrance exam of Iranian universities with almost 500,000 participants.

PUBLICATIONS

- **M. Abbasi**, D. Laurandeau, C. Gagné, "Self-supervised Robust Object Detectors from Partially Labelled Datasets", https://arxiv.org/abs/2005.11549.

- **M. Abbasi,** A. Rajabi, C. Gagne, R. Bobba, **"**Toward Adversarial Robustness by Diversity in an Ensemble of Specialized Deep Neural Networks**",** Long paper in **Canadian Conference on AI**, 2020 [**Best paper award**].

- **M. Abbasi**, C. Shui, A. Rajabi, C. Gagne, R. Bobba, "Towards metrics for differentiating Out-of-Distribution sets", **NeurIPS** Workshop on Safety and Robustness in Decision-Making, 2019, and accepted in European Conference on Artificial Intelligence (**ECAI)**, 2020 [**oral, acceptance rate ~26%**].

- C. Shui, **M. Abbasi**, L.E. Robitaille, B. Wang, C. Gagné, "A Principled Approach for Learning Task Similarity in Multitask Learning", International Joint Conference on Artificial Intelligence (**IJCAI**) 2019 [**poster, acceptance rate ~18%**].

- **M. Abbasi**, A. Rajabi, A.S. Mozafari, R.B. Bobba, C. Gagné, "Controlling Over-generalization and its Effect on Adversarial Examples Generation and Detection", arXiv: 1808.08282, 2018.

- **M. Abbasi**, A. Rajabi, C. Gagné, R. B. Bobba, "Towards Dependable Deep Convolutional Neural Networks (CNNs) with Out-Distribution Learning", Dependable and Secure Machine Learning (DSML), co-located with Dependable System Networks (**DSN**), 2018.

- **M. Abbasi**, and C. Gagné. "Robustness to Adversarial Examples through an Ensemble of Specialists." International Conference on Learning Representations (**ICLR**) Workshop, 2017.

- F. Kiaee, C. Gagné, **M.Abbasi**, "Alternating Direction Method of Multipliers for Sparse Convolutional Neural Networks.", arXiv:1708.04788, 2017

- **M. Abbasi**, H. R. Rabiee, and C. Gagné. "Monocular 3D Human Pose Estimation with a Semi-supervised Graph-based Method." International Conference on **3DVision**, IEEE, 2015. [**oral, 15% acceptance rate for oral**]

INDUSTRIAL PROJECTS

- **Research Assistant** 2020
  Family Medicine, McGill University, Montreal, Canada
  Project: ML for community-based health-care system

- **Robust Object Detector for partially-labelled datasets** 2019-2020
  Computer Vision and Systems Laboratory, UL, Québec, Canada
  Designing and implementing a framework (using Pytorch) for generating online pseudo labels for the missed-labels objects in order to train a robust object detector with high generalization performance.

- **Hockey player identification by Jersey number recognition** 2018
  Stradigi AI company, Montreal, Canada
  During 4 months of this summer internship, I devised and implemented (using Tensorflow) a pipeline based on weakly supervised (without having labeled bounding-boxes) deep neural networks for automatically localizing the jersey number in a given hockey player image, then recognizing it.

PRESENTATIONS & TALKS

- Toward Metrics for Differentiating Out-of-Distribution Sets, **Poster presentation, Workshop NeurIPS**, Vancouver, Canada, 2019.
- "Controlling Over-generalization and its Effect on Adversarial Examples Generation and Detection", **Poster presentation**, **Montreal AI Symposium**, Montreal, Canada, 2018.
- "Robustness to Adversarial Examples through an Ensemble of Specialists", **Poster presentation**, **Montreal AI symposium**, Montreal, Canada, 2017.
- "Robustness to Adversarial Examples through an Ensemble of Specialists", **Poster Presentation**, **ICLR**, Toulon, France, 2017.
- "Monocular 3D Human Pose Estimation with a Semi-Supervised Graph-based Method", **Talk and Poster Presentation**, **3DVision(IEEE)**, Lyon, France, 2015.

COMPUTER-RELATED SKILLS

- **Programming Languages**: Python, Java, Matlab, C++
- **Python Packages**: sikit-learn, sklearn, scipy, numpy, matplotlib
- **Deep Learning Libs.**: Theano, Lasagne, TensoreFlow, Pytorch
- **Command-line OS**: Linux (Ubuntu)
- **Related Applications**: Latex, Git, Docker, SQL Server 2012, MySQL

TEACHING EXPERIENCES

- **Lecturer**, Fundamental Concepts of Databases, Spring 2014
  Shahid Bahonar Univesity of Kerman, Iran
- **Lecturer**, Computer Programming, Summer 2013
  Shadid Bahonar University of Kerman, Iran
- **Lecturer**, Modern Information Retrieval, Spring 2013
  Azad University, Kerman, Iran
- **Teaching Assistant**, Pattern Recognition, Spring 2012, 2011
  Sharif University of Technology, and Al-zahra University, Tehran, Iran

SERVICES

- Reviewer:
  - ICLR2019, NeurIPS2018, NeurIPS2017

LANGUAGES

- English: Advanced
- French: Intermediate
- Persian: mother tongue

REFEREES

- Christian Gagné
  Full Professor, Electrical and Computer Engineering Department, UL
  christian.Gagne@gel.ulaval.ca
- Denis Laurendeau
  Full Professor, Electrical and Computer Engineering Department, UL
  denis.Laurendeau@gel.ulaval.ca
- Hamid Reza Rabiee
  Full Professor, Computer Engineering Department, SUT
  rabiee@sharif.edu