Zahra Atashgahi

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RESEARCH INTERESTS

- Machine Learning
- Sparse Neural Networks
- Deep Learning
- Cost-efficient Neural Networks
- Time Series Analysis
- Anomaly Detection
- Continual Learning
- Healthcare

EDUCATION

University of Twente - Data Management & Biometrics (DMB) Enschede, The Netherlands
PhD Candidate in Computer Science, *May 2020 – Apr. 2024 (Expected)*
- During My PhD, I will study sparse neural networks. We seek to develop algorithms to solve different tasks efficiently in terms of computational costs and data requirement. My supervisors are Dr. Decebal Mocanu (University of Twente), Prof. Dr. Raymond Veldhuis (University of Twente), and Prof. Dr. Mykola Pechenizkiy (Eindhoven University of Technology).

Eindhoven University of Technology - Data Mining (DM) Eindhoven, The Netherlands
PhD Candidate in Computer Science, *Oct. 2019 – Apr. 2020*
- My PhD started at the Eindhoven University of Technology; after a few month I moved to University of Twente together with Dr. Decebal Mocanu.

Amirkabir University of Technology (Tehran Polytechnic) Tehran, Iran
M.Sc. in Computer Science - Artificial Intelligence (GPA: 4 (18.3/20)), *Sep. 2017 – Sep. 2019*

Amirkabir University of Technology (Tehran Polytechnic) Tehran, Iran
B.Sc. in Computer Engineering - Hardware Engineering (GPA: 3.55 (17.09/20)), *Sep. 2013 – July 2017*

PUBLICATIONS

Journal Articles

[1] **Z. Atashgahi**, G. Sokar, T. van der Lee, E. Mocanu, D. C. Mocanu, R. Veldhuis, and M. Pechenizkiy, "Quick and robust feature selection: The strength of energy-efficient sparse training for autoencoders," *arXiv preprint arXiv:2012.00560. (In Press: Accepted at Machine Learning Journal - ECML PKDD 2022 Journal track)*, 2020.

[3] S. Liu, T. Chen, X. Chen, **Z. Atashgahi**, L. Yin, H. Kou, L. Shen, M. Pechenizkiy, Z. Wang, and D. C. Mocanu, "Sparse training via boosting pruning plasticity with neuroregeneration," *arXiv preprint arXiv:2106.10404 (Accepted at NeurIPS 2021)*, 2021.

[4] S. Liu, T. Chen, **Z. Atashgahi**, X. Chen, G. Sokar, E. Mocanu, M. Pechenizkiy, Z. Wang, and D. C. Mocanu, "Freetickets: Accurate, robust and efficient deep ensemble by training with dynamic sparsity," *arXiv preprint arXiv:2106.14568*, 2021.

Conference Proceedings

[2] S. Liu, T. van der Lee, A. Yaman, **Z. Atashgahi**, D. Ferrar, G. Sokar, M. Pechenizkiy, and D. C. Mocanu, "Topological insights into sparse neural networks," in *Proceedings of ECML-PKDD*, 2020.

TECHNICAL SKILLS

Programming Languages: Python, Matlab, R, C/C++, Java
Machine Learning Libraries: Tensorflow, Keras, Scikit-Learn, Pandas, NumPy
Database Systems: MySQL, SQL Server
Hardware Design Languages: Verilog, VHDL, 8086 Assembly, AVR Assembly
Web Development: HTML5, CSS, XML, XSLT, JavaScript, Jqueri, AJAX, PHP

Honors & Awards

Accepted as an student volunteer | *IJCAI 2021*	2021
Scholarship for the 8th ACM Celebration of Women in Computing | *womENcourage 2021*	2021
Accepted for Oxford Machine Learning Summer School (acceptance rate: 15%) | *OxML2021*	2021
Ranked **3rd** out of 45 in Artificial Intelligence Students | *Amirkabir University of Technology*	2019
Direct admission to Graduate Program (M.Sc.) in Artificial Intelligence | *Amirkabir University of Technology*	2017
Ranked **4th** out of 25 in Computer Hardware Engineering Students | *Amirkabir University of Technology*	2017
Ranked in top 0.8% in National Entrance Exam among approximately $230k$ students | *Iran*	2012
Semi-finalist at Student National Mathematics Olympiad among high school Iranian students | *Iran*	2011
Semi-finalist at Student National Computer Olympiad among high school Iranian students | *Iran*	2011

Relevant Coursework

- Machine Learning
- Optimization
- Statistical Pattern Recognition
- Artificial Neural Networks
- Algorithms for Complex Networks
- Natural Language Processing

Attended Conferences

International Joint Conference on Artificial Intelligence (IJCAI) | *Online Conference*	Aug. 2021
International Conference on Machine Learning (ICML) | *Online Conference*	Jul. 2020
ECML-PKDD | *Online Conference*	Sep. 2020

Projects

EDIC: Exceptional and Deep Intelligent Coach \| *Python*   Oct. 2019 – Present

As a part of my PhD, I collaborate in the EDIC project; we aim to develop an intelligent coach to support users in maintaining a healthy lifestyle. In this project, I mainly focus on:

- Feature Selection from high-dimensional data
- Event detection from multi-dimensional time series
- Learn from heterogeneous data of diabetes patients

M.Sc. Thesis \| *Python, Keras*   Feb. 2019 – Sep. 2019

Abnormal Activity Detection for the Elderly People Living in Smart Homes

- Generated artificial anomalies related to dementia, in the activity recognition time series
- Designed a Convolutional-LSTM-Autoencoder-based method to detect anomalies from time series data

B.Sc. Thesis \| *C++ (Arduino), Java (Android Studio), HTML, JavaScript, PHP*   May 2017 – Feb. 2018

Design and Implementing IoT-Based Health Monitoring System

- Build a health-band to collect vital signs of the user
- Send the collected data to mobile phone continuously, using Bluetooth
- Develop an Android application to monitor the vital signs of the user
- Send the user data from mobile phone to a web application
- Develop a web-application to display the data of the patient

Activities

Organizing *Sparse Neural Networks* discussion group | *University of Twente*	Dec. 2020 – Present
Organizing study group on *Mathematics for Machine Learning* book | *University of Twente*	Nov. 2020 – Present
B.Sc. Student Supervision | *University of Twente*	Oct. 2020 – Present
Teaching Assistant | *Amirkabir University of Technology*	2017

- Internet Engineering (Fall 2017)
- Computer Networks (Spring 2017)
- Electrical Circuits (Spring 2017)

CERTIFICATES

Neural Networks and Deep Learning	*Coursera*	Aug. 2018
IELTS	*score 7.5 (R:9, L:8.5, W:6.5, S:6.5)*	Dec. 2018

REFERENCES

- Dr. Decebal Mocanu
  University of Twente
  ✉ d.c.mocanu@utwente.nl

- Prof. Dr. Raymond Veldhuis
  University of Twente
  ✉ r.n.j.veldhuis@utwente.nl

- Prof. Dr. Mykola Pechenizkiy
  Eindhoven University of Technology
  ✉ m.pechenizkiy@tue.nl