

Education

- 2016 - 2019 **M.Sc. in IT, Computer Networks**, Sharif University of Technology, Tehran, Iran
Supervisor: A. M. A. Hemmatyar, with Co-supervisory of A. Movaghar.
Thesis: Detecting Community Structures in Patients with Peripheral Nervous System Disorders.
Score: Accepted with 'Excellent' score.
- 2013 - 2015 **B.Sc. in Software Engineering**, Khayyam University of Mashhad, Mashhad, Iran
Supervisor: A. Rezaee.
Thesis: Design and implementation of Autra company offline mobile application (Practical)
Score: 4/4 (20/20)
- 2010 - 2012 **Associate in Computer- Software**, Technical and Vocational University (TVU), Neyshabour, Iran
Project: Hybrid Programming (Scheduling System) (Practical)
Score: 4/4 (19.75/20)

—Master Selected Courses and Grades

Research Interest

Data Analysis, Deep Learning, Machine Learning (based on graph analysis), Network Science, Complex Networks, Sport Analysis.

Accomplishment & Awards

- Jan 2019 **Ranked 2nd (among class entries)** in M.S. program based on cumulative GPA, School of Science & Technology, Department of Computer Engineering, Sharif University of Technology.

Publications

Peer-Review Journal Article

CoVarPred: A GAN framework for mutation prediction ..., Seyed S. AmirAli Gh. Ghahramani, Morteza Hosseinioun, Amirhossein Nosrati, Kaveh Kavousi, (Under Review), [Available Upon Request](#)

Detecting Community Structures in Patients with Peripheral Nervous System Disorders., M. Hosseinioun*, A. M. A. Hemmatyar, A. Movaghar, S. Ahmadifar, H. Samiee, AmirAli Ghahramani, * et al. and primary author., (Under Review) [Available Upon Request](#)

Classification and Segmentation of Pulmonary Lesions in CT images using a combined VGG-XGBoost method, and an integrated Fuzzy Clustering-Level Set technique., N. Akhavan Javan, A. Jebreili, B. Mozafari, M. Hosseinioun, AmirAli Ghahramani, ([arXiv](#)), (Under Review)

Working Papers

Machine Learning Applications in Basketball Officiating: A review, Morteza Hosseinioun, AmirAli Ghahramani, Hojjat Samiee, SayedMorteza Malaekheh, (Working), [Available Upon Request](#)

—Details

Academic and Research Experience

Sharif University of Technology

- 2020 – present **Predicting effectiveness in Chiropractic-based treatment with Deep Learning application.**, Senior Researcher, Advisors: Dr. A. Ghahramani & Dr. H. Samiee, [Samiee Chiropractic Center](#)
The idea of this study is to analyze and classify the patient's Cervical images so that the effectiveness of the Chiropractic could be predicted. This method can be utilized to help physicians decide whether this method of treatment could help the patients which can result in saving time and costs.
- Fall 2020 **Research Assistant in Machine Learning with Graphs**, Research Assistant, Advisor: Dr. Amirali Ghahramani, [AIDA Lab](#)
Contributed to multiple works : Held various meetings with the instructor to designed projects, helped TAs team in correcting students practices, Designed a grading analysis system and selecting students for questions and answers, Provide several classrooms for students.

- Fall 2018 **Teacher assistant in Computer Networking**, *Teacher Assistant*, Advisor: Dr. Siavoshani, [Department of Computer Engineering](#)
Designed assessment models for undergraduate students with a team of 12 TAs, including the instructor and teacher assistants in one semester.
- 2017 – 2020 **Master's Thesis, Senior Researcher**, Advisors: Dr. Hemmatyar & Dr. Movaghar
Detecting Community structures in patients with Peripheral Nervous system disorders. I have worked on a research project as my thesis entitled "Detecting Community Structures in Patients with Peripheral Nervous System Disorders", in [Dr. Hemmatyar](#) and [Dr. Movaghar's](#) lab to model the human nervous disease processes utilizing network science (Bipartite Networks). I spent two summers at v, where I had the chance to collaborate with the medical team to discover new ideas and they provided me with personal data of the patients and enriched me with fruitful discussions. The results of our algorithm afterward, have been compared with the results of medical analysis.
- Fall 2017 **Teacher assistant in Distributed algorithms**, *Teacher Assistant*, Advisor: Dr. Kaveh Kavousi
Provided part of the classroom for undergraduate and graduate students, assessed students by personally designed models in the semester.
[Khayyam University](#)
- 2020 - 2021 **Classification and Segmentation of Pulmonary Lesions in CT images using a combined VGG-XGBoost method, and an integrated Fuzzy Clustering-Level Set technique.** In this project, my role was to provide a dataset with an appropriate number of samples and high accuracy. Under the project's direction and based on a specialist doctor's technical diagnosis, this dataset was derived from [Behsazteb Medical Center](#) archival data and related reports. In his way, for each image taken, the label associated with that image was identified by a specialist doctor and then wrangled and recorded in the dataset. Compared to the existing similar samples, this dataset includes a much more comprehensive range of various complexities. Annotations on samples have been reviewed several times, and the labels have proven highly accurate. In total, there are more than 2111 samples that have been labeled. It is noteworthy that the dataset used has the following characteristics and benefits: local samples derived from Iranian patients, high accuracy in the labeling due to the expert opinion of a specialist physician, a suitable size of the dataset in comparison with similar datasets, and a wide range of lung lesions included in the dataset.

Work Experience

- Dec 2021 - Present **Researcher**, *Drug-Target Interaction Prediction with Deep Learning and Recommender Systems*, [Artificial Intelligence and Data Science Lab](#)
This study relies on drug-target prediction, and the interactions between medications and target proteins, which are represented by bipartite networks. Moreover, we construct a network of proteins based on their structural similarity. The challenge of drug-target prediction may be expressed as link prediction within a bipartite network. To more precisely anticipate the interaction between medicines and proteins, we offer a Graph Neural Network framework. The proposed GNN framework attempts to discover the latent factors of pharmaceuticals and proteins by combining the data from two networks: the bipartite drug protein network and the protein similarity network. To test the performance of our proposed GNN framework, we prepared a dataset containing relevant information about drugs, target proteins, and their interactions. A well-known benchmark dataset comprising interactions between medications and several classes of enzymes, ion channels, GPCRs, and nuclear receptors was also used.
- Jan 2019 - Present **Researcher**, [Samiee Chiropractic Center](#)
Cooperating with AIDA lab to gather, wrangle, and preprocess patient data to find the effectiveness of Chiropractic-based treatment with a Deep Learning application.
- Summer 2017, 2018 **Scientific Intern**, [Samiee Chiropractic Center](#)
Contributed to the medical team to collect data, discussion to learn more about the Peripheral Nervous System, designed and developed several key components for the Data-collecting system in the office, with a focus on the scalability challenge.
- Fall 2017 **Deputy Executive Secretary in CADS'17**, 19th International Symposium on Computer Architecture and Digital Systems
Reviewed some papers submitted for admission to the conference, admission of approved people at Sharif University (Kish International Campus)
- 2015 – 2019 **Chief Technology Officer**, [Autra Burners Co.](#)
Autra Company manufactures gas burners, diesel burners, single burners, and multi burners. Their products range from heavy burners to small, lightweight burners used fully in the food and home industries. These enterprises can be seen in making cookies, making fruit leathers, making lollipops, and home heating applications. My job was to ensure the proper functioning of all Computer systems, including Computer Server, Website, Warehouse Management System, and other hardware, daily. I also assessed optimized solutions processes for the Informatics section and constantly offered a vision along with career turnover and motivational projects for future careers, which were essentially based on Computer Science. This idea led me to work with managers to identify trends and development that might influence the Informatics department.
- 2011 – 2015 **Senior Content Manager**, Autra Burners Co.
programmed and developed company website, designed and developed Factory warehouse management system,

Courses

In-Person

- Present **Fundamentals of Data Science Course**, *In Persian*
What is Data?, Data Vs. Information, Types of data, Unstructured and Semi-Structured Data, Digital Data: storage formats, Database, Data Collection methods, Data Preprocess and explore, Visualization. Achievements: [Certificate](#).

Online

- March 2023 **fMRI Principles and Practice, Sharif Neuroscience Symposium 2023, IPM**, *In Persian*
fMRI basics & fMRI preprocessing: Basic Principles of BOLD fMRI, Practice in AFNI and FSL, Regression analysis: General Linear Model (GLM), Practice in AFNI and FSL, Multiple comparisons and group analysis: Group Analysis, Practice in AFNI and FSL, Introduction to afni.proc.py. Achievements: [Certificate](#).
- Present **Professional Computer Vision**, *In Persian*
Image Classification, Transformers, Object Detection, Image Segmentation, Pose Estimation, Action Recognition, Object Tracking, 3D Computer Vision, Text Detection, Generative Adversarial Networks.
- Present **Machine Learning 2022**, *In Persian*
What is Machine Learning?, Regression, Classification, Underfit, Overfit, Regularization, Clustering, Dimensionality Reduction, SVM, K-Nearest Neighbor, Decision Trees & Random Forests, Ensemble Learning, Multi Layer Perceptron, Reinforcement Learning.
- December 2022 **Deep Learning 2022**, *In Persian*
Practical training from scratch with teacher coding while teaching on prerequisites, Multi Layer Perceptron, Overfitting!, Loss & Optimization, Convolutional Neural Network, Recurrent Neural Network, Transformer Network, Graph Neural Network, Generative Neural Network, self-supervised Learning, DL in Computer Vision, DL in NLP, DL in Speech Processing.
- October 2022 **PyTorch**, *In Persian*
Practical training from scratch, Teacher coding while teaching, MLP neural network training in PyTorch with practical project, Training in convolutional neural network with advanced techniques and practical project, Recursive neural network training in PyTorch with project, Implementation of a combined canonization and return project in PyTorch, Teaching basic concepts for beginners (such as defining a programming language, library or framework, IDE, etc.), Training in installing the necessary software and libraries.
- May 2022 **Machine Learning & Deep Learning in Python & R**
Covers all essential aspects of Machine Learning and Deep Learning, such as Regression, Decision Trees, SVM, Neural Networks, CNN, and Time Series Forecasting, using Python and R. Achievements: [Certificate](#).
- April 2022 **Machine Learning- From Basics to Advanced**
Examined concepts on NumPy, fast mathematical calculations, Data Wrangling, scikit-learn for data-preprocessing, model selection and feature selections techniques, cluster analysis, anomaly detection, SVMs for classification, regression and outliers detection in Machine Learning. Achievements: [Certificate](#).
- August 2020 **CS224W: Machine Learning with Graphs**
Prof. Yure Leskovec course focuses on the analysis of massive networks which provide several computational, algorithmic, and modeling challenges.
- July 2020 **Machine Learning**
Part of course until session 8 by Prof. Tom Mitchell. Carnegie Mellon University.
- June 2020 **Deep Learning Specialization**.
Part of Neural Networks and Deep Learning course by Andrew Ng. on Coursera.
- April 2020 **Data Analysis**
Learned to Import data sets, clean and prepare data for analysis, manipulate pandas Data Frame, summarize data, build machine learning models using scikit-learn. Build data pipelines. Achievements: [Certificate](#).
- April 2020 **Data Science**
Courses materials based on Python Basics, Python Data Structures, Python Programming Fundamentals, Working with Data in Python. Achievements: [Certificate](#).
- April 2020 **Deep Learning & Blockchain**
Participated on course based on Classic image processing, Neural networks, Convolutional networks, Recommender system, object Detection and Classification, GAN, Keras and Tensor flow and OpenCV libraries. Also, syllabus about blockchain, BitCoin network, Ethereum network, and Mining strategies.

Skills

- Programming Languages **Python, Matlab, C/C++**
- Scientific packages **Stanford Snap, PyG, PyTorch, Graph Neural Networks, Open Graph Bench-mark, Matlab BiMat package, Anaconda.**
- Office software: **LaTex, Microsoft Office, Visual Studio.**
- Operating systems: **Windows, Linux, MacOS**

Language

- Persian **Native proficiency**
- English **Full professional proficiency**, Duolingo ([Certificate](#)): 120
- French **Limited working proficiency**

Selected Courses

Graduate Courses

Advanced Computer Network, Sharif University of Technology: 4/4 (18.6/20)

Machine Learning with Graphs (Complex Networks), Sharif University of Technology: 4/4 (18/20)

Data Communications, Sharif University of Technology: 4/4 (18/20)

Distributed Algorithms, Sharif University of Technology: 4/4 (19/20)

Network Security, Sharif University of Technology: 4/4 (18.5/20)

Performance Evaluation, Sharif University of Technology: 4/4 (18.6/20)

Wireless Communications, Sharif University of Technology: 3/4 (14.1/20)

Wireless Networking, Sharif University of Technology: 4/4 (17/20)

References

Dr. Ali Mohammad Afshin Hemmatyar

- Assistant Professor, Department of
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- Head of Information Technology group

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