

# MORTEZA HOSSEINIOUN

Curriculum Vitae, January 2025

Department of Computer Science & Engineering, School of Science and Engineering  
Sharif University of Technology, Azadi Ave., Tehran, Iran

✉ [morteza.hosseinioun@gmail.com](mailto:morteza.hosseinioun@gmail.com), [morteza.hosseinioun@alum.sharif.edu](mailto:morteza.hosseinioun@alum.sharif.edu)

🌐 <https://www.morioon.com/>

inLinkedIn

## 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.
- 2013 - 2015 **B.Sc. in Software Engineering**, Khayyam University of Mashhad, Mashhad, Iran.  
Supervisor: A. Rezaee. [Persian]  
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)

## Research Interest

Machine Learning Applications for Financial Markets, Quantitative Modeling and Data Science, Deep Learning and Natural Language Processing (LLMs), Network Science, and Graph 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.
- Jan 2019 **Master's Thesis Awarded the EXCELLENT score** in School of Science & Technology, Department of Computer Engineering, Sharif University of Technology.

## Publications

### Peer-Reviewed Articles

**BiProSimGCN: Prediction of Drugs-Proteins Interactions Using Graph Convolutional Neural Network and Proteins Similarity**, S. AmirAli Gh.Ghahramani, M. Hosseinioun, A. Nosrati, K. Kavousi, Accepted for publication in 10th IEEE Asia-Pacific Conference on Computer Science and Data Engineering, CSDE2023, Shangari-La Yanuca Island, Fiji, December 4-6, 2023.

**Detecting Community Structures in Patients with Peripheral Nervous System Disorders.**, M. Hosseinioun\*, A. M. A. Hemmatyar, A. Movaghar, S. Ahmadifar, H. Samiee, S. AmirAli Gh.Ghahramani, \* et al. and primary author., Accepted for publication in 12th International Conference on Complex Networks and their Applications (CNA23), Menton Riviera, France, November 28-30, 2023.

### Working Papers and Pre-Prints

**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 preprint: 2101.00948v2, 2021](https://arxiv.org/abs/2101.00948v2).

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

## Work Experience

- Jan 2019 - Present **AI Researcher and IT Consultant**, [Samiee Chiropractic Center](#).  
I am actively engaged in research involving the analysis of clinical data, overseeing a dataset of 96,000 patient files in collaboration with the AIDA lab. Our focus is on collecting, organizing, and preprocessing patient information to assess the effectiveness of Chiropractic-based treatments. Additionally, I am closely collaborating with Dr. Samiee to transition the office into a fully paperless environment. In this capacity, I manage the website and internal systems, creating seamless connectivity to the external world. To enhance patient accessibility, I have implemented a system allowing individuals to reach us 24/7. Patients can now assess the potential benefits of our care before visiting the office by submitting their medical files, including MRI scans, CT scans, Bone Scans, X-rays, Scanograms, laboratory test results, nerve conduction studies, sonograms, and more, for evaluation. On an average day, we successfully upload 60 patient files and maintain communication with over 150 individuals.
- March 2020 - Present **Basketball Referee**, [Iran Basketball Federation \[Persian\]](#).  
Applied rule-based decision-making and teamwork, which parallels systematic problem-solving skills needed in data science and machine learning. [License](#).
- Summer 2017, 2018 **Scientific Intern**, [Samiee Chiropractic Center](#).  
Contributed to the medical team to collect data, and discussions 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 developments 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,

## Academic and Research Experience

### Sharif University of Technology

- 2024 – Present **Senior Researcher**, *Evaluating Chiropractic Treatment Efficacy Through AI: A Machine Learning Approach Utilizing MRI, CT Scans, and Clinical Notes*, Cooperating between [Artificial Intelligence and Data Science Lab](#) and [Samiee Chiropractic Center](#).  
Our study involves gathering, organizing, and preprocessing patient data to evaluate the effectiveness of Chiropractic treatments through AI techniques. We employ machine learning methods to predict OK, TRY, and NO cases, with a particular focus on MRI, CT scans, and clinical notes.
- Dec 2021 to Dec 2023 **Researcher**, *BiProSimGCN: Prediction of Drugs-Proteins Interactions Using Graph Convolutional Neural Network and Proteins Similarity*, [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. 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 were also used.
- Fall 2020 **Research Assistant in Machine Learning with Graphs**, *Research Assistant*, Advisor: Dr. Amirali Ghahramani, [Artificial Intelligence and Data Science Lab](#).  
Contributed to multiple works: Held various meetings with the instructor to design projects, helped the TA team in correcting students' practices, Designed a grading analysis system and selected 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 – 2019 **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 [Samiee Chiropractic Center](#), 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, and assessed students by personally designed models in the semester.

2020 - 2021 **Researcher**, *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. 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.

## Courses

### In-Person

March 2023 **Fundamentals of Data Science Course**, *In Persian*.

What is data?, Data vs. information, Types of data, Storage formats, Introduction to Database, Where data resides?, Introduction to data collection, Data collection methods, Surveys, Feedback systems, Web Scraping, Introduction Web Scraping cont., Web Scraping cont., Preprocessing Integration, Problem identification, Dropping and filling, Preprocessing cont. Time series processing, Time series interpolation, Text cleaning, and transformation Transformation pipelines, Exploration, and Data Analysis Statistical metrics, Correlation analysis, Hypothesis testing, Visualization, Univariate analysis, Bivariate analysis, Perception channels Multivariate analysis, Converting bivariate examples to multivariate, Visualization cont. Aggregation techniques, Some well-known plot types, 3D visualizations, real-time visualization, Feature encoding Dimension reduction, PCA, TSNE, Normalization and scaling Data resampling (Up-sampling, Down-sampling), Recap Real-world, mini project. 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](#).

February 2023 **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.

February 2023 **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, and 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 in the 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, the syllabus about blockchain, Bitcoin network, Ethereum network, and Mining strategies.

## Skills and Experience

Programming Languages **Python, R, SQL, Matlab, C/C++, VB, PHP, Arena**

Machine Learning Libraries **TensorFlow, PyTorch, Scikit-Learn, Pandas, Numpy, Stanford Snap, PyG, Graph Neural Networks, Open Graph Benchmark, Matlab BiMat package, Anaconda**

Data Analysis **Data Preprocessing, Data Visualization, Statistical Analysis**

Mathematical Foundations **Statistics & Probability, Linear Algebra, Calculus**

Natural Language Processing **Experience with LLMs and NLP techniques**

## Languages

Persian **Native proficiency**

English **Full professional proficiency, Duolingo ([Certificate.\(Expired\)](#)): 120**

TOEFL **Due Date for the Test is January 18, 2025.**

## References

### **Dr. Ali Mohammad Afshin Hemmatyar\***

- Assistant Professor, Department of Computer Science and Engineering, Sharif University of Technology, Tehran, Iran  
- Head of Information Technology group  
✉ hemmatyar@sharif.edu  
🖥 Webpage

### **Dr. Amirali Ghahramani\***

- Assistant Professor, Department of Computer Science and Engineering, Sharif University of Technology, International Campus- Kish Island  
- Dean of Department, and Head of group in Kish-Campus  
✉ ghahramani@pardis.sharif.edu  
☎ (+98)(764) 442 2299 - EXT: 313, 208  
🖥 Webpage

### **Dr. Hojjat Samiee\***

- Co-founder and CEO of Samiee Chiropractic Center, No. 10 South 26th Khayyam Blvd, 4th Floor, Mashhad, Iran.  
✉ info@samieechiropractic.com  
☎ (+98)(513) 761 4903  
🖥 Webpage

\* References allowed to put their information in my resume.

## Hobbies

My leisure pursuits are a dynamic blend of technology, sports, intellectual discussions, and personal connections. The majority of my absolute interests are divided between the realms of computers and basketball. Beyond these passions, I am particularly drawn to thought-provoking programs that delve into discussions on societal problem-solving and leadership. In my free time, I find joy in exploring new destinations through travel, delving into captivating books, engaging in friendly basketball matches, and watching and discovering the profound influence of music and movies. Cherishing moments with my family and close friends holds a special place in my heart, adding warmth to my diverse range of interests.