

Amin Karimi Monsefi

PH.D. STUDENT OF COMPUTER SCIENCE.

Columbus, Ohio, USA

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“Be the change that you want to see in the world.”

Summary

I am Amin Karimi Monsefi, a dedicated Ph.D. student in Computer Science with a focus on Artificial Intelligence at Ohio State University. Holding Bachelor's and Master's degrees in Computer Engineering from Shahid Beheshti University of Tehran, my academic journey has spanned hardware and software realms. From my Bachelor's exploration of reinforcement learning in multi-object environments to my Master's innovative approach to software testing using machine learning, I am passionate about pushing boundaries. Under the guidance of Professor Rajiv Ramnath, my current research encompasses diverse domains, including deep learning for Smart Mobility analysis, self-supervised learning in medical image analysis, and overcoming exploration challenges in reinforcement learning for gaming. With six published papers, eight years of experience, and a commitment to effective teaching, I thrive on solving intricate problems and staying at the forefront of technological advancement.

Education

PhD. in Computer Science

Columbus, Ohio, USA

OHIO STATE UNIVERSITY

Jan. 2022 - Exp. Present

- Supervisor: Prof. Rajiv Ramnath
- Project One: Medical Image - I focused on addressing a common challenge: the limited availability of labeled data. To overcome this obstacle, I adopted a self-supervised learning approach. By leveraging this technique, I aimed to train models using unlabeled medical images, allowing them to learn meaningful representations and extract valuable features from the data.
- Project Two: Smart Mobility Research - The first domain, Smart Mobility, revolves around the utilization of deep learning techniques for time series analysis. Specifically, I am developing models to predict and analyze the risk of accidents and road construction within specific zones. To achieve this, I leverage various data sources, including historical data, weather information, satellite and map images, as well as demographic information.
- Project Three: Reinforcement learning to play Atari games - Our primary focus in this project is to tackle the exploration problem in reinforcement learning. Exploration is a critical challenge in RL, as it involves discovering new strategies and actions to maximize rewards in a game environment.

M.Sc. in Computer Engineering with focus on Software

Tehran, Iran

SHAHID BEHESHTI UNIVERSITY

Sep. 2015 - Exp. Sep. 2017

- Thesis: An Approach for Automatic Software Test Data Generation Using Machine Learning and Program Static Structure
- Supervisor: Prof. H.Haghighi
- I achieved **Ranked 1st**, National M.Sc Entrance Exam of Computer Engineering, Among More Than 10.000 Students

B.Sc. in Computer Engineering with focus on Hardware

Tehran, Iran

SHAHID BEHESHTI UNIVERSITY

Sep. 2011 - Exp. Sep. 2015

- Thesis: Applying Reinforcement Learning on Multi-Agent Environments
- Supervisor: Prof. M. Abdoos

Papers

Masked LoGoNet: Extracting Local and Global Features for 3D Image Analysis in Medical Domain

Under Review

AMIN KARIMI MONSEFI, PAYAM KARISANI, STACEY CHOI, NATHAN DOBLE, HENG JI, SRINIVASAN PARTHASARATHY, RAJIV RAMNATH

2023

CrashFormer: A Transformer to Predict the Risk of Crash

Under Review

AMIN KARIMI MONSEFI, POUYA SHIRI, AHMAD MOHAMMADSHIRAZI, NASTARAN KARIMI MONSEFI, SOBHAN MOOSAVI, RAJIV RAMNATH

2023

Novel Physics-Based Machine-Learning Models for Indoor Air Quality Approximations

Long Beach, California, USA

AHMAD MOHAMMADSHIRAZI, AMIN KARIMI MONSEFI, AIDA NADAFIAN, MOHAMMAD H RAFIEI, RAJIV RAMNATH

2023

- 29TH ACM SIGKDD
- Conference On Knowledge Discovery And Data Mining

Smart and collaborative industrial IoT: A federated learning and data space approach

BAHAR FARAHANI AND AMIN KARIMI MONSEFI

- Journal: Digital Communications and Networks

Elsevier

2023

Will there be a construction? Predicting road constructions based on heterogeneous spatiotemporal data

AMIN KARIMI MONSEFI, SOBHAN MOOSAVI AND RAJIV RAMNATH

- Conference: International Conference on Advances in Geographic Information Systems
- 30th ACM SIGSPATIAL

Seattle, Washington, USA

2022

Real-time Travel Time Estimation Using Matrix Factorization

AMIN KARIMI MONSEFI, EBRAHIM BADRESTANI, BEHNAMEH BAHRAK, ALI ELAHI, ADIB FARAMARZI, POURIA GOLSHANRAD, HAMID MAHINI, ARMIN ZIRAK

- Journal: Transportation Research Part C: Emerging Technologies

Elsevier

2019

Solving the Reaction-Diffusion equation based on analytical methods and deep learning algorithm; the Case study of sulfate attack to concrete

AMIN KARIMI MONSEFI AND RANA BAKHTIYARZADE

- Journal: Computer and Mathematics with Applications

Elsevier

2019

Weakly Supervised Learning Technique for solving Partial Differential Equations; Case study of 1-D Reaction-Diffusion Equation

BEHZAD ZAKERI, AMIN KARIMI MONSEFI, SANAZ SAMSEM AND BAHAREH KARIMI MONSEFI

- Conference: TopHPC Conference (High Performance Computing and Big Data Analytics)
- Selected Paper And Publish In The Springer Book Series
- Communications in Computer and Information Science

(Tehran, Iran)

2019

Performing Software Test Oracle Based on Deep Neural Network with Fuzzy Inference System

AMIN KARIMI MONSEFI, BEHZAD ZAKERI, SANAZ SAMSEM AND MORTEZA KHASHEHCHI

- Conference: TopHPC Conference (High Performance Computing and Big Data Analytics)
- Selected Paper And Publish In The Springer Book Series
- Communications in Computer and Information Science

(Tehran, Iran)

2019

Deep Learning Prediction of Heat Propagation on 2-D Domain via Numerical Solution

BEHZAD ZAKERI, AMIN KARIMI MONSEFI AND BABAK DARAFARIN

- Conference: The International Conference on Contemporary Issues in Data Science
- Selected Paper And Publish In The Springer Book Series
- Lecture Notes on Data Engineering and Communications Technologies Communications in Computer and Information Science

(Zanjan, Iran)

2019

Study of Emotions and Thoughts of The Society and The Effect of Various Events on Them by Social Media

AMIN KARIMI MONSEFI, BEHZAD ZAKERI AND BABAK DARAFARIN

- Conference: 5th International Conference on Information Technology, Computer and Telecommunication

(Tbilisi, Georgia)

2018

Professional Experiences

JIBB

San Francisco, USA

SENIOR DATA SCIENTIST

Des 2020 - Dec 2021

- JIBB is the smart new way to capture, save and share your handwriting from anywhere, anytime. Whether you select a **whiteboard** or **paper** session to start, you will always have these options: Share and save a high-quality JPEG copy of your writing at any time from the mobile app or your JIBB Workspace.
- My work is **detecting objects** and **remove extra objects** from images and videos.
- I **detect color** of contests and **remove shadow** and **reflection** from images and videos. I developed different method of **CNN** for my works.

BlueBitSoft

Tehran, Iran

TECHNICAL CONSULTANT (CTO)

Des 2018 - Dec 2021

- Bluebitsoft is an international team that masters the production of pharmacy software solutions. The team consists of software and business experts who love developing groundbreaking software in the industry. Our products are currently deployed in Nederland's pharmacies and we hope to expand our products throughout the World.
- I was technical consultant at the company, I designed a high level an architecture for there software.

Esign Start Up

Tehran, Iran

TEAM LEAD OF SOFTWARE ENGINEER (PART TIME JOB)

Des 2020 - Dec 2021

- Esign is a start up team that work on selling carpets..
- I'm team lead of implementing team for developing a web application for selling carpets.

TAP30(New name is TAPSI) (Online Taxi)

Tehran, Iran

SENIOR DATA SCIENTIST & BACK-END DEVELOPER

Mar. 2018 - Des 2020

- Designed and Implemented Pricing micro-services by Python and communicate by event messaging (RabbitMQ).
- Designed and Implemented **fake GPS detection** algorithm and micro-service by Python and communicate by event messaging (RabbitMQ).
- Implemented smart side of our back-end based on passengers' data (Origin Suggestion, Destination Suggestion, Favorite Location Suggestion, and Ride Suggestion) by using **unsupervised algorithms**
- Implemented micro-service ETA (estimated arrival time) by drivers' GPS information. We introduce a **new algorithm for ETA based on GPS data** and we published a paper for our work too
- Produced Base map of Tehran and Karaj cities using in-ride drivers' GPS information.
- Implemented SMART map for predicting locations with higher ride demand rates in cities.
- In Tap30, we work with Python and NodeJs to develop our back-end, and we use Spark, Kafka, and R for our analytical purposes; besides, we exploit PostgreSQL, MongoDB, and Redis to store our data.

Haft-Sang Company Group

Tehran, Iran

SENIOR SOFTWARE ENGINEER & WEBSITE BACK-END DEVELOPER

Apr. 2016 - Mar. 2018

- Implemented APIs for **streaming videos, music** and etc.
- Designed and Implemented a software architecture able to connect to MCI and MTN APIs and transfer users' information.
- Implemented server sides of more than 10 Apps in the media.
- In The Haft-Sang, we worked with ASP.Net and .NetCore for server side of our software, also, we employed SQL Server as databases.

Shahid Beheshti Cyberspace Faculty

Tehran, Iran

EXPERT WEBSITE BACK-END DEVELOPER

Sep. 2014 - Feb. 2016

- Developed a crawler and classifier to crawl more than 1000 websites to extract contents and images for classification and categorization of real-time content streams using fuzzy models and neural network.
- Implemented Restful API server which is communicating with the client side of the website to transform data from the server to the web.
- In the SBCF, we worked with ASP.Net and Java SE as back end side of our website and SQL Server and Cassandra as databases.

Zoraq (Start-up company)

Tehran, Iran

BACK-END WEB DEVELOPER INTERN

Jun. 2013 - Oct. 2013

- Learned how to develop a website using C#, Asp.Net.
- Learned how to create databases for websites using SQL Server.
- learned how to write Rest APIs.
- learned how to design website's front-end side using HTML/CSS.
- In the Zoraq, I experienced the taste of working in development teams and started my professional career as an developer.

Honors & Awards

ACM-ICPC COACH AND TEAM LEAD

Apr 2018	Coach , 42nd Annual World Finals	Beijing, China
Dec 2017	Coach , 7th and 17th teams, Regional Contest	Tehran, Iran
Nov 2017	Coach , 10th and 16th teams, Internet Programming Contest	Tehran, Iran
Oct 2017	Coach , The 1st team, Regional Contest	Kabul, Afghanistan
Oct 2017	Coach , The 1st team, Online Programming Contest	Kabul, Afghanistan
Oct 2015	Coach , The 11th team, Iran-Internet-PC-IU Online Programming Contest	Tehran, Iran
Oct 2015	Coach , The 23rd team, Iran-Internet-PC-SBU Online Programming Contest	Tehran, Iran
Nov 2014	Coach , The 12th, 53rd, and 131st teams, Internet Programming Contest	Tehran, Iran

ACM-ICPC CONTESTANT

Dec 2014	10th Place , Asia Regional Contest	Tehran, Iran
Oct 2014	2nd Place , Qualification Contest, Shahid Beheshti University	Tehran, Iran
Dec 2013	3rd Place , Asia Regional Contest	Tehran, Iran
Oct 2013	1st Place , Qualification Contest, Shahid Beheshti University	Tehran, Iran
May 2013	5th Place , The 5th ACM National Collegiate Programming Contest, University of Kashan	Kashan, Iran
Apr 2013	8th Place , The 1st ACM National Collegiate Programming Contest, University of Shahrood	Shahrood, Iran
Dec 2012	25th Place , Asia Regional Contest	Tehran, Iran
Nov 2012	16th Place , The 3rd ACM National Collegiate Programming Contest, Amir Kabir University of Technology	Tehran, Iran
Oct 2012	2nd Place , Qualification Contest, Shahid Beheshti University	Tehran, Iran

OTHER

June 2015	Ranked 1st , National M.Sc Entrance Exam of Computer Engineering, Among More Than 10.000 Students	Iran
June 2011	Ranked Top 1% , National B.Sc Entrance Exam of Mathematics, Among More Than 256,000 Students	Iran
Mar 2009	Bronze Medal , Mathematics Olympiad of Waterloo University	Tehran - Waterloo

Teaching Experiences

TEACHING ASSISTANT

3 times **Modeling and Problem Solving with Spreadsheets and Databases**, Fall 22/23 and Spring 23
Spr 2012 **Introduction to Programming**, Teacher: Dr. A. M. Aznaveh
Fall 2012 **Introduction to Programming**, Teacher: Dr. A. M. Aznaveh
Spr 2013 **Introduction to Programming**, Teacher: Dr. M. H. Moayeri
Spr 2013 **Discrete Mathematics**, Teacher: Dr. F. Safaie
Fall 2013 **Discrete Mathematics**, Teacher: Dr. H. Haghighi
Spr 2014 **Discrete Mathematics**, Teacher: Dr. F. Safaie
Spr 2015 **Introduction to Algorithm**, Teacher: Dr. E. Bavafaye
Fall 2015 **Data Structure**, Teacher: Dr. M. E. Moghadam
Fall 2015 **Artificial Intelligence**, Teacher: Dr. M. Shamsfard
Fall 2015 **Introduction to Algorithm**, Teacher: Dr. R. Ghavamizade
Fall 2016 **Data Structure**, Teacher: Dr. M. E. Moghadam
Fall 2016 **Artificial Intelligence**, Teacher: Dr. M. Shamsfard
Spr 2017 **Discrete Mathematics**, Teacher: Dr. H. Haghighi
Spr 2018 **Discrete Mathematics**, Teacher: Dr. H. Haghighi

Ohio State Uni
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Skills

- Data Analysis**
 - Python
 - MATLAB, R
 - TensorFlow, Keras, Pytorch
 - Spark, Kafka, Hadoop
- Programming**
 - C, C++, C#
 - Java
 - NodeJS
 - VHDL, Verilog
 - HTML, CSS, JS
- Applications**
 - Web Backend (ASP.net MVC, .net Core)
 - Web UI (HTML, CSS, JS)
 - Application Development (Android)
- Databases**
 - SQL (SQL Server, MYSQL, PostgreSQL)
 - NOSQL (Cassandra, MongoDB, Redis, Memcached, SolR, Elasticsearch, Lucene)
- DevOps**
 - CI/CD (gitlab)
 - Docker, VM
 - RabbitMQ
 - Cloud (Azure)