

# 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

Currently, I'm studying as a Ph.D. student at OSU. I have more than eight years of experience as a data scientist, back-end developer, and researcher. I have good experience as a teacher and coach, too. I was TA for more than five different courses (14 times in total) when I was a student at Shahid Beheshti University. As an academic researcher, I published five conference papers, and currently, three other journal papers of mine are under review. I'm a super nerd who loves Data, Machine Learning, and Developing, with a great passion for understanding deep-learning methods and employing them for solving problems. I am interested in devising better problem-solving strategies for challenging tasks and learning new technologies and tools if the need arises.

## Education

### PhD. in Computer Science

Columbus, Ohio, USA

OHIO STATE UNIVERSITY

Jan. 2022 - Exp. Present

- Supervisor: Prof. Rajiv Ramnath
- Project One: Medical Image - Detecting, diagnosing, and predicting disease using medical images and computer vision methods.
- Project Two: Smart Mobility Research - In this research, we try to predict events like road construction and the risk of accidents in different locations of cities. To do that, we employ satellite images history of events for each area. We used sequential models like RNN and attention and CNN models for this project.

### 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

### CrashFormer: A Transformer to Predict the Risk of Crash

ACM

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

2023

RAMNATH

- Conference: Special Interest Group on Knowledge Discovery and Data Mining
- 29TH ACM SIGKDD
- Under Review

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

ACM

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

2023

- Conference: Special Interest Group on Knowledge Discovery and Data Mining
- 29TH ACM SIGKDD
- Under Review

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

Elsevier

BAHAR FARAHANI AND AMIN KARIMI MONSEFI

2023

- Journal: Digital Communications and Networks

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

Seattle, Washington, USA

AMIN KARIMI MONSEFI, SOBHAN MOOSAVI AND RAJIV RAMNATH

2022

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

## Real-time Travel Time Estimation Using Matrix Factorization

Elsevier

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

2019

- Journal: Transportation Research Part C: Emerging Technologies
- Under Review

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

Elsevier

AMIN KARIMI MONSEFI AND RANA BAKHTIYARZADE

2019

- Journal: Computer and Mathematics with Applications
- Under Review

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

(Tehran, Iran)

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

2019

- 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

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

(Tehran, Iran)

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

2019

- 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

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

(Zanjan, Iran)

BEHZAD ZAKERI, AMIN KARIMI MONSEFI AND BABAK DARAFARIN

2019

- 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

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

(Tbilisi, Georgia)

AMIN KARIMI MONSEFI, BEHZAD ZAKERI AND BABAK DARAFARIN

2018

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

## 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 (PART TIME JOB)

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

### ACM-ICPC CONTESTANT

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

### OTHER

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

# Teaching Experiences

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## TEACHING ASSISTANT

2 times **Modeling and Problem Solving with Spreadsheets and Databases**, Fall 2022 and Spring 2023  
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

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- 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)