Amir Mohammad Karimi-Mamaghan
Ph.D. student

in linkedin.com/in/amk6610   **⑂** scholar.google.com/amk6610
▯ +46728493961   **@** amir.karimi6610@gmail.com
♀ EECS, KTH Royal Institute of Technology, Stockholm, Sweden
ℹ Born on 1997-08-07 in Iran

🎓 EDUCATION

Present **August 2022**	**Ph.D. in Computer Science, KTH Royal Institute of Technology, Sweden** ❯ Division of Decision and Control Systems ❯ Supervisors: Karl Henrik Johansson, Stefan Bauer
May 2022 **September 2019**	**M.Sc. in Computer Engineering (Artificial Intelligence and Robotics), University of Tehran, Iran** ❯ Thesis: *Longevity Analysis of Cryptocurrency Addresses* I work on longevity (lifespan) of the addresses in popular cryptocurrencies (BTC, ETH, etc.) and try to fit a known distribution to this feature. I also try to find correlations between this feature and some other properties of the addresses. ❯ Laboratory: Data Analytics Lab, School of Electrical and Computer Engineering ❯ Advisor: Behnam Bahrak ❯ GPA: 18.17/20 (4/4)
July 2019 **September 2015**	**B.Sc. in Software Engineering, University of Tehran, Iran** ❯ Thesis: *Classification of Electrocardiogram Signals using Machine Learning & Neural Networks* ❯ Advisor: Siamak Mohammadi ❯ GPA: 18.5/20 (3.96/4)

📖 PUBLICATIONS

❯ **Karimi Mamaghan, A.**, Dittadi, A., Bauer, S., Johansson, K. H., & Quinzan, F. (2023). Diffusion Based Causal Representation Learning. arXiv preprint arXiv:2311.05421.

❯ Seyfi, M. A., Aghabayk, K., **Karimi Mamaghan, A.**, & Shiwakoti, N. (2023). Modeling the Motorcycle Crash Severity on Nonintersection Urban Roadways in the Australian State of Victoria Using a Random Parameters Logit Model. *Journal of Advanced Transportation*, 2023.

❯ **Karimi Mamaghan, A.**, Setayesh, A., & Bahrak, B. (2022, November). Analysis of Address Lifespans in Bitcoin and Ethereum. In 2022 *12th International Conference on Computer and Knowledge Engineering (ICCKE)* (pp. 288-293). IEEE.

❯ Karimi-Mamaghan, M., Mohammadi, M., Meyer, P., **Karimi Mamaghan, A.**, & Talbi, E. G. (2022). Machine learning at the service of meta-heuristics for solving combinatorial optimization problems: A state-of-the-art. *European Journal of Operational Research*, 296(2), 393-422.

❯ Karimi-Mamaghan, M., Mohammadi, M., Pirayesh, A., **Karimi Mamaghan, A.**, & Irani, H. (2020). Hub-and-spoke network design under congestion: A learning based metaheuristic. *Transportation research part e: logistics and transportation review*, 142, 102069.

📑 ACADEMIC EXPERIENCE

Research Assistant:

❯ Research Assistant at Data Analytics Lab, University of Tehran, Iran, Feb 2020- May 2022.
I did some projects to make Bitcoin transactions in P2PKH and P2SH modes and broadcast them to the blockchain. I also did some projects to make a simple application using Solidity, web3.js and Truffle framework in order to deeply understand smart contracts. Furthermore, I worked on bitcoin transaction data and analyzed some properties of the transaction graph and bitcoin addresses and tried to find correlations between them.

Research projects:

❯ Developing a mathematical model for the hub-and-spoke network under congestion, implementation of a meta-heuristic algorithm combined with a clustering technique for solving the problem, 2020.

- › Design and implementation of a meta-heuristic combined with a reinforcement learning algorithm for solving a bi-objective stochastic resilient obnoxious p-median problem, 2021.
- › Implementation of a Reinforcement Learning Algorithm for Mountain Car Problem, 2020.
  I implemented a Fuzzy model and a RBF model for a car stuck between mountains to help the car climb the mountains using Python and Gym.
- › Design and Implementation of a Generative Adversarial Network (GAN) for Super Resolution Task, 2019.
  I implemented a GAN to increase the size of the images without diminishing the quality using PyTorch and Tensorflow.
- › Implementation of a Hidden Markov Model - Gaussian Mixture Model (HMM-GMM) acoustic model for Automatic Speech Recognition Task, 2018.
  I implemented a HMM-GMM model to classify arabic digits audio dataset using PyTorch.
- › Design and Implemenation of a custom CNN/RNN network for Question Answering Task, 2018.
  I developed a custom CNN/RNN network to automatically answer questions about an image using PyTorch.
- › Analysis of Spotify songs popularity using Machine Learning Algorithms, 2020.
  I analyzed Spotify songs data (1920-2020) retrieved from Spotify API and used machine learning algorithms to predict popularity of the songs using Scikitlearn.

Teaching Assistant:

- › **Deep Learning**: University of Tehran, Fall 2020
- › **Database Design**: University of Tehran, Fall 2018
- › **Discrete Mathematics**: University of Tehran, Fall 2018
- › **Programming Languages and Compilers**: University of Tehran, Fall 2018
- › **Algorithm Design**: University of Tehran, Fall 2017 & Fall 2018
- › **Data Structures**: University of Tehran, Fall 2017 & Spring 2018
- › **Engineering Probability and Statistics**: University of Tehran, Fall 2017
- › **Web Development**: Allameh Helli High School (Exceptional Talents), August 2017-July 2020
- › **C++ Programming**: Allameh Helli High School (Exceptional Talents), August 2018-July 2019

💼 PROFESSIONAL EXPERIENCE

Data Engineer, Tapsell, November 2019-March 2020

- › Tapsell is the leading company in the online advertising industry in Iran. During my experience at Tapsell, I implemented a Machine Learning model to map IP address of users to the location of each one. I also worked on Sauron, a module used for fraud detection and developed some heuristics to detect fraudulent users. I worked with Spring Boot, Kotlin, and Python and I got to work with big data processing tools such as Kafka streams, ElasticSearch, MongoDB and I got familiar with Apache Spark.

Software Engineer Intern, Rahnema College, July 2017-August 2017

- › "Unagi", a location based social network application.
  In this project, I have focused on back-end development using Node.JS Express framework.

🎁 HONORS AND AWARDS

- › **HIDA Visiting Researcher Grant** from Helmholtz Information and Data Science Academy to conduct a fully-funded research stay at Helmholtz Munich for 3 months, 2024.
- › **Gold Open Access award** for an *invited review* paper in the European Journal of Operational Research sponsored by EURO, 2021.
- › Ranked among the **top 5%** among **M.Sc.** students in Computer Engineering, University of Tehran, 2019-2021.
- › Awarded **full scholarship** for M.Sc. program in Computer Engineering at the University of Tehran, September 2019-May 2022.
- › Received **Straight Admission** without examination to M.Sc. in Computer Engineering Program at University of Tehran, September 2019.
- › Member of Iran's National Elites Foundation, 2015-Present.
- › **Awarded the FOE** (Faculty of Engineering) prize for three consecutive academic years, ranked **1st** among all **B.Sc.**

students in Software Engineering, University of Tehran, 2015-2018.

> Awarded **full scholarship** for B.Sc. program in Software Engineering at the University of Tehran, September 2015-May 2019.

> Ranked 91 among 200'000 participants (**top 0.04%**) in the nationwide university entrance exam for undergraduate studies, (B.Sc. program), 2015.

COMPUTER SKILLS

Programming	Python, R, C, C++, C#, Kotlin, Java, Matlab
Optimization	Gurobi, PulP, GAMS
Libraries and Frameworks	PyTorch, Tensorflow, Scikitlearn, Gym, Django, SpringBoot
Database	MySQL, NoSQLs (MongoDB, Cassandra, Redis), ElasticSearch
Tools	git, LaTeX, Docker, Kubernetes, KafkaStreams, Apache Spark