

Amir Mohammad Karimi-Mamaghan

Ph.D. student

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EECS, KTH Royal Institute of Technology, Stockholm, Sweden



EDUCATION

Present August 2022	Ph.D. in Computer Science, KTH Royal Institute of Technology, Sweden <ul style="list-style-type: none">> Division of Decision and Control Systems> Thesis Topic: <i>Structured Representation Learning</i>> Supervisors: Karl Henrik Johansson, Stefan Bauer
May 2022 September 2019	M.Sc. in Computer Engineering (Artificial Intelligence and Robotics), University of Tehran, Iran <ul style="list-style-type: none">> Data Analytics Lab, School of Electrical and Computer Engineering> Thesis Title: <i>Longevity Analysis of Cryptocurrency Addresses</i>> Supervisor: Behnam Bahrak> GPA: 18.17/20 (4/4)
July 2019 September 2015	B.Sc. in Software Engineering, University of Tehran, Iran <ul style="list-style-type: none">> Thesis Title: <i>Classification of Electrocardiogram Signals using Machine Learning & Neural Networks</i>> Supervisor: Siamak Mohammadi> GPA: 18.5/20 (3.96/4)

RESEARCH INTERESTS

- > Representation Learning
- > Generative Models
- > Object-Centric Learning
- > Causal Inference

PUBLICATIONS

- > **Karimi Mamaghan, A.**, Papa, S., Johansson, K. H., Bauer, S., & Dittadi, A. (2024). *Exploring the Effectiveness of Object-Centric Representations in Visual Question Answering: Comparative Insights with Foundation Models*. arXiv preprint arXiv:2407.15589.
- > **Karimi Mamaghan, A.**, Tigas, P., Johansson, K. H., Gal, Y., Annadani, Y., & Bauer, S. (2024). *Challenges and Considerations in the Evaluation of Bayesian Causal Discovery*. In Forty-first International Conference on Machine Learning (ICML).
- > **Karimi Mamaghan, A.**, Dittadi, A., Bauer, S., Johansson, K. H., & Quinzan, F. (2024). *Diffusion-Based Causal Representation Learning*. *Entropy*, 26(7), 556.
- > 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). *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 AND PROFESSIONAL EXPERIENCE

- > **Visiting Researcher**, TU Munich & Helmholtz AI, Germany, Dec 2023 - Mar 2024.
Working on the paper *Challenges and Considerations in the Evaluation of Bayesian Causal Discovery*.
Supervised by Stefan Bauer.
- > **Research Assistant**, Data Analytics Lab, University of Tehran, Iran, Feb 2020 - May 2022.
Analyzed Bitcoin transactions and smart contracts; conducted master's thesis research, published as *Analysis of Address Lifespans in Bitcoin and Ethereum*.
Supervised by Behnam Bahrak.
- > **Data Engineer**, Tapsell (the leading online advertising company in Iran), Iran, November 2019-March 2020.
Developed an IP-to-location ML model, contributed to developing recommendation algorithms for ads, contributed to the fraud detection module with custom heuristics.
- > **Teacher**, Allameh Helli High School (Exceptional Talents), Iran, August 2017-July 2020.
Teaching: C++, Web Development.
- > **Software Engineer Intern**, Rahnema College, Iran, July 2017-August 2017.
Developed a location-based social network Android application.
- > **Teaching Assistant**, University of Tehran, Iran, 2017-2022.
Teaching: Deep Learning, Discrete Mathematics, Algorithm Design, Data Structures, Engineering Probability and Statistics, Database Design, Programming Languages and Compilers.
- > **Reviewer** for ICLR & CLeaR, 2024.

SUMMER SCHOOLS

- > **Wallenberg AI, Autonomous Systems and Software Program (WASP) Community Building**, Sweden, August 2023.
- > **Generative Modeling (GeMSS)**, Copenhagen, June 2023
- > **CIFAR Deep Learning + Reinforcement Learning (DLRL)**, Virtual, July 2022.

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.

SKILLS

Programming	Python, R, basic C/C++, Kotlin, Java
Libraries and Frameworks	PyTorch, Tensorflow, Scikitlearn, Django, SpringBoot
Optimization	Gurobi, GAMS
Database	MySQL, NoSQLs (MongoDB, Cassandra, Redis), Elasticsearch
Tools	git, LaTeX