

Alireza Hashemi

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EDUCATION

The City University of New York

PhD Student in Physics

- Applied graph theory and graph machine learning on biological data.

New York, USA

Sep 2022 –

Sharif University of Technology

Master of Science in Physics

- Numerical simulation of chaos in a system with multiple topological defects.

Tehran, Iran

Sep 2019 – Jan 2022

University of Zanjan,

Bachelor of Science in Physics

Zanjan, Iran

Sep 2015 – Jun 2019

WORK EXPERIENCE

blubank, *Data Scientist*

May 2020 – Aug. 2022

- Fraud detection on user transactional data using isolation forests, autoencoders, and other anomaly detection methods.
- Fine-tuning and training of several CNNs for face vs. ID card verification and liveness detection.
- Development of a Neo4j graph database from various internal data sources to identify money-laundering networks, community detection, fraud detection, and recommender system in a user transaction database with more than 2 million users.
- Data engineering pipelines & automations with Apache Airflow and ETL with Python on different databases (SQL, NoSQL).

Rahnema College, *Machine Learning Course Mentor*

Mar. 2021 – Jun. 2021

- Mentored a group of interns to work on machine learning projects in anomaly detection and music recommender system.

PUBLICATIONS

Visiting distant neighbors in graph convolutional networks

Alireza Hashemi, Hernán A. Makse *arXiv preprint* (2023)

Social distancing in pedestrian dynamics and its effect of disease spreading

Alireza Hashemi, Sina Sajjadi and Fakhteh Ghanbarnejad - *Physical Review E* (2021)

Chaotic dynamics of active topological defects

Alireza Hashemi, Mohammad Reza Ejtehadi - *Soft Materials* (2021)

Analysis of the ground-state energy eigenvalues of fractal quantum potentials

Alireza Hashemi, Amirhossein Darooneh - *Physica Scripta* (2019)

Many-body effects on the radiative heat transfer in fractal nanostructures

Moladad Nikbakht, Serviyeh Ahmadian, Alireza Hashemi - *IJAA* (2017)

Translation of the book “Dark Matter & Dark Energy” by Brian Clegg to Farsi (2020)

CONFERENCE PRESENTATIONS

Social distancing in pedestrian dynamics *Dynamical Biological Systems* (2020), COVID-19 in Iran *NetSci* (2020)

Effectiveness of social distancing through the lens of ABM *Complex Systems Society* (2020)

RELEVANT SKILLS

Programming Languages: Python, C++, MATLAB, R, **Standard Learning Libraries:** NumPy, Pandas, scikit-learn, SciPy, NetworkX, Keras, TensorFlow, PyTorch (and PyTorch geometric), graph-tool, PyMC, **Parallel Computation:** LAPACK, OpenMP, basic CUDA, **SQL & NoSQL Databases:** PostgreSQL, MongoDB, Neo4j, **Machine Learning:** Supervised/Unsupervised/Semi-Supervised algorithms with standard libraries, **Deep Learning:** Image processing with CNN, Graph neural networks, Autoencoders **Timeseries:** Causal impact analysis, timeseries prediction, Anomaly & Fraud Detection **Teamwork Tools:** Jira, Git, Confluence, **Data Reporting:** Metabase, Superset, **Data Engineering & ML Automation Tools:** Apache Airflow, Python ETL

OTHER

NTD Hackathon runner-up team (report on [NPR.org](https://www.npr.org)), 23rd & 24th school on physics at [IASBS](https://iasbs.ac.ir), Tehran School on Complex Networks ([TACN2018](https://tacn2018.org)) participant, Teaching experience as an adjunct lecturer at CCNY.

LINKS

[Google Scholar](#)

[Researchgate](#)

[Linkedin](#)

[Github](#)

[Homepage](#)