

# Nima Fathi

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## EDUCATION

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### M.Sc. in Electrical and Computer Engineering

Sept. 2022, Expected: By Sept. 2025

- Master of Science in Electrical & Computer Engineering at **McGill University** (GPA: 4.0/4.0)
- Student researcher at **MILA** Research Institute under the supervision of **Prof. Tal Arbel**

### B.Sc. in Computer Engineering

Sept. 2017, Dec. 2021

- Bachelor of Science in Computer Engineering at **Sharif University of Technology** (GPA: 3.85/4.0 – 18.12/20.0)

### NODET: High School

Sept. 2013, Jun. 2017

- National Organization for Development of Exceptional Talents
- Mathematics and Physics (GPA: 4.0/4.0 – 19.8/20.0)

## RESEARCH EXPERIENCE

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### Mila - Quebec Artificial Intelligence Institute

❖ MSc Student

Sept. 2022, Ongoing.

- Advised by **Prof. Tal Arbel** at McGill University  
Research Areas: Counterfactual Image Synthesis, Diffusion Models, Generative Adversarial Networks, Bias Mitigation, Longitudinal Generative Models, Trajectory Modeling in Medical Imaging for Irregularly-Sampled Time Series, VQA models using LLMs

### EPFL

❖ Research Assistant (Intern)

Jul. 2021, May 2022

- Supervised by **Prof. Alexandre Alahi**
- Software Development: Lead developer for a PyTorch-based toolbox for pose prediction, **Posepred**

### Sharif University of Technology

❖ Research Assistant

Dec. 2020, Sept. 2021

- supervised by **Prof. MohammadHossein Rohban**
- Focus: Vision Transformer, CXR imaging

## PUBLICATIONS

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### **MIDL'24 DeCoDEX: Confounder Detector Guidance for Improved Diffusion-based Counterfactual Explanations**

- [Nima Fathi\\*](#), [Amar Kumar\\*](#), [Brennan Nichyporuk](#), [Mohammad Havaei](#), [Tal Arbel](#)

### **MICCAI'23 Debiasing Counterfactuals In the Presence of Spurious Correlations**

- [Amar Kumar](#), [Nima Fathi](#), [Raghav Mehta](#), [Brennan Nichyporuk](#), [Jean-Pierre R Falet](#), [Sotirios Tsafaris](#), [Tal Arbel](#)

### **ArXiv SwinCheX: Multi-label classification on chest X-ray images with transformers**

- [Sina Taslimi\\*](#), [Soroush Taslimi\\*](#), [Nima Fathi](#), [Mohammadreza Salehi](#), [Mohammad Hossein Rohban](#)

### **ICCV Workshops'21 Towards human pose prediction using the encoder-decoder Istm**

- [Nima Fathi\\*](#), [Armin Saadat\\*](#), [Saeed Saadatanejad](#), [Alexandre Alahi](#)

## WORK EXPERIENCE

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### **Cafe Bazaar Inc. - Divar**

Software Engineer

Tehran, Iran  
Jan. 2021, Jul. 2021

- Employed at Divar, a prominent Persian mobile application and online platform specializing in classified ads and e-commerce in Iran. The platform boasts a substantial user base of approximately 60 million.
- Technical back-end developer as a member of the chat team, responsible for providing online chatting and call services.
- Contributed to the development of an intelligent model aimed at detecting harassment, nudity, and other unwelcome behaviors.

### **Yektanet Inc.**

Software Engineer

Aug. 2020, Dec. 2020  
Tehran, Iran

- Yektanet is an Iranian advertising network that caters to native advertising. It is known to be one of the most advanced advertising networks in Iran with over 50 million unique users and 12 billion monthly impressions.
- Led a 5-person team as Technical Leader of Infrastructure/Core, responsible for meeting the data science and software needs of the technical tribe.

### **Yektanet Inc.**

Data Scientist

May 2020, Jul. 2020  
Tehran, Iran

- Junior Data scientist at Data team, a team of 7.
- Participated in developing content-based recommender systems.
- Led and contributed significantly to the User Location Estimator project, utilizing Bayesian inference to achieve 80% accuracy in predicting users' locations within a 500-meter range in the city of Tehran.

## SKILLS

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### **Machine Learning and Artificial Intelligence**

- Related Coursework:** Stanford CS231n: CNNs for Visual Recognition, Aaron Courville's UdeM Representation Learning, McGill ECSE626: Statistical Computer Vision David Silver's UCL Reinforcement Learning, Stanford CS224n: Natural Language Processing with Deep Learning, Berkeley CS 188: Introduction to Artificial Intelligence, Harvard 110: Statistics, and MIT's Linear Algebra.
- Working Experience in:** JAX, PyTorch, TensorFlow, Keras, OpenCV2, OpenAIGym, Numpy.

### **Computer Engineering and Programming**

- Working Experience in:** Python, GO, and Elixir
- General Programming Skills:** C/C++, Java, R, and MATLAB
- Web Development:** JavaScript, Django, Flask, HTML/CSS/Bootstrap, React Native, and JQuery
- Data management and Database:** PostgreSQL, MySQL, RocksDB, MongoDB, Redis, Cassandra, SQLite, and Elasticsearch
- General Software Engineering knowledge:** Docker, kubernetes, MinIO, Git, and  $\LaTeX$

## SELECTED TEACHING ASSISTANCE EXPERIENCE

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|---|--|---|
| • Statistical Computer Vision<br><i>McGill University</i><br>[Prof. T. Arbel, Head TA]            | • Introduction to Computer Vision<br><i>McGill University</i><br>[Prof. J. J. Clark, Head TA]            | • Design of Algorithms<br><i>Sharif University of Technology</i><br>[Prof. A. Sharifi-Zarchi, Head TA]  |
| • Applied Machine Learning<br><i>McGill University</i><br>[Prof. R. Rabbany]                      | • Advance Information Retrieval<br><i>Sharif University of Technology</i><br>[Prof. M. Soleymani]        | • Introduction to Bioinformatics<br><i>Sharif University of Technology</i><br>[Prof. A. Sharifi-Zarchi] |
| • Systems Analysis and Design<br><i>Sharif University of Technology</i><br>[Prof. A. Heydarnoori] | • Artificial Intelligence<br><i>Sharif University of Technology</i><br>[Prof. MH. Rohban, Lead TA of RL] |   |

## RESEARCH INTERESTS

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- Diffusion Models
- Generative Adversarial Networks
- Representation Learning
- Large Language Models
- Counterfactual Generation
- Motion Forecasting (trajectory and pose)