

# Nima Fathi

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## EDUCATION

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

GPA: 4.0/4.0

- McGill University
- Student Researcher @ Mila - Quebec AI Institute

Montreal, Canada  
Sept. 2022 - Expected: Sept. 2025

### B.Sc. in Computer Engineering

GPA: 3.85/4.0 - 18.12/20.0

- Sharif University of Technology

Tehran, Iran  
Sept. 2017 - Dec. 2021

### NODET: High School

GPA: 4.0/4.0 - 19.8/20.0

- National Organization for Development of Exceptional Talents, Mathematics and Physics

Tehran, Iran  
Sept. 2013 - Jun. 2017

## RESEARCH EXPERIENCE

### Mila - Quebec AI Institute

MSc Student

- Advised by **Prof. Tal Arbel** at McGill University
- 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

Montreal, Canada  
Sept. 2022 - Present

### EPFL

Research Assistant (Intern)

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

Remotely from Tehran  
Jul. 2021 - May 2022

### Sharif University of Technology

Research Assistant

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

Tehran, Iran  
Dec. 2020 - Sept. 2021

## PUBLICATIONS

**MIDL'24**

**ORAL**

**Shorlisted for Best Paper Award [Top 3.6%]**

*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 lstm*

Nima Fathi\*, Armin Saadat\*, Saeed Saadatanejad, Alexandre Alahi

## WORK EXPERIENCE

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### ServiceNow

Visiting Researcher

- Fine-tuning LLMs using Discrete Diffusion models.

Montreal, Canada  
Aug. 2024 - Present

### Cafe Bazaar Inc. - Divar

Software Engineer

- full stack developer for the chat team, responsible for online chat and call services.
- Developed an AI model for detecting harassment and scams.

Tehran, Iran  
Jan. 2021 - Jul. 2021

### Yektanet Inc.

Software Engineer

- Led a 5-person team as Technical Leader, focusing on infrastructure and core systems.

Tehran, Iran  
Aug. 2020 - Dec. 2020

Data Scientist

- Contributed to content-based recommender systems and led the (ULE), User Location Estimator, project.

May 2020 - Jul. 2020

## SKILLS

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### Frameworks and Codebases

- **Working Experience** JAX, PYTORCH, and TENSORFLOW
- **General Skills** OPENCV2, OPENCV2, OPENAIGYM, and NUMPY
- **Hugging Face** TRANSFORMERS, DIFFUSERS, PEFT, and ACCELERATE
- **Data/Pipeline/Tensor Parallelism** DEEPSPEED, and MEGATRON-LM

### Programming Languages

- **Working Experience** PYTHON, GO, and ELIXIR
- **General Skills** C/C++, JAVA, R, and MATLAB
- **Data management and Database** POSTGRESQL, ROCKSDB, MONGODB, REDIS, CASSANDRA, SQLITE, and ELASTICSEARCH
- **Web Development** DJANGO, FLASK, HTML/CSS/BOOTSTRAP, and REACT NATIVE
- **Miscellaneous** DOCKER, KUBERNETES, MINIO, GIT, and L<sup>A</sup>T<sub>E</sub>X

## SELECTED TEACHING ASSISTANCE EXPERIENCE

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### Statistical Computer Vision

McGill University

Prof. T. Arbel, Head TA

### Introduction to Computer Vision

McGill University

Prof. J. J. Clark, Head TA

### Design of Algorithms

Sharif University of Technology

Prof. A. Sharifi-Zarchi, Head TA

### Applied Machine Learning

McGill University

Prof. R. Rabbany

### Advance Information Retrieval

Sharif University of Technology

Prof. M. Soleymani

### Introduction to Bioinformatics

Sharif University of Technology

Prof. A. Sharifi-Zarchi

### Systems Analysis and Design

Sharif University of Technology

Prof. A. Heydarnoori

### Artificial Intelligence

Sharif University of Technology

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)