Nima Fathi

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Personal GitHub | Personal Website | LinkedIn

Highlights

- **6+ years** of experience in deep learning research and engineering across *LLMs*, *Generative AI*, and *Medical Imaging*.
- **First-author at ICLR, COLM, MIDL, MICCAI** on topics including Diffusion Language Models, Counterfactual Generation, and Vision-Language Reasoning.
- **2+ years of industry experience**, delivering scalable ML systems; led infra teams and built recommender/chat/voice products.
- **Motivated by AGI**: I'm driven by the pursuit of scalable, general-purpose intelligence — inspired by Turing's vision: "We can only see a short distance ahead, but we can see plenty there that needs to be done."

Education

- **McGill University** — *M.Sc. in Electrical and Computer Engineering* *Montreal, Canada — Sept. 2022 – Aug. 2025 (Expected)*
  - Student Researcher at Mila - Quebec AI Institute. **GPA: 4.0/4.0**
- **Sharif University of Technology** — *B.Sc. in Computer Engineering* *Tehran, Iran — Sept. 2017 – Dec. 2021*
  - **GPA: 3.85/4.0 (18.12/20.0)**

Research Experience

- **ServiceNow Research** — *Visiting Researcher* *Montreal, Canada — Jul. 2024 – Mar. 2025*
  - Built one of the first diffusion-based language models (DLMs).
  - Proposed a framework unifying LLMs and DLMs for efficient generation.
- **Mila - Quebec AI Institute** — *MSc Researcher (Advisor: Prof. Tal Arbel)* *Montreal, Canada — Sept. 2022 – Present*

  Working on foundational research at the intersection of generative modeling and medical imaging.
  - Multi-agent systems for counterfactual generation and visual explainability. (submitted work @ iccv workshops)
  - Diffusion and GAN-based approaches for counterfactual image synthesis. (ORAL@ MIDL'24 and short-listed for Best Paper Award)
  - Bias mitigation for improving robustness and generalization in medical imaging. (Published work @ MICAAI)
  - Longitudinal generative modeling and trajectory forecasting for irregularly sampled time series.
- **EPFL** — *Research Intern (Prof. Alexandre Alahi)* *Remote — Jul. 2021 – May. 2022*
  - Principal developer of UnPOSed, an open-source **toolbox** for **forecasting** a sequence of human poses. Contributed to:
    - Software engineering best practices, modular design, and reproducible experimentation.
    - Developing and scaling the most recent open-source and closed-source published models in the realm of trajectory and pose prediction.
- **Sharif University of Technology** — *Research Assistant* (Prof. Rohban) *Tehran, Iran — Dec. 2020 – Sept. 2021*
  - Co-authored one of the earliest works applying Vision Transformers to medical imaging, establishing a benchmark for subsequent research.

Industry Experience

- **Divar (Cafe Bazaar Inc.)** — *Software Engineer* *Tehran, Iran — Jan. 2021 – Jul. 2021*
  - Divar is the biggest Persian classified ads and E-commerce mobile app.
  - *Chat Team*:
    - Improved in-app messaging and VoIP call functionality, boosting user engagement by over 40%.
    - Maintained system ownership across CI/CD, code reviews, and production monitoring.
    - Built moderation tools using ML to detect harassment and scams.
- **Yektanet Inc.** — *Machine Learning Engineer* *Tehran, Iran — May 2020 – Dec. 2020*
  Started as a data scientist in the Data team and was quickly promoted to a machine learning engineer for the Infrastructure team.
  - *Infrastructure team*:
    - Developed a real-time data pipeline for ad serving, improving latency by 30%.
    - Implemented a distributed system for large-scale data processing, enhancing scalability.
    - Owned and maintained backend and database services for internal tooling.
  - *Data team*:
    - Built content-based recommenders for ads and personalization.
    - Designed a geolocation system increasing CTR by 6.1%.

Selected Publications

- **COLM'25 & ICLR'25–DelTa**: *Unifying Autoregressive and Diffusion-Based Sequence Generation* Nima Fathi, Torsten Scholak, Pierre-Andre Noel
- **MIDL'24 (Oral, Best Paper Finalist)**: *DeCoDEx: Confounder Detector Guidance for Improved Diffusion-based Counterfactual Explanations* Nima Fathi*, Amar Kumar*, et al.
- **MICCAI'23 - FAIMI**: *Debiasing Counterfactuals In the Presence of Spurious Correlations* A. Kumar, Nima Fathi, et al.

Honors & Awards

- Graduate Excellence Fellowship (GEF) and McGill Engineering Doctoral Award (MEDA) **[McGill]**
- Google Institutional Research Program **[Mila/Google Brain]**, Tuition Differential Waiver (DFW) **[McGill]**
- Fully Funded Admission: **Mila/McGill**, UBC, UWaterloo, SFU.
- Ranked Top 0.1% in Iranian National University Entrance Exam

Skills

- **Frameworks**: PyTorch, JAX, TensorFlow, Transformers, Diffusers, PEFT, Accelerate
- **Infra/Parallelism**: DeepSpeed, Megatron-LM, FlashAttention
- **Agentic AI**: LangGraph, LangChain, LlamaIndex, smolagents, Haystack, RAG, VectorDB
- **Languages**: Python, GO, Elixir, C/C++, Java, MATLAB, R
- **Databases**: PostgreSQL, MongoDB, RocksDB, Redis, Elasticsearch
- **Web**: Django, Flask, HTML/CSS/Bootstrap, React Native

Research Interests

- Agentic AI, Multi-agent Reasoning, Inference-time Algorithms
- Diffusion Language Models, LLM Alignment, Vision-Language Models
- Counterfactual Explanations, Fairness & Robustness in Medical Imaging