MAHAN FATHI

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HIGHLIGHTS

- **3+ years** of academic and industrial expertise in developing large-scale **deep learning research infrastructure**, with a focus on areas such as *Large Language Modeling*, *Reinforcement Learning*, and *Computer Vision*.
- **3+ years** of work experience as **Software Engineer**, **Data Scientist**, and **Team Leader** – e.g., user-centric ML, high-throughput streaming microservices, gigantic image datasets.
- **Proud of switching gears** – pun intended: coming from a Mechanical Engineering background, I decided to not settle for anything less than following my true passion, robotics. RL just happened to be a recently popularized means to this end.

SELECTED EXPERIENCES

Google DeepMind ❖ *Student Researcher (SR) – LLM*   *Montréal, QC* ◆ Apr. 2023 – Jan. 2024
- Focus: Large Language Modeling and State-Space Models
- Supervised by **Ross Goroshin**

Google Brain ❖ *Student Researcher (SR) – Deep RL*   *Montréal, QC* ◆ Aug. 2022 – Feb. 2023
- Member of MonRL team, led by **Marc G. Bellemare**
- Supervised by **Ross Goroshin**
- Focus: The intersection of Sequence Modeling and offline/online Reinforcement Learning

Mila: MTL. Inst. for Learning Algs. ❖ *MSc Student*   *Montréal, QC* ◆ Jan. 2021 – Present
- Advised by **Pierre-Luc Bacon** at Université de Montréal
- Research Areas: Sample-efficient Reinforcement Learning, Energy-based Policy/Imitation Networks, Continuous Sequence Models (HiPPO-inspired) in RL and Control

Polytechnique Montréal ❖ *Teaching Assistant*   *Montréal, QC* ◆ Sep. 2021 – Jan. 2022
- Teaching Assistant for INF8953DE – Reinforcement Learning, by **Sarath Chandar**
- Responsible for designing the majority of the assignments

Aalto University ❖ *Research Assistant*   *Espoo, Finland* ◆ Jun. – Sep. 2019
- Supervised by **Perttu Hämäläinen**
- Developed a framework that offered *MuJoCo* dynamics step functions as differentiable *PyTorch* operations
- Controlled systems as complicated as `Humanoid` using analytic policy gradients

CafeBazaar ❖ *Senior SWE/DS and TL*   *Tehran, Iran* ◆ Oct. 2018 – Jan. 2021
- Worked at **Balad**, which is now the biggest domestic map and navigation application of Iran (joined at userbase of 100k and left when at ∼6M)
- Technical Leadership and Product Management of Data Infrastructure, a team of 7 Data Scientists, and ETA&Traffic, a team of 4 Software Engineers and 3 Data Scientists
- Computer Vision Scientist, information extraction from street and aerial imagery
- Software Engineer, developed the first traffic logging&predicting service of Balad (solo)

TAPSI ❖ *Backend Developer*   *Tehran, Iran* ◆ Feb. – Oct. 2018
- Among the biggest Iranian tech companies, TAPSI is a ride-hailing platform with millions of monthly active users.
- Improved finished rides rate by 3% in a self-directed project, and rewrote many legacy services including Location and Dispatch from scratch

PUBLICATIONS

❖ **ICLR'24** | **COURSE CORRECTING KOOPMAN REPRESENTATIONS**
Mahan Fathi, Clement Gehring, Jonathan Pilault, David Kanaa, Pierre-Luc Bacon, Ross Goroshin

❖ **NeurIPS'23** | **BLOCK-STATE TRANSFORMERS**
Mahan Fathi*, Jonathan Pilault*, Orhan Firat, Christopher Pal, Pierre-Luc Bacon, Ross Goroshin

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I am a strong believer in the one-page resume. Full experience summary is available in LinkedIn

EDUCATION

M.Sc. in Computer Science   Jan'21 – Jan'24
Université de Montréal & Mila (Dean's List)

B.Sc. in Mechanical Engineering   Sep'13 – Jul'17
Sharif University of Technology

NODET: High School   Sep'09 – Jun'13
National Organization for Development of Exceptional Talents, Mathematics and Physics

TECHNOLOGIES

Frameworks and Codebases
- JAX♥, PyTorch, TensorFlow
- Flax, Haiku, Optax, T5X, etc.
- Data/Pipeline/Tensor Parallelism
- Acme, BRAX, Dopamine, RLax
- XM, Google Infrastructure

Everything Data
- Apache Spark, SparkSQL, Apache Kafka
- Apache Flink, Apache Beam
- HDFS, YARN
- Redis, MongoDB
- PostgreSQL, MySQL

Main Programming Languages
- C/C++ • Python • JS • Java • Lua • SQL

Miscellaneous
- 10+ years experience with Linux systems
- Emacs, Arch Linux
- 🏴 English, Farsi

HONORS & AWARDS

Bourse D'excellence DIRO & MSc Tuition Exemption Scholarship (Bourse C)

Fully Funded Admission to
Mila/UdeM, **ETH**, **UBC**, **McGill**, **Aalto**

Awarded membership to the *National Elites Foundation*

Silver Medalist at 25th National Physics Olympiad

RESEARCH INTERESTS

- Unsupervised Learning
- Long-Range Sequence Modeling
- Large Language Modeling
- Sequential Decision Making & RL
- Really Large Scale AND Toy Experiments
- Inference-time Algorithms