Erfan Miahi — ML Research Engineer

Canada – Toronto

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HIGHLIGHT OF SKILLS & QUALIFICATIONS

- **8+ years in AI Research**: Published **6 top-tier papers** with **100+ citations**, collaborating with **Google DeepMind**.
- **3+ years in MLE/SWE**: Built scalable AI systems and ML pipelines, delivering impactful real-world solutions.
- **End-to-end understanding of LLMs**: Wrote GPU kernels, implemented DDP, and developed AI agents with RAG.
- **Exceptional communication skills**: Excel at mentoring diverse individuals across technical and business domains.
- **Proven project management**: Successfully managed multiple projects while maintaining quality within timelines.

RELEVANT EXPERIENCES

ML Research Engineer   **November 2022 - October 2024**
DeepR Analytics   *Remote, Canada & US*

- **Developed RL pipeline and algorithms**, driving **$100+ daily profit increases per asset** in algorithmic trading.
- **Migrated pipeline to Amazon ECS**, enabling **large-scale deployment and experimentation** on various trading assets.
- **Optimized ML Pipeline for 9x faster model training**, reducing resource usage significantly.
- **Achieved 85% test coverage with pytest**, **reducing bugs by 45%** across ECS, GitHub CI, and C++ Trading Engine.

CEO   **August 2023 - August 2024**
IntractAI (Leadership and Business)   *Toronto, Canada*

- **Led a team of 2 engineers/researchers**, driving the development of backend infrastructure.
- Built backend infrastructure for **continual LLM fine-tuning** on the codebase and internal documents.
- Developed a **web-scraping agent** to automate data collection for model fine-tuning.
- Designed a **RAG pipeline** for efficient retrieval of code chunks and internal documents for user queries.

Research Associate   **Sep 2022 - Dec 2022**
University of Alberta (RLAI Lab)   *Edmonton, Canada*

- **Redesigned ML codebase** for sensory data prediction, accelerating experimentation and analysis by **50%** (Publication).
- **Developed and deployed an optimized control algorithm**, improving system performance by **21%**.

Assistant AI Consultant   **Nov 2021 - Mar 2023**
Alberta Machine Intelligence Institute (Amii)   *Edmonton, Canada*

- Provided continuous technical coaching to 5+ enterprise teams, aligning projects with their business needs.
- Contributed to consulting an energy firm on problem formulation, ML system design, and roadmap, **resulting in potential annual savings of $10-15 million dollars** (Blog).

AI Mentor   **Jan 2017 - present**
Self-employed (Leadership)   *Remote/Edmonton, Canada*

- Have been **mentoring students in AI research and engineering for 7+ years** (For More Info)
- Mentored a University of Guilan (rank 1422) student for 4+ years to secure a PhD at Michigan State (rank 116).

RELEVANT PROJECTS (*60+ GitHub Projects*)

Circuit Analysis Service: Converting Circuit Sketches into Interactable XR Circuits	Backend / Frontend
LLM-Powered Contract Review and Extraction for Revenue Accountants	Repo
AI-first Software Development Copilot for Specialized Industries (e.g., Optics)	Backend
Mixed-Precision Library for LLM Training with Torch JIT and Bitwise Manipulation (**FP8** and BF16)	Request
Open-Source RL Framework for Fast Experimentation on Real-World Problems (The Sole Contributor)	Repo
Solutions to Assignments of Deep RL Course by UoC, Berkeley (100+ Stars on GitHub)	TensorFlow/PyTorch

KEY SKILLS

ML Frameworks	PyTorch, TensorFlow, HuggingFace, LangChain, XGBoost, Scikit-learn, Optuna
Programming Languages	Python, C++, Java, JavaScript, TypeScript, SQL, HTML, CSS
Web Development	Angular, React, NextJS, FastAPI, Kubernetes
Cloud Services	Google Cloud, Compute Canada, AWS Cloud, Azure
Operating Systems	Windows, GNU/Linux (Ubuntu & Fedora & RHEL), macOS
Extra Tools	Ray-core, PostgreSQL, Redis, Docker, GitHub Actions, WandB, Git, Vim, ROS
Strong Background in	ML and Deep Learning, RL, Mathematics, Data Structures and Algorithms

SELECTED PUBLICATIONS (*100+ Citations on Google Scholar*)

Investigating the Properties of Neural Network Representations in Reinforcement Learning
 Han Wang, Erfan Miahi, Martha White, Marlos C. Machado, et al. (**DeepMind Collaboration**)   Paper
Published in Artificial Intelligence Journal (AIJ)

GVFs in the Real World: Making Predictions Online for Water Treatment
 Muhammad K. Janjua, Haseeb Shah, Martha White, Erfan Miahi, et al.   Paper
Published in Machine Learning Journal (MLJ)

Scalable Transfer Evolutionary Optimization: Coping with Big Task Instances
 Mojtaba Shakeri, Erfan Miahi, Abhishek Gupta, Yew-Soon Ong (**NTU & A*STAR Collaboration**)   Paper/Code
Published in IEEE Transactions on Cybernetics Journal

Resmax: An Alternative Soft-Greedy Operator for Reinforcement Learning
 Erfan Miahi, Revan MacQueen, Alex Ayoub, Abbas Masoumzadeh, Martha White   Paper
Published in Transactions in Machine Learning Journal (TMLR)

Genetic Neural Architecture Search for Automatic Assessment of Human Sperm Images
 Miahi, Erfan, Seyed Abolghasem Mirroshandel, and Alexis Nasr   Paper
Published in Expert Systems and Applications

EDUCATION

M.Sc. in Computing Science   **Jan 2021 - Aug 2022**
University of Alberta   *Edmonton, Canada*

- **Supervisors**: *Martha White* & *Marlos C. Machado*
- **Thesis**: Feature Generalization in Deep RL: An Investigation into Representation Properties
- **Committee:** *Martha White* (**UoA**) & *Marlos C. Machado* (**Ex DeepMind**) & *Matthew E. Taylor* (**Ex BorealisAI**)

B.Sc in Computer Engineering   **Sep 2015 - Aug 2019**
University of Guilan   *Rasht, Iran*

- **Ranked 1st in class**

TEACHING EXPERIENCE

Graduate Teaching Assistant, Basics of Machine Learning   **Edmonton, Canada**
University of Alberta   *Jan 2021 - Apr 2021*

Undergraduate Teaching Assistant   **Edmonton, Canada**
University of Guilan   *Jan 2016 - Apr 2019*

- **Assisted in teaching 6 courses**: Principles of Data Mining, Principles of Computational Intelligence (Self-Designed Tutorial), Algorithm Design, Data Structures, Advanced Programming, Principles of Computer & Programming

AWARDS AND ACHIEVEMENTS

- **1st Place at Llama Meta Hackathon Toronto 2024 (45 teams and 150 attendees)**
- **Reached Y Combinator Summer 2024 interview stage (top 7% applicant)**
- **Placed among the top 10% of reviewers in ICML 2022**
- **Ranked 6th in World Robot Challenge 2018 (received travel grant to Japan)**
- Abrishamchian Reward (Awarded for graduating with the highest distinction among all students of the University)
- Top Researcher in Computer Engineering Group
- Honorable Mention in ACM/ICPC 2016

LANGUAGES

English - Fluent   **Persian** - Native   **French** - Novice