Mahtab **Farrokh**

MACHINE LEARNING ENGINEERING

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Highlighted Skills

- Over 6 years of experience, collaborated with interdisciplinary teams to tackle practical challenges using ML.
- Proficiency in utilizing Python, PyTorch, OpenCV, Pandas, Scikit-Learn, and other machine learning frameworks.
- Authored +5 papers across prestigious peer-reviewed journals and top-tier conferences.
- 2 years of experience in software development and full-stack projects including React, Node.js, HTML/CSS and SQL.

Education

Master of Science in Computer Science — *Edmonton, Canada*

University of Alberta — *2021 - 2023*

- Proposed a novel and effective evaluation metric for cancer survival prediction under the supervision of Russ Greiner.
- Demonstrated vital prognostic information within cellular-level images, indicative of future prostate cancer recurrence.
- Utilized representation learning techniques on tissue images, resulting in a 7% enhancement in predictive accuracy.

Bachelor of Computer Software Engineering — *Tehran, Iran*

Amirkabir University of Technology — *2015 - 2020*

- Designed a multi-label classification algorithm to improve a symptom checker's diagnosis accuracy by 9%.

Work Experiences

Machine Learning Resident — *Edmonton, Canada*

Alberta Machine Intelligence Institute (Amii) and Clio — *Jul 2024 - Now*

- Researched and created a detailed workflow for summarizing timelines within legal documents.
- Developed a pipeline utilizing **Large Language Models (LLMs)** for annotating and extracting data from legal documents.

Machine Learning Intern — *Edmonton, Canada*

Alberta Machine Intelligence Institute (Amii) and MDA Space — *Mar 2024 - Jun 2024*

- Designed, developed, and optimized a Retrieval-Augmented Generation (RAG) system using Langchain and HuggingFace models, integrating **LLMs** such as Llama-3, Mistral, and GPT-4.
- Led weekly client meetings to understand project milestones, define solutions, and ensure timely progress.
- Developed strong client communication and time management skills through regular interactions and coordination.

Machine Learning Engineer — *Tehran, Iran*

Tebinja — *Oct 2017 - May 2019*

- Designed a web-based symptom checker using machine learning-based models with 87% accuracy.
- Implemented back-end and front-end (full-stack) using Node.js, React, and CSS.

Teaching Experiences

Mentor (2024) / Teacher Assistant (2023) — *Montreal, Canada*

Mila - AI4Good Lab — *2023 - 2024*

- Gave lectures and served as a TA for a training program for women and gender-diverse people across Canada.
- Led interactive discussions to ensure students' understanding of Neural Networks, Convolutional Neural Networks, Residual Neural Networks, Transformers, and more.
- Built strong proficiency in various ML topics while supporting underrepresented individuals in tech.

Teacher Assistant — *Edmonton, Canada*

University of Alberta — *2021 - 2023*

- List of courses: Computer Vision, Intelligent Systems, Introduction to the Foundations of Computation II

Notable Key Projects

Multilingual Alzheimer's Dementia Recognition through Spontaneous Speech — *Rankings*

- Explored various approaches to dementia detection by analyzing the distribution of pauses (silence) and word-level durations feature set using openSMILE toolkit.
- Translated speech to text using Whisper model by Open AI. — *2023*
- Proposed an ensemble of models that achieved rank 4th in the challenge with 70% test set accuracy.

Language Comprehension Assistance for Individuals with Autism

- Led a project to translate and paraphrase figurative language, by applying LLM and NLP-based techniques.
- **Fine-tuned** a T5 (Text-To-Text Transfer Transformer) model from HuggingFace on figurative data. — *2023*

Publications

Exploring Language-Agnostic Speech Representations using Domain Knowledge for Detecting Alzheimer's Dementia *Paper link*
Accepted at 2023 IEEE International Conference on Acoustics, Speech, and Signal Processing *Feb 2023*

An Effective Meaningful Way to Evaluate Survival Models *Paper link*
Accepted at 2023 ICML *Apr 2023*

Learning to Predict Prostate Cancer Recurrence from Tissue Images *Paper link*
Accepted at Journal of Pathology Informatics *Nov 2023*

Effective Survival Prediction for Cancer Patients *Paper link*
Under-review, submitted at BMC Bioinformatics *Mar 2024*

Community Involvement

Great Cycle Challange *Edmonton, Canada*
Volunteer *2021 - 2024*
- Biked more than 600 Km, and raised more than $1.3k to support kids with cancer.
- Link to my fund-raising page: [click here]

Students Scientific Chapter (SSC) *Tehran, Iran*
Academic Director *2017 - 2018*
- Elected as a member of Students Scientific Chapter(SSC), CEIT Department, Amirkabir University of Technology.
- Organized over 10 events to build community, enhance technical knowledge, and provide industry exposure for students.

AUT ACM ICPC *Tehran, Iran*
Member of Execution Committee *2016 - 2018*
- Organaized the 18th, 17th, and 16th International AUT ACM ICPC.