Mansour Saffar

Machine Learning Engineer

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Work Experience

05/22 - Present	**Senior Machine Learning Engineer (Unity Ads)**	Unity, Toronto

• Working with the Unity Ads team to optimize the platform.

01/22 - 05/22	**Lead Machine Learning Engineer**	AltaML, Toronto

• Served as ML Solution Architect and team lead in multiple machine learning projects.
• Designed the architecture and lead a team of 5 ML devs to build a **customizable object detection solution** built on top of Azure.

03/21 - 12/21	**Senior Machine Learning Engineer**	AltaML, Toronto

• Lead multiple teams of machine learning engineers (2-3 team members) in multiple projects, including recommender systems and time-series forecasting.
• Designed the architecture and implemented a **machine learning model deployment pipeline** built on top of AWS and Kubernetes (EKS). This pipeline is used internally to deploy ML models.

03/18 - 03/21	**Machine Learning Engineer**	AltaML, Edmonton

• Developed **NLU** modules (intent recognition and entity detection), **extractive text summarization**, **Ad-Words generation**, **keyword extraction**, and **OCR** in various NLP projects.
• Developed an automatic **medical report generation** system from technician reports using transformer-based models with 87% similarity with radiologists' writings.
• Developed a human-in-the-loop **content-based recommender system** to help content editors find the most relevant articles while using the web CMS with an F-score of 80%.
• Designed and developed multiple task-oriented chatbot projects including **synthetic data generation tool for NLU and dialogue management**, **chatbot to answer complex natural queries from a financial database**, **customer service** and **FAQ chatbots**.
• **Technologies:** *Python, PyTorch, Tensorflow (tensor2tensor), Tf-Serving, Rasa, spaCy, NLTK, Gensim, Scikit-learn, MongoDB, Pandas, Dask, PySpark, AWS, Azure, Git, DVC, Docker, Kubernetes, MLflow*

05/17 - 08/17	**Data Analyst**	Finning Canada, Edmonton

• Developed regression models for rental machinery residual value prediction using **ensemble models**.
• **Technologies:** *Python, C++, Pandas, Scikit-learn, H2O, XGBoost, LightGBM, Azure ML, MySQL*

Select Projects

09/17 - 11/18	**Deep Learning Models for Task-oriented Chatbots**	Graduate Research Assistant (Master's Thesis)

• Researched usage of **self-attentional models** for training end-to-end task-oriented chatbots. The results showed faster training with comparable accuracy. [Source Code] [Publication Link]
• Developed **ChatSim**, an **architecture agnostic evaluation framework** for task-oriented chatbots that can model **user characteristics** and behaviour in chatbot evaluation. [Source Code] [Publication Link]
• **Technologies:** *Python, Tensorflow (tensor2tensor), Rasa, spaCy, Git*

09/16 - 11/16	**Retinal Image Segmentation**	Machine Learning Course

• Developed a segmentation model by applying **ensemble and SVM models** on retinal images. Faced with the problem of small dataset size, we achieved good results by using bagging methods. [Report Link]
• **Technologies:** *Python, MATLAB*

Education

2016 - 2019	**M.Sc in Computer Science (GPA: 4/4)**	University of Alberta, Edmonton

• With a focus on Machine Learning, Natural Language Processing and Chatbots

2011 - 2016	**B.Sc in Electrical Engineering (GPA: 3.67/4)**	University of Tehran, Tehran

• With a focus on Machine Learning and Medical Image Processing

Technical Skills

Languages	**Programming Languages:** *Python (5+ years), C++ and Java (familiar)*
ML/DL/XAI	**Machine Learning, Deep Learning, and Explainable AI:** *Scikit-learn, H2O, PyTorch, Tensorflow (familiar), SHAP, What-if tool*
NLP	**Natural Language Processing and Conversational AI:** *Transformers, spaCy, NLTK, Gensim, Rasa (Core & NLU), ParlAI, FairSeq, Tensor2tensor*
Data	**Big Data Analysis Frameworks and Databases:** *MySQL, Pandas, Dask, MongoDB, Redis, Apache Spark (PySpark)*
Cloud	**Cloud Computing Platforms:** *AWS (Certified ML-Speciality, EKS, Lambda, SageMaker), Azure (Azure ML, App Service, AKS)*
MLOps	**Machine Learning Model Deployment and MLOps:** *Docker, Kubeflow, MLflow, Streamlit, Flask, FastAPI, Terraform, Kubernetes, TF-Serving*
Tools	**Numerical Analysis and Software Development Tools:** *Git, DVC, NumPy, SciPy, MATLAB, hyperopt, Linux (Ubuntu), Visual Studio Code*

Publications

August 2019	**Mansour Saffar, Amine Trabelsi, Osmar R. Zaiane** • *Self-Attentional Models Application in Task-Oriented Dialogue Generation Systems* Recent Advances in Natural Language Processing (RANLP 2019) [Publication Link]
February 2019	**Ghazal Sahebzamani, Mansour Saffar, Hamid Soltanian-Zadeh** • *Machine Learning Based Analysis of Structural MRI for Epilepsy Diagnosis* International Conference on Pattern Recognition and Image Analysis (IPRIA 2019) [Publication Link]

Volunteering

October 2020	**Public Speaker** Data Science Meetup, Edmonton • Presented a talk, **From RNNs to GPT-3**, about the progression of deep learning for NLP [Slides]
03/19 - 10/19	**Machine Learning Engineer in Ana Project** Joint Project with Amii • Collaborated with Prof. Zaiane's team in architecture design and developing NLU modules for Ana, an intelligent chatbot with emotional capabilities designed to help older adults. [Mentioned on CBC News]
October 2019	**Public Speaker** Data Science Meetup, Edmonton • Presented a talk about **explainable AI (XAI)** and its application in industrial ML. [YouTube Video] [Slides]

Certificates

Machine Learning	**Machine learning certifications:** AWS Certified Machine Learning - Specialty [Certification],
Software & DevOps	**Software engineering and DevOps certifications:** Docker [Udemy], Kubernetes [Udemy], Redis [Udemy], AWS Lambda [Udemy]