

Mansour Saffar

Machine Learning Engineer

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Work Experience

- 03/18 - Present **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 radiologist's writings.
 - Developed a **regulatory change management system** using distributed semantic representation models to detect changes between two legal regulatory frameworks with +95% detection accuracy.
 - 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 a **data generation framework** to create a high-quality and multi-domain dataset for training **task-oriented chatbots**.
 - Developed and deployed a pipelined **chatbot** for answering complex natural queries from financial a database.
 - Participated in a 5-day internal hackathon organized by a large holding company to develop an **information extraction system** from unstructured insurance documents.
 - **Technologies:** *Python, Tensorflow (tensor2tensor), Tf-Serving, PyTorch, Rasa, ParlAI, spaCy, NLTK, Gensim, Scikit-learn, MongoDB, Pandas, Dask, PySpark, AWS, GCP, Azure, Git, DVC, Docker, MLflow*
- 05/17 - 08/17 **Data Analyst** [Finning Canada, Edmonton](#)
- Developed regression models for rental machinery residual value prediction using **ensemble methods (Random Forest and GBRT)** with high R^2 (+90%).
 - **Technologies:** *Python, C++, Pandas, Scikit-learn, H2O, XGBoost, LightGBM, Azure ML, MySQL*

Select Projects

- 03/19 - Present **Ana (Automatic Nursing Agent)** [Joint Project with Amii](#)
- Designed the architecture and developed NLU modules for Ana, an intelligent chatbot with emotion capabilities designed to help elderly people. [Mentioned on CBC News]
 - **Technologies:** *Python, Rasa NLU, AWS, GCP, Docker, Git*
- 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 which can model **user characteristic** and behaviour in chatbot evaluation. [Source Code]
 - **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](#)
- Relevant Coursework: **Reinforcement Learning, Deep Learning, Machine Learning**, Data Mining
- 2011 - 2016 **B.Sc in Electrical Engineering (GPA: 3.67/4)** [University of Tehran, Tehran](#)
- Relevant Coursework: **Data Structures and Algorithms, Advanced Programming, Pattern Recognition**, Introduction to Artificial Intelligence, Linear Algebra

Technical Skills

Languages	Programming Languages: <i>Python (4+ years), C++ & MATLAB (Proficient), Java (familiar)</i>
ML/DL Tools	Machine Learning & Deep Learning Libraries: <i>Scikit-learn, H2O, PyTorch, Tensorflow (tensor2tensor)</i>
XAI	Explainable AI tools and libraries <i>LIME, SHAP, What-if tool</i>
Optimization	Numerical Analysis & Optimization Libraries: <i>NumPy, SciPy, hyperopt</i>
NLP	Natural Language Processing & Conversational AI Libraries: <i>spaCy, NLTK, Gensim, Rasa (Core & NLU), ParlAI, Transformers</i>
Big Data	Big Data Analysis Frameworks: <i>Apache Spark (PySpark)</i>
Database	Data Management & Munging: <i>MySQL, Pandas, Dask, MongoDB, Redis, Neo4j</i>
Cloud	Cloud Computing Platforms: <i>AWS (EC2, S3, Lambda, SageMaker), Microsoft Azure, GCP</i>
MLOps	ML Model Deployment and MLOps: <i>Docker (2+ years), Docker-compose, TF-Serving, MLflow, Streamlit, Flask, FastAPI, Kubernetes (familiar)</i>
Tools	Software Development Tools: <i>Git, DVC, Linux (Ubuntu), Visual Studio Code</i>

Publications

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

Volunteering

October 2019	Public Speaker Data Science Meetup, Edmonton • Presented a talk about explainable AI (XAI) at Edmonton Data Science Meetup. [YouTube Video] [Slides]
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Teaching Assistantships

Fall 2017	Reinforcement Learning in Artificial Intelligence University of Alberta, Edmonton • A comprehensive course on reinforcement learning. Besides grading, I collaborated with 10 TAs in the labs to help 250 students with their programming assignments.
Fall 2016	Introduction to Foundations of Computation University of Alberta, Edmonton • An introduction to data structures in Python. I ran weekly labs and taught data structure concepts and Python programming to the students in my lab and held office hours to help them with their assignments.

Certificates

DevOps	Software engineering and DevOps tools: Docker [Udemy], Kubernetes [Udemy], Redis [Udemy], AWS Lambda [Udemy]
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