

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.
 - Developed a human-in-the-loop **content-based recommender system** to help content editors find the most relevant articles while using the web CMS.
 - Designed and developed a **data generation framework** to create a high-quality and multi-domain dataset for training **task-oriented chatbots**.
 - *Technologies: Python, Tensorflow, Pytorch, Rasa, ParlAI, spaCy, NLTK, Gensim, Scikit-learn, MongoDB, Pandas, Dask, PySpark, AWS, Git, Docker, MLflow*
- 05/17 - 08/17 **Data Analyst** [Finning Canada, Edmonton](#)
- Created regression models for rental machinery residual value prediction using **ensemble methods (Random Forest and GBRT)** with high R^2 (+90%).
 - Developed a **recommender system** using **association rule mining** method.
 - *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 behavior 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*
- 04/15 - 04/16 **Classification of Epileptic Patients** [Bachelor's Thesis](#)
- Applied **Kernel SVM** on statistical and textual information of brain MRI to detect epilepsy. [Publication 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), Scala (Familiar)</i>
ML/DL Tools	Machine Learning & Deep Learning Libraries: <i>Scikit-learn, H2O, Tensorflow, Pytorch</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</i>
Big Data	Big Data Analysis Frameworks: <i>Apache Spark (PySpark)</i>
Database	Data Management & Munging: <i>MySQL, Pandas, Dask, MongoDB, Redis</i>
Cloud	Cloud Computing Platforms: <i>AWS (EC2, S3, Lambda), Microsoft Azure (ML), GCP</i>
Tools	Software Development Tools: <i>Git, Docker, Kubernetes (kubeflow), MLflow</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]
Februray 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 • Presented a talk about explainable AI (XAI) at Edmonton Data Science Meetup. [YouTube Video] [Slides]	Data Science Meetup, Edmonton
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Teaching Assistantships

Fall 2017	Reinforcement Learning in Artificial Intelligence • A comprehensive course on reinforcement learning. Besides grading, I collaborated with 10 TAs in the labs to help 250 students with their programming assignments.	University of Alberta, Edmonton
Fall 2016	Introduction to Foundations of Computation • 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.	University of Alberta, Edmonton

Certificates

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