

# Mansour Saffar

Machine Learning Engineer

+1 (587) 937 0770 | [linkedin.com/in/msaffarm](https://www.linkedin.com/in/msaffarm) | [github.com/msaffarm](https://github.com/msaffarm) | [msaffarmehrjardy@gmail.com](mailto:msaffarmehrjardy@gmail.com)

## Work Experience

- 03/18 - Present **Machine Learning Engineer** [AltaML, Edmonton](#)
- Worked on **extractive summarization**, **neural information retrieval**, and **recommender systems** in various projects.
  - Designed and developed a **data generation framework** to create **high-quality** and **multi-domain** dataset for training **task-oriented chatbots**.
  - Trained **NLU** models for with high accuracy/F1-score (+93%) for **user intent classification** and **entity extraction**.
  - *Technologies: Python, Tensorflow, Rasa, ParlAI, spaCy, NLTK, Gensim, Scikit-learn, MongoDB, Pandas, AWS, Git, Docker*
- 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. Faced with the problem of a large number of records, I augmented the system with specific data structures for speed-up.
  - *Technologies: Python, C++, Pandas, Scikit-learn, H2O, XGBoost, LightGBM, Azure ML, MySQL, Microsoft SSMS, Plotly*

## Selected Projects

- 09/17 - 11/18 **Deep Learning Models for Task-oriented Chatbots** [Graduate Research Assistant \(Master's Thesis\)](#)
- Given the success of **self-attentional models** in machine translation, I researched usage of them for task-oriented chatbots. The results showed faster training with comparable accuracy. [Source Code]
  - Developed an **evaluation method** for **task-oriented chatbots** using profile-conditioned user simulator. This method can model **user characteristic** and behavior in chatbot evaluation.
  - *Technologies: Python, Tensorflow (tensor2tensor), Rasa, spaCy, Git*
- 09/16 - 11/16 **Retinal Image Segmentation** [Machine Learning Course](#)
- Developed 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 **SVM and Kernel SVM models** on statistical and textual information extracted from brain MRIs to detect epileptic patients. [Paper Link]
  - *Technologies: Python, MATLAB*
- 04/15 - 07/15 **Human Fall Detection System** [Rehabilitation Systems Course](#)
- Applied **SVM model** and **image processing techniques** on human pose features extracted from videos to detect fall. [Report Link]
  - *Technologies: MATLAB, LIBSVM*

## 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
  - Thesis: "Self-attentional Models Application for Task-oriented Dialogue Generation Systems"
- 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
  - Thesis: "Classification and Detection of Epileptic Patients Using Brain MRI Images"

## Technical Skills

Languages	<b>Programming Languages:</b> <i>Python (4+ years), C++ &amp; MATLAB (Proficient), Java (Intermediate)</i>
ML/DL Tools	<b>Machine Learning &amp; Deep Learning Libraries:</b> <i>Scikit-learn, H2O, Tensorflow, Familiar with Pytorch</i>
Optimization	<b>Numerical Analysis &amp; Optimization Libraries:</b> <i>NumPy, SciPy, hyperopt</i>
NLP	<b>Natural Language Processing &amp; Conversational AI Libraries:</b> <i>spaCy, NLTK, Gensim, Rasa (Core &amp; NLU), ParlAI</i>
Big Data	<b>Big Data Analysis Frameworks:</b> <i>Familiar with Hadoop, Apache Spark (PySpark)</i>
Database	<b>Data Management &amp; Munging:</b> <i>MySQL, Pandas, MongoDB, Redis</i>
Cloud	<b>Cloud Computing Platforms:</b> <i>AWS (EC2, S3, Lambda), Microsoft Azure (ML)</i>
Tools	<b>Software Development Tools:</b> <i>Git, Docker, Kuernetes (kubeflow)</i>

## Publications

Februray 2019	<b>Ghazal Sahebzamani, Mansour Saffar, Hamid Soltanian-Zadeh</b> • <i>Machine Learning Based Analysis of Structural MRI for Epilepsy Diagnosis</i> (In press) International Conference on Pattern Recognition and Image Analysis (IPRIA 2019) [Paper Link]
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## Teaching Assistantships

Fall 2017	<b>Reinforcement Learning in Artificial Intelligence</b> <a href="#">University of Alberta, Edmonton</a> • 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	<b>Introduction to Foundations of Computation</b> <a href="#">University of Alberta, Edmonton</a> • 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.

## Volunteering

2014 - 2015	<b>Chief Editor</b> • Chief editor of Biotech journal published by University of Tehran student branch of ISBME. I managed 5 students in order to publish a monthly magazine about the latest innovations in biomedical engineering.
Winter 2014	<b>Event Organizer</b> • Helped in organizing the first biomedical engineering technical ideas competition (Ideas Bazaar) with co-operation of Amirkabir University of Technology.

## Certificates

DevOps	<b>Software engineering and DevOps tools:</b> Docker [Udemy], Kubernetes [Udemy], Redis [Udemy], AWS Lambda [Udemy]
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