Ali Zamani

Data Scientist, ML Developer

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Highlights

- Experienced Data Scientist, ML Developer, and member of Amii (Alberta Machine Intelligence Institute) with 3+ years of research and industrial experience in linguistics, sentiment analysis, intent detection, entity extraction, text classification, image processing, and erorr analysis.
- Developed an ML pipeline for Mean Grain Size (MGS) estimation on Azure from core images and conducted error analysis to highlight the shortcomings of a model and areas which can be improved upon.
- Developed and implemented a mental health chatbot (**mymira.ca**) using ML and NLP techniques for detecting the intent and sentiment of a sentence and extracting entities from it.
- Demonstrated strong teamwork skills by collaborating with healthcare workers, students, and colleagues while developing a mental health chatbot and an ML pipeline for MGS estimation, and presenting the project progress to the partners like Pfister, and Suncor.

Relevant Work Experience

Associate Machine Learning Developer (Contract Position) Sept. 2022 - Dec. 2022
AltaML, Calgary, AB

- Implemented a **LightGBM** and **XGBoost** algorithm for predicting the permeability of rock core images with an accuracy of **94%**, saving upwards of 10 million dollars for the client.
- Developed a Machine Learning pipeline from scratch on **Azure** and conducted error analysis to further improve the model performance.

Data Scientist and Chatbot Developer (MIRA Chatbot -) Jan. 2021 – Sept. 2022
Department of Computing Science, University of Alberta and Amii, Edmonton, AB

- Built and implemented the back-end and front-end of the MIRA chatbot (mymira.ca).
- Explored and compared different Recurrent Neural Network language models to detect the intent of a sentence and extract entities from it with an F1-score of **97% and 83%**.
- Used various data augmentation techniques like back translation and synonym replacement to increase the amount of training data in the MIRA chatbot.
- Applied Sentiment Analysis techniques to MIRA Chabot to identify the sentiment of users' responses and modify the chatbot's responses according to detected sentiments.

Co-Founder and Full-Stack Developer May 2019 – Jan. 2021
CafeIot, Tehran, Iran

- Experience in leading a group by managing the technical part of CafeIot startup.
- Collaborated with team members utilizing version control systems such as Git to organize modifications and assign tasks.

Education

M.Sc. in Computing Science Jan. 2021 – Aug. 2022
University of Alberta, under the supervision of *Dr. Osmar R. Zaiane* *Edmonton, AB*

M.Sc. in Digital Electronic Systems Sep. 2017 – Sep. 2020
Amirkabir University of Technology *Tehran, Iran*

B.Sc. in Electrical Engineering Sep. 2013 – Sep. 2017
Kashan University *Isfahan, Iran*

Technical & Soft Skills

Languages: Python, C++, C, MATLAB, PHP, HTML/CSS, JavaScript, SQL
NLP: NLTK, Spacy, Gensim, Hugging Face, Stanza
Libraries: Tensorflow, Pytorch, Keras, Sklearn, Numpy, OpenCV, Scipy, Pandas, React
Tools: Azure ML Studio, Linux, Git, WordPress, Ns-3 simulator, Docker, NGINX, Bash
Database: MySQL, Microsoft SQL Server, SQLite, PostgreSQL
Frameworks: Rasa, Laravel, Django, Flask
Visualizations: Tableau, Matplotlib, Seaborn, Plotly, Microsoft Power BI, LIME
Soft Skills: Communication, Teamwork, Leadership, Work Ethic, Time Management, Creativity

Selected Projects

Microsoft and AltaML Hackathon

- Developed an ML pipeline on Azure to detect burnout of a call center's agent using a pre-trained transformer-based model (BERT).

Kaggle Competitions

- Competed in two Kaggle competitions: Sarcasm Detection and Fake Disaster News Classification, with an accuracy of 85+% and 90+%.

Commonsense Validation and Explanation

- Used state-of-the-art pre-trained transformer-based models (BERT & RoBERTa) to achieve higher performance on common sense validation and explanation tasks.

Relation Extraction

- Developed a classifier to assign a given sentence to one of the four classes of publisher, performer, director, or character.

Parts of Speech Tagger

- Used HMM and Brill taggers to tag sentences - Fined-tuned the HMM and Brill taggers to achieve higher accuracy.

Grammar Checker

- Used context-free grammar (CFG) and constituency parsing to build a grammar checker.

Extract Information with Regular Expressions

- Utilized regular expressions to extract information like dates, and locations from a written text.

Ngram Language Model

- Built n-gram language model from scratch.

Fraud Detection

- Developed a parallel version of basic ML algorithm like Naive Bayes, and Logistic Regression.

Parallel Computing

- Developed a parallel version of basic ML algorithm like Naive Bayes, and Logistic Regression.

Selected Publications

Developing and Implementing a Mental Health Chatbot to Support Healthcare Workers
2021, A.Zamani, M.Gharayat, J.Nobel, O.Zaiane, E.Stroulia – REMAP-D, Vancouver, British Columbia, Canada

Selected Certificates

- IBM Data Science (IBM Skills Network)
- Natural Language Processing (Deeplearning.ai on Coursera)
- Machine Learning (Stanford University on Coursera)