Mohammad Karimiabdolmaleki

Data Scientist, ML Developer

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Highlights

- Skilled Data Scientist and ML developer having 4+ years of experience in designing and developing end-to-end ML and data pipelines
- Deep knowledge of data-centric operations including feature engineering, MLOps, ETL/ELT, and DBMS
- Highly proficient in Natural Language Processing and Computer Vision with 4+ years of research and industrial experience in text and image classification, relation extraction, sentiment analysis, natural language understanding, and feedback generation
- Demonstrated strong teamwork, representation, and leadership skills by collaborating with data scientists and business team while developing a scalable ML pipeline for the Government of Alberta, capable of saving millions of dollars per year
- Adept data science instructor with more than 7 years of experience in teaching as teaching assistant, private tutor, and Alberta AI data science program instructor

Relevant Work Experience

Machine Learning Developer (Contract-Full Time) Sept. 2022 - Present
AltaML, Edmonton, AB

- Developed and optimized a deep learning model pipeline on **Azure** to identify road defects based on Google street view panorama imagery
- Implemented and deployed a quick and **scalable ML pipeline** on Azure to predict on over **2.6 billion** geospatial satellite imagery data points with an accuracy of +**88%** using cross-validation
- Gained a deep understanding of **business values** and **agile delivery model** through close collaboration with the clients and the business team

Data Scientist and NLP Researcher Jan. 2021 – Aug. 2022
University of Alberta and Amii, Edmonton, AB

- Developed and fine-tuned **language models** (i.e., n-grams and recurrent neural networks) to identify grammatically incorrect writing from **big data** resources with an accuracy of +**97%**
- Trained a decoding model to recognize the neural representation of words within phrases based on time series MEG data
- Implemented and fine-tuned ML models from scratch to extract the semantic relation between chunks of a sentence with an accuracy of +**87%**

Software Engineer Sep. 2018 – Jan. 2020
Iranian national robotics team, Tehran, Iran

- Implemented a data acquisition pipeline to collect imagery dataset of objects and employed **YOLO** deep learning algorithm to enable object recognition
- Designed and developed a ML algorithm to enable human robot interaction using speech and prompt processing

Education

M.Sc. in Computer Science Jan. 2021 – Aug. 2022
University of Alberta *Edmonton, AB*

B.Sc. in Software Engineering Sep. 2015 – Sep. 2019
University of Science and Technology of Mazandaran *Mazandaran, Iran*

Selected Projects

Negative Language Transfer Identification

- Developed and fine-tuned eight ML models in a four months period to identity negative language transfer in the English writing of Chinese and Farsi native speakers

Commonsense Validation and Explanation

- Utilized state-of-the-art pre-trained transformer-based models (BERT & RoBERTa) to achieve superior performance on commonsense validation and explanation tasks

Skull Health Grade Assessment

- Developed a deep learning algorithm (Faster R-CNN) using object recognition to identify human skull cracks based on MRI scans with an accuracy of +92%

Dead Trees Detection

- Implemented a scalable ML pipeline using random forest and SVM to detect dead trees of Alberta using freely available satellite imagery and vegetation indices

Face Recognition Platform

- Implemented and prototyped an accurate face recognition module as a product using Convolutional Neural Networks and Raspberry Pi for an Iranian university's dormitory

Technical & Soft Skills

Languages: Python, C++, SQL, C#, JavaScript, PHP, HTML/CSS
NLP: NLTK, Spacy, Gensim, Hugging Face, Stanza
Libraries: Tensorflow, Pytorch, Keras, Sklearn, OpenCV, YOLO, Pandas, Numpy
Tools: Azure, Linux, Git, Docker, Bash, ROS, Google Street View, Google Earth Engine
Database: MySQL, Microsoft SQL Server, SQLite, PostgreSQL
Visualizations: Tableau, Matplotlib, Seaborn, Plotly, Microsoft Power BI, LIME, Streamlit
Soft Skills: Critical Thinking, Leadership, Communication, Work Ethic, Time Management, Creativity

Selected Publications

- **Karimiabdolmaleki, M.**, Farias Wanderley, L., Cutumisu, M., Demmans Epp, C. (2023). Identifying negative language transfer in the English writing of Chinese and Farsi native speakers. European Association for Research on Learning and Instruction (EARLI) Conference, Thessaloniki, Greece, August 22-26.
- **Karimi Abdolmaleki, M.**, Demmans Epp, C., Cutumisu, M. (2022). Automated feedback generation in programming environments: A systematic review. Poster. Systematic Review and Meta-Analysis SIG Poster Session. American Educational Research Association (AERA) Annual Meeting, San Diego, CA, April 22-25.

Community Engagements

ML Instructor **Alberta AI Association**

- Teaching an advanced ML course with more than 15 students, covering NLP topics and MLOps, including data processing, model training, model evaluation, and deployment

Guest Speaker **Action for Healthy Communities**

- Demonstrated leadership and presentation skills by presenting ML-related topics to people from different backgrounds