Ali Zamani

ML Engineer @ Priceline (Booking Holding)

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Relevant Work Experience

Machine Learning Engineer (Full-Time) ▶   Apr. 2023 - Present
Priceline (Booking Holdings), Toronto, ON

- Built a **standardized ML pipeline** for preprocessing, training, and online/offline deployment on **Vertex AI**, featuring modular design, feature store integration, versioning, and backfilling. Orchestrated the pipeline with a reusable **Airflow DAG**.

- Designed a scalable **GenAI framework** on GCP with CI/CD integration, featuring a robust **Inference module** with rate limiting, monitoring, parallel processing, and use-case-specific configuration, and a **Validation module** using **LLM-as-a-Judge** for automated evaluation and continuous quality feedback. Leveraged **LangChain** for orchestrating dynamic LLM workflows and integrating retrieval-augmented generation capabilities.

- Delivered a **hotel review summarization** use case combining sentiment analysis and summarization, with an algorithm to surface high-impact reviews. Achieved a **30% conversion rate uplift** through A/B testing.

- Built a **flight price prediction** use case using **time series forecasting**. Deployed on **Vertex AI** with data from **BigQuery**, enabling data-driven pricing and integration with product features.

- Supported the **Penny Chatbot** using **Vector RAG**, **fine-tuned models**, and **AI agents** to enhance customer interactions through contextual understanding and dynamic response generation.

Data Scientist (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 ML 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

- Developed and deployed the back-end and front-end of the **MIRA chatbot** (mymira.ca), enhancing user experience with advanced NLP.

- Applied data augmentation to improve training data quality.

- Evaluated various Recurrent Neural Network language models for intent detection and entity extraction, achieving an F1-score of **97%** for intent detection and **83%** for entity extraction.

Data Scientist   May 2019 – Jan. 2021
CafeIot, Tehran, Iran

- Developed a linear regression model leveraging IoT sensor data to forecast daily peak electricity load, achieving an average **accuracy of 90%**.

- Built a price optimization engine for smart energy systems using IoT smart meter data, combining **A/B testing** for demand elasticity and linear programming for time-of-use pricing.

Education

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

M.Sc. in Computer Engineering	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

Programming: Python, C++, C, MATLAB, PHP, HTML/CSS, JavaScript

NLP: NLTK, Spacy, Gensim, Hugging Face, Stanza

Libraries: Tensorflow, Pytorch, Keras, Sklearn, Numpy, Scipy, Pandas, React

Tools: GCP, Azure ML Studio, Linux, Git, Spark, Flink, Docker, NGINX, Jira

Database: SQL, MySQL, Microsoft SQL Server, SQLite, PostgreSQL, BigQuery

Frameworks: Rasa, Laravel, Django, Flask

Visualizations: Tableau, Matplotlib, Seaborn, Plotly, LIME

Software Skills: Communication, Teamwork, Leadership, Work Ethic, Time Management, Creativity

Selected Projects

Priceline Hackathon (Placed 1st and 3rd in Consecutive Years)

- **Neighborhood Recommendation System**: Leveraged vector embeddings to suggest neighborhoods to users based on their preferences, enhancing personalized travel experiences.

- **Travel Assistance Chatbot**: Developed a chatbot using GPT-4 to assist customers in finding their desired travel destinations, significantly improving user engagement and satisfaction.

Ml-Pipeline Template

- Developed an ML pipeline template to create a user friendly utility to drastically speed up the development and implementation of a machine learning model for all sorts of various problems.

Microsoft and AltaML Hackathon

- **Burnout Detection System**: Built an ML pipeline on Azure to detect burnout among call center agents, utilizing a pre-trained transformer-based model (BERT) for accurate sentiment analysis and stress detection.

Kaggle Competitions

- **Sarcasm Detection and Fake Disaster News Classification**: Achieved over 85% accuracy in sarcasm detection and over 90% in fake disaster news classification.

Commonsense Validation and Explanation

- High performance in Common Sense Validation and Explanation tasks using BERT & RoBERTa.

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