

Amir Gholizad

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Summary: Graduating M.Sc. Physics student with research experience in **Data Science** and developing ML and DL models, with proficiency in TensorFlow, Scikit-learn, and PyTorch. **Junior Backend Developer**, specializing in AWS and cloud-based solutions, with proficiency in FastAPI, PostgreSQL, and Docker. Experienced in preprocessing data for machine learning models and deploying AI-based web apps and databases to the cloud.

Skills

Data Science: Numpy, Pandas, Seaborn, Matplotlib, Keras, Pytorch, TensorFlow, Scikit-learn, **OpenAI**

DevOps: **AWS** (EC2, Lambda, S3, Elastic Beanstalk, Lightsail) - Vercel - CI/CD - **Docker**

Backend and Server Management: **FastAPI** - NginX

Frontend: HTML - CSS

Database: **PostgreSQL**

Other: **Linux** - **Git**

Projects

CRUD Web App

- Developed a **CRUD** web application using **FastAPI** and **PostgreSQL** for database management.
- Deployed the application on an **EC2** instance, ensuring scalability and reliability.
- Implemented **Nginx** as a reverse proxy to handle incoming traffic efficiently.
- Utilized **Docker** for containerization, simplifying the deployment process.

Exploring Dimensionality Reduction Techniques for Fluid Flow Analysis

- Investigated fluid behavior using Proper Orthogonal Decomposition (POD) and Dynamic Mode Decomposition (DMD) techniques.
- Focused on analyzing the vorticity field of a two-dimensional flow past a cylinder at Reynolds number $Re = 200$.
- Applied a combination of POD and DMD methods to reduce the dimension and predict future flow modes.

Maximum Likelihood Estimators of Weibull and Uniform Distributions

- Utilized **R** programming language to estimate the parameters of Weibull and Uniform probability distributions using Maximum Likelihood Estimators (**MLEs**).

IMDB Reviews Sentiment Analysis

- Implemented a Sequential model in **Keras** with 3 **Dense** layers and **Sigmoid** Activation functions.
- Compiled the model with **categorical cross entropy** loss and **Adam** optimizer.
- Achieved **85% precision** on testing set in classifying reviews into "positive" and "negative" groups.

Experience

Memorial University of Newfoundland, St. John's, NL, CA
Researcher (Part-Time)

September 2022 – Present

Analyzing Potential Functions Derived from Tick Data Using Machine Learning and Technical Analysis

- Pre-processing: Use Fractional Differentiation and normality tests.
- Estimation: Estimate probability density functions using Kernel Density Estimation.
- Feature Extraction: Construct Potential Functions and extract unique features.
- Indicator Creation: Build indicators based on Technical Analysis methods.
- Correlation Analysis: Examine correlations of new indicators with SMA, RSI, MACD, etc.
- Machine Learning: Build, test, and fine-tune a Random Forest Model to study the predictability of extracted features and their importance score.

Education

Master of Science in Physics (GPA: 3.75/4.00) Memorial University of Newfoundland, St. John's, NL, CA (2022 – 2024)