ABOLFAZL ZOLFAGHARI

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SUMMARY

Machine Learning Researcher with a Ph.D. in Industrial Engineering and 4+ years of experience in predictive modeling, optimization, and data-driven research with 20+ peer-reviewed papers in optimization, machine learning, and data-driven system modeling. Skilled in time series forecasting, PyTorch, TensorFlow, and advanced ML algorithms. Proven record of developing, deploying, and optimizing models for forecasting, energy efficiency, and decision-making. Passionate about applying machine learning and optimization to solve complex, real-world problems in energy and sustainability.

TECHNICAL SKILLS

Programming & Data: Python, SQL, Pandas, NumPy
ML/DL Frameworks: Scikit-learn, PyTorch, TensorFlow, Keras, kerastuner, Optuna, Transformers
Core Competencies: Time Series Forecasting, Optimization, Statistical Modeling, Deep Learning
Visualization: Tableau, Power BI, Matplotlib, Seaborn
Deployment & Tools: FastAPI, Docker, Git/GitHub, Jupyter, Google Colab, AWS

SELECTED PROJECTS (GitHub: abolfazl6678)

Energy Demand Forecasting (Personal Project)

- Built deep learning models using PyTorch to forecast energy consumption and solar generation based on weather and load data.
- Integrated time series analysis and optimization techniques to improve prediction accuracy.

Retail Demand Forecasting – Deep Learning

- Developed a Deep Learning model using TensorFlow and PyTorch to predict daily product demand in retail stores, leveraging the Kaggle Retail Inventory Forecasting dataset.

Optimization-Based Predictive Modeling (PhD Research, OSU)

- Designed and implemented optimization algorithms for mechanical systems, reducing weight by 10%.
- Applied predictive ML models to estimate vessel burst pressure, achieving a 25% improvement in prediction accuracy.

Healthcare Cost Prediction – Caltech Capstone

- Built regression models in Python and Scikit-learn to predict patient healthcare costs with 93% accuracy using SQL and Tableau and python ML libraries.

End-to-End ML Deployment Pipeline (FastAPI + Docker + AWS)

- Built an automated ML pipeline for real-time predictions, integrating data preprocessing, model training, and deployment with version control in GitHub.
- Reduced deployment time by automating data validation, model packaging, and API hosting using FastAPI and Docker on AWS.
- Implemented monitoring and performance tracking to ensure high model uptime and reproducibility.

Marketing-Campaign-Analysis-with-EDA-and-Hypothesis-Testing:

- Conducted exploratory data analysis (EDA) and hypothesis testing on marketing campaign data to assess the impact of product, price, place, and promotion strategies on customer acquisition and campaign effectiveness.

Personalized-Music-Recommendations-ML:

- Developed an unsupervised machine learning model to cluster Rolling Stones songs from Spotify, uncovering patterns in musical features to enhance music recommendations.

PROFESSIONAL EXPERIENCE AND PROJECTS

Production and Manufacturing Engineer, Luminit., Torrance, CA Apr. 2023 - Present

- Automated production data collection and analysis, improved process efficiency and reduced downtime.
- Developed and enhanced 5+ custom software programs for production, improving throughput.
- Applied predictive modeling for cost estimation and ROI analysis to support business decisions.

Mechanical Design Engineer, KLA Corp., Milpitas, CA Jun. 2021 - Aug. 2022

- Collaborated with teams to bring designs into production by data-driven testing/validation.
- Designed and tested 10+ mechanical components, improving reliability and performance.
- Introduced structured data analysis for design validation, reducing failure rates

Graduate research and teaching assistant, The Ohio State University May 2018 – May 2021

- Applied machine learning to predict vessel burst pressure, improving accuracy over classical methods.
- Reduced precision molding process costs by 30% through optimization and simulation-based modeling.
- Developed new optimization approach for gear system design, reducing weight by 10%.

EDUCATION

Caltech Post Graduate Program in Data Science Center for Tech., Pasadena, CA Sep. 2024 - April 2025

Ph.D. in Industrial Engineering, The Ohio State University, Columbus, OH Aug. 2018-May 2021