Mustafa Aslan

Data Scientist • Mathematical Modeller
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EDUCATION

PhD in Probabilistic Machine Learning in Healthcare Management
Cardiff University, Cardiff, UK *Oct 2024 — Present.*

- Recipient of WGSSS-ESRC Studentship Award
- Project focused on enhancing discharge care coordination in healthcare and social care using a probabilistic data-driven modelling approach
  - Supervisors: Prof Bahman Rostami-Tabar, Dr. Jeremy Dixon

MSc in Financial Mathematics
Middle East Technical University, Ankara, Turkey *Oct 2017 — Aug 2021*

- Dissertation: Effects of Exchange Rate Volatility and Firm-Specific Features on the Rates of Returns of the Manufacturing Firms Listed in Borsa İstanbul: A CAPM Approach
  - Statistical&Machine learning techniques used: Markov Switching GARCH Models, ARIMA, Panel Data Econometrics, Principal Component Analysis

BSc in Business Administration
Middle East Technical University, Ankara, Turkey *Oct 2011 — Aug 2015*

WORK EXPERINCES

Reporting and Data Analytics Executive
AKBANK (a leading bank in Turkey), Istanbul *Jun 2022 — Sep 2024*

- Applied time-series forecasting and machine learning techniques, including ARIMA, Bayesian Time Series, Prophet, ANN, LSTM, Random Forest, LightGBM and XGBoost, to historical data for making long-horizon forecasts of daily customer call volume. The best model achieved over 94% accuracy (1-MAPE) in forecasting all days of the next month.
- Implemented machine learning models (e.g., XGBoost, LightGBM, CatBoost) to predict customer behavior with an over recall rate of 70% and an accuracy rate of 85%, enabling fewer customer complaints and increase sales by 14%.
- Analyzing large amounts of data to identify trends and find patterns, signals and hidden stories within customer calls data.
- Applied machine learning techniques (Z-score, IsolationForest) to detect anomalies.
- Applied unsupervised machine learning techniques (DBSCAN, Gaussian mixture, K-means) to cluster customers.
- Hyperparameter tuning for machine learning models using Hyperopt, Optuna and KerasTuner.

Research Associate
The Economic Policy Research Foundation of Turkey (Think Tank), Ankara *Jan 2022 — Apr 2024*

- Determined areas of research to increase knowledge in the particular field.

- Utilizing inferential statistics such as hypothesis testing (e.g., t-test, ANOVA test, population proportion test), confidence intervals, correlation analysis and regression analysis to make inferences and draw conclusions about data.
- Developed statistical models (regression analysis, panel data modeling) for regional development projects to contribute to data-driven decisions.

Senior Process Development Analyst
ETI GIDA Inc (a major FMCG player in Turkey), Eskisehir *Jun 2019 — Jan 2022*

- Interacted with internal customers to understand business needs and translate into requirements and project scope.
- Assessed the impact of current business processes on users and stakeholders and evaluated potential areas for improvement.
- Maintained strong working knowledge of ERP (SAP), CRM and business intelligence tools and operational features.

Internal Auditor
Turk Telekom Inc. (the telecom giant of Turkey), Ankara *Nov 2015 — Jun 2019*

- Performed strategic planning, execution and finalization of audits using data analytics and critical thinking skills.
- Investigated discrepancies discovered during the auditing process.
- Recommended new methods to improve internal controls and operating efficiency.

RESEARCH INTERESTS

- Data-driven decision making
- Machine learning
- Reinforcement learning and stocastic optimization in decision making
- Time series forecasting
- Probabilistic forecasting
- Conformal prediction for time series forecasting

SKILLS & EXPERTISE

Expertise: Mathematical and Statistical Modeling, Machine Learning, Time Series Analysis and Forecasting, Stocastic Optimization and Reinforecement Learning, Statistical and Explanatory Data Analysis
Programming: Python SQL
Reporting: Quarto Advanced Excel QlikView SAS
Languages English (Fluent), Kurdish (Native), Turkish (Native)

PROFESSIONAL DEVELOPMENT

- Certification:
  - Data Science: Machine Learning, HarvardX (edX)
- Books (some of my go-to books):
  - Forecasting: Principles and Practice (Hyndman et al, 2021)
  - Introduction to Statistical Learning with Applications in R (Tibshirani et al, 2019)
  - The Elements of Statistical Learning (Tibshirani et al, 2008)
  - Probabilistic Machine Learning: An Introduction (Murphy. 2022)
  - Reinforcement Learning: An Introduction (Barto et al, 2018)

- Reinforcement Learning and Stochastic Optimization (Powell, 2022)
- Time Series Forecasting in Python (Peixeiro, 2022)
- A Student's Guide to Bayesian Statistics (Lambert, 2018)
- Dive into deep learning (Zhang, 2022)

References

Available upon request