Elaheh Dastan

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Professional Summary

Senior ML Engineer with 7+ years of experience designing and deploying scalable machine learning systems and data pipelines. Expert in building end-to-end solutions from data collection and ETL to model training and production deployment. Proven track record of delivering data-driven products with measurable business impact across e-commerce, fintech, and transportation domains. Strong foundation in both software engineering and data science with published research in intelligent transportation systems.

Experience

Digikala **Tehran, Iran**

Senior Data Scientist *Jul 2024 – present*

- Accelerated semantic embedding model fine-tuning by **30%** using contrastive learning with the **FlagEmbedding framework**, achieving faster convergence and improved embedding consistency.
- Trained a **Query Understanding (QU)** model leveraging user query logs and click data to infer user intent and reformulate low-confidence queries, reducing zero-click searches by **4%**.
- Improved search relevance via **multi-metric fine-tuning** and category-consistent retrieval using Category Loss and GMV-weighted balancing, boosting CR by **4%**.
- Designed **Claude-powered** query variation generation to improve generalization and long-tail recall, decreasing zero-click searches by **5%**.
- Led the **Exact Match project** to enable precise product code recognition (e.g., "PG32UCD Laptop") by implementing tokenizer modifications, custom masking, and a **Redis-based code index**, that reduced seller complaints by **20%**.
- Investigated feedback-driven search optimization using user engagement signals, and evaluated **ANCE**s suitability for near-real-time embedding refresh and retraining.
- Built scalable user segmentation using **embedding-based**, **feature-driven**, and **clustering** techniques; improved conversion rate by **3%** through iterative class refinement and premium user targeting.
- Compared Semantic business aware and Elastic Search pipelines across top queries to guide searches to the best engine increasing add-to-cart by **3%**.
- Developed an **LLM chatbot** to guide users through product discovery and selection on Digikala. Integrated **semantic retrieval** and **contextual recommendation** pipelines, increasing user engagement time by **5%**.
- Built an **image-to-product retrieval system** enabling users to upload or share images to find visually similar products. Designed and trained a **dual-encoder model** combining **CLIP-based visual embeddings** with textual product representations, achieving **92% top-10 accuracy**.
- Integrated an **object detection pipeline** into the image search system to automatically localize products within uploaded images, improving matching precision by **3%** and reducing false positives by **4%** through region-based embeddings.

Skills: Python, PyTorch, TensorFlow, LLMs, Retrieval Systems, Vector Search, ElasticSearch, Redis, Data Engineering, Experiment Design, A/B Testing, Statistical Modeling

Asan Pardakht **Tehran, Iran**

Machine Learning Consultant *Feb 2024 – Jul 2024*

- Designed portfolio optimization using Modern Portfolio Theory and Deep Q-Learning to maximize Sharpe ratio across 20+ cryptocurrencies.
- Built LSTM and Prophet models for price forecasting, achieving 12–18% MAPE on major coins like BTC and ETH.
- Developed a recommendation system using LightGBM with user clustering (KMeans on behavioral data), increasing simulated ROI by 9.3%.
- Integrated Monte Carlo simulations for profit expectation under different market scenarios. Delivered a prototype that outperformed baseline strategies (e.g., equal-weighted portfolio) by 15% in backtesting.

Skills: LightGBM, Prophet, Time Series Forecasting, Deep Reinforcement Learning (DQN), Model Evaluation (MAPE, Sharpe Ratio), Portfolio Optimization, Monte Carlo Simulation, Backtesting, Modern Portfolio Theory (MPT), Cryptocurrency Markets, Quantitative Trading Strategies

Snapp! **Tehran, Iran**

Senior ML Engineer *2021 – 2024*

- Built a **recommendation system** to recommend speed for streets that don't have sufficient data which **improved coverage from one million shared streets to 3 million**.
- Initiated a project to give ETA (estimated time of arrival) in over 5 cities in both **Iran and Iraq** that overall **improved R2 by 20%**.
- Teamed with 2 cloud engineers to develop a complete pipeline to train, version and deploy models using **Airflow, Spark, MLFlow, Katib, Feast, Tensorflow Server, FastAPI, Kafka Stream, Gitlab CI/CD** that **reduced train and deployment process time 70%**.
- Developed a **Golang** microservice to benchmark the accuracy of different models real time, log metrics like **response time** using **Prometheus** and create dashboards on **Grafana** that sped up QA by 80%.
- Collaborated with product to **cluster** Iran cities from over 40 down to 10 which helped in reducing number of models.
- Implemented **HMM** algorithm to match GPS probes of drivers on streets and calculate speed of each driver afterwards.
- Trained and deployed models to **predict** the speed of street for future time buckets which **reduced ETA MAPE 5%**.
- Owned a project to suggest the best pickup location to drivers and passengers that **reduced offer-to-accept time 5%**.

Skills: Collaborative filtering, Content-based filtering, Time-series forecasting, RNN, SARIMA, Tree-based models, Hierarchical clustering, Unsupervised learning, predictive modeling

Snapp! **Tehran, Iran**
Software Engineer AI/ML *2020 – 2021*

- Integrated **vector database** solutions for efficient **similarity search** to return similar items in snapp shop which **increased conversion rate 5%**.
- Fine tuned a pre-trained **OCR** model (EasyOCR) and deployed to read ID cards for a driver signup project. This implementation significantly **reduced the signup process time from days to hours**.
- Employed **ONNX** to **boost inference speed by 10%** for a transformer model and separate training and deployment phases.
- Engineered a **sentiment analysis** service utilizing **Support Vector Machine (SVM)** to analyze over 10,000 Tweets daily for real-time insights into public sentiment regarding the company.
- **Mentored over 5 new joiners**, launched a consistent mentorship program and a new interview pipeline.

Nahal **Tehran, Iran**
ML Engineer *2018 – 2020*

- Fine tuned and deployed **LLM models** on **GPU** to translate text between support team and foreign customers.
- Developed a **CRF**-based model for **NER** that assisted address search engine to **increase successful searches by 15%**.
- Spearheaded the development and deployment of a **stacked Long Short-Term Memory (LSTM)** model to predict stock and cryptocurrency values, achieving **prediction accuracy of 87%**.
- Led the design and implementation of a **type ahead search system** for stock search functionality, leveraging prefix matching and a custom-built **trie data structure**, achieved a **30% reduction in stock search time**.
- Developed an AI-driven chatbot utilizing the **BERT transformer** model to assist customers with inquiries about stocks, facilitating informed investment decisions which drove a **20% increase in user engagement**.

Avidnet Technology **Tehran, Iran**
Software Engineer AI/ML *2017 – 2018*

- Deployed neural network models for time series forecasting on **Raspberry Pi 4** and decision tree for classification on **ARM Cortex-M52**.
- Classified patients to over 20 classes and used **active learning** to improve accuracy.
- Implemented **Kalman filtering** to **enhance the GPS positioning by 10%**.
- Predicted where the person should be in a 30 minute time bucket using **time-series forecasting deep learning models** and alert otherwise.
- Employed **Tensorflow Lite** for models to **reduce memory usage by 50%** to be able to run the model on mobile phones.
- Launched a **Kafka** pipeline to gather data from sensors using **Protobuf** and store into **DataLake** capable of handling **+20k messages per second**.
- Led the design and implementation of an **event detection** service to alert in case of patient's abnormal behavior that achieved **0.95 F1** score.

Skills: TinyML

Education

Amirkabir University of Technology
M.Sc. in Artificial Intelligence *2022 — 2024*
Research Focus: Deep Learning, Time Series Analysis, Intelligent Transportation Systems

Amirkabir University of Technology
B.Sc. in Software Engineering *2017 — 2022*
Relevant Coursework: Machine Learning, Data Structures, Algorithms, Database Systems, Statistics

Publications & Research

IEEE Intelligent Vehicles Symposium (IV)

Deep ETA Prediction for Urban Transport Systems *2022*

- Co-authored research paper on deep learning-based ETA prediction for ride-hailing services
- Proposed novel architecture combining spatial-temporal features with real-time traffic patterns
- Achieved state-of-the-art performance on large-scale urban transportation dataset
- View Publication

Skills

Programming Languages and frameworks: Python, Tensorflow, Tensorflow Lite, Pytorch, HuggingFace, PySpark, Go, Rust, C, Java

Technical Skills: Deep Learning, Predictive Modeling, Time Series Forecasting, Data Mining, Natural Language Processing, Recommendation Systems, Statistical Analysis, A/B Testing, Experiment Design, Feature Engineering, ETL/ELT

Data Visualization & Analytics: Matplotlib, Seaborn, Plotly, Pandas, NumPy, Scikit-learn, XGBoost, LightGBM

Databases: MySQL, PostgreSQL, Cassandra, MongoDB, Redis

ML Infrastructure: MLFlow, Airflow, Katib, Feast, Beam, Temporal.io, Kubeflow

Messaging Systems: NATS, Apache Kafka, EMQ, RabbitMQ

Version Control Systems: Git, DVC

Tools: Docker, Kubernetes, Helm, ArgoCD, Terraform, Teleport, Ansible

Operating Systems: Linux, macOS

Methodologies: Agile, Scrum, Kanban, Scrumban

Cloud Providers: Azure, GCP, AWS

Cloud Services: Vertex AI, AWS EC2, AWS ECS, AWS EKS, AWS SageMaker, AWS Lambda, AWS RDS, AWS S3, AWS Glue, AWS Athena

Language

Persian: Native

English: Fluent