

# SEYED ALI SHAHEBRAHIMI

## Machine Learning Engineer

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### PROFESSIONAL SUMMARY

Machine Learning Engineer with 4+ years of experience designing, building, and deploying production ML systems. Specialised in end-to-end pipeline development using PyTorch, TensorFlow, and PySpark, with proven expertise in containerised deployment (Docker/Kubernetes), orchestration (Vertex Pipelines/KFP, Amazon SageMaker), and production monitoring. Experienced in deep learning architectures including Graph Neural Networks, computer vision (YOLOv8), and NLP (Hugging Face Transformers). Strong track record of implementing MLOps best practices — experiment tracking (MLflow, W&B), CI/CD automation, data validation, and post-deployment observability. Published co-author at IJCLR 2025.

### TECHNICAL SKILLS

- **ML & Deep Learning:** PyTorch, TensorFlow, scikit-learn, Graph Neural Networks (GNN/GIN, PyG), PySpark, Hugging Face Transformers, YOLOv8, feature engineering
- **MLOps & Deployment:** Docker, Kubernetes, MLflow, Weights & Biases, Google Vertex Pipelines / Kubeflow (KFP), CI/CD (GitHub Actions, Gitea), Amazon SageMaker, AWS (Lambda, EC2, S3, DynamoDB), FastAPI, Flask
- **Explainability & Monitoring:** SHAP, permutation importance, post-deployment monitoring, graph analysis (community detection, centrality, link prediction)
- **Programming & Tools:** Python, SQL, R, MATLAB, JavaScript/TypeScript; Git, Agile (Scrum/Kanban), Jira, Linux

### WORK EXPERIENCE

#### Machine Learning Engineer (Industry Placement) — Azaries, Guildford, UK Aug 2024 – Aug 2025

- Designed and deployed end-to-end ML pipelines for structured, text, and graph data (PyTorch, PyTorch Geometric, scikit-learn, PySpark), combining ensemble methods and deep learning to achieve scalable training at lower computational cost across multiple domains and switch between accuracy vs cost trade-offs.
- Established production-grade MLOps infrastructure: Docker/Kubernetes containerisation, CI/CD with Gitea, experiment tracking (MLflow, W&B), automated testing, data validation, and post-deployment monitoring.
- Developed and benchmarked GNN and GIN architectures for graph classification tasks using PyTorch Geometric, including the Mutagenesis benchmark and a proprietary graph dataset.
- Integrated LangChain with a fine-tuned Hugging Face Transformer to auto-generate natural-language summaries of model outputs for non-technical stakeholders.
- Delivered model explainability via SHAP, permutation importance, and graph-level analysis, translating complex outputs into actionable stakeholder-ready reports.
- Built real-time KPI dashboards (Tableau, Plotly) tracking model performance metrics including accuracy, F1-score, and ROC-AUC.

#### Software Developer — Boland Afarin Eram Co, Shiraz, Iran Feb 2020 – Feb 2023

- Designed and deployed automated ETL pipelines and ML models (churn prediction, demand forecasting, risk scoring) using Python and scikit-learn on structured business data.
- Integrated trained model outputs into Python backend services via REST APIs, enabling real-time prediction endpoints consumed by internal applications.
- Engineered SQL- and JSON-based data pipelines; applied EDA techniques to inform feature selection and model architecture decisions.
- Built full-stack internal web applications using React, C#, ASP.NET, and SQL Server.

### KEY PROJECTS

- **Graph Neural Network Classification (PyG, PyTorch)** — Implemented and benchmarked multiple GNN architectures on the Mutagenesis dataset; evaluated expressiveness of GIN vs standard message-passing networks.
- **Fog-Robust Vehicle Detection — MSc Dissertation** — Deployed YOLOv8 for object detection on foggy driving images; applied transfer learning and targeted data augmentation; tracked experiments with W&B; achieved +5.8% mAP improvement over baseline.
- **Cost-Aware Stock Market Analysis Platform (AWS)** — Designed serverless architecture (Lambda, EC2, S3, CloudFormation, ELB) achieving ~15% reduction in compute costs.
- **NER & Text Classification Pipeline (RoBERTa/LSTM)** — Built end-to-end PyTorch training pipeline with automated CI/CD via GitHub Actions for Named Entity Recognition and text classification.
- **Unified ML Preprocessing Pipeline** — Developed a modular, configurable preprocessing framework handling diverse data types to accelerate ML data preparation across projects.

## PUBLICATION

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Co-author. *"Integrating Language Models into Inductive Logic Programming: Enhancing Knowledge Integration and Human-Centric Explainability," IJCLR 2025, University of Surrey.*

## EDUCATION

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| <b>MSc Data Science (Merit)</b> — <i>University of Surrey, Guildford, UK</i>       | 2023 – 2025 |
| Dissertation: Fog-Robust Vehicle Detection using YOLOv8 — +5.8% mAP over baseline. |             |
| <b>BSc Computer Engineering (Software)</b> — <i>Shiraz Azad University, Iran</i>   | 2016 – 2019 |