

Mohammad Abdollahi

Data Scientist & Operational Researcher · Forecasting, optimisation and analytics for operational decisions

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PROFILE

Researcher and data scientist with a PhD in Operational Research (University of Essex, 2024) and an MSc in Computer Engineering – Artificial Intelligence with Distinction. Research on forecast-informed pricing, demand management and routing for last-mile delivery, published in the European Journal of Operational Research and Annals of Operations Research, and on scalable forecasting systems deployed in industry. Delivered a 30-month Knowledge Transfer Partnership between Priory Direct and the University of Kent, building a forecasting and procurement decision system across more than 1,200 products. Teaching experience at undergraduate and postgraduate level in AI, machine learning, statistics, programming and data science.

ACADEMIC AND PROFESSIONAL EXPERIENCE

KTP Associate – Data Scientist

March 2024 – September 2026

Priory Direct and the University of Kent (Knowledge Transfer Partnership) · United Kingdom

- Led the technical design and delivery of an end-to-end forecasting and procurement decision system across more than 1,200 products, translating analytics into the business's day-to-day purchasing process.
- Built reproducible Python and SQL workflows for data extraction, cleansing, feature engineering, chronological backtesting, model selection and automated reporting across SAP Business One, SQL Server and SQLite.
- Developed and compared statistical, machine-learning and neural forecasting methods, including intermittent-demand models and gradient boosting; in chronological backtests the selected models improved forecast performance by approximately 28–30% relative to the approach the business used previously.
- Designed model-selection, fallback and validation logic for heterogeneous and sparse demand, including short-history, intermittent and new-product cases.
- Implemented data-quality, anomaly and reproducibility controls so that outputs were suitable for downstream ordering decisions.
- Worked directly with management, procurement, software and academic stakeholders to frame questions, review model behaviour and embed the outputs in procurement workflows.
- Prepared a manuscript on a unified forecasting framework with global and demand-type-gated local models, drawing on the deployment.

Teaching Assistant – Data Science, Statistics and Computing

2021 – 2023

University of Essex · Colchester, United Kingdom

- Supported teaching in Artificial Intelligence and Machine Learning Applications, Neural Networks and Deep Learning, Applied Statistics, Python, R, SQL, Java, Databases, Data Structures and Algorithms, Stochastic Processes and Mathematics for Data Science.
- Delivered practical sessions and problem-solving support, guided programming and modelling exercises, supported assessment and gave formative feedback to students from varied disciplinary backgrounds.

PhD Researcher – Operational Research

2020 – 2024

University of Essex · Colchester, United Kingdom

- Thesis: Dynamic Pricing and Emission Control for E-Grocery Fulfilment. Supervisors: Dr Xinan Yang and Dr Michael Fairbank. Defended 27 June 2024.
- Modelled demand, booking behaviour, capacity and fulfilment decisions under uncertainty using real-world customer and operational data.
- Developed forecasting, dynamic-pricing, opportunity-cost, routing and dynamic-programming methods in Python and MATLAB; computational experiments produced simulated profit improvements of 13.57–21.43% relative to the comparison policies.
- Published in the *European Journal of Operational Research* (2023) and *Annals of Operations Research* (2026).

Researcher and Software Developer

2013 – 2019

Services Centre of Qom Islamic Seminary · Qom, Iran

- Developed NLP and software tools for Arabic text processing, knowledge organisation and AI-assisted workflows, including an AI-assisted flowchart and decision-workflow application.
- Combined algorithm development with maintainable software engineering over a six-year programme of work.

Lecturer in Computer Science

2012 – 2014

Pooyesh Higher Education Institute · Qom, Iran

- Taught programming, algorithms, data structures, artificial intelligence and related computing modules, and supported practical software-development projects.

EDUCATION

PhD in Operational Research

2020 – 2024

University of Essex, United Kingdom · Thesis: Dynamic Pricing and Emission Control for E-Grocery Fulfilment.

MSc in Computer Engineering – Artificial Intelligence (Distinction)

2010 – 2013

K. N. Toosi University of Technology, Iran · Research in genetic programming, machine learning and optimisation, leading to three peer-reviewed publications.

BSc in Computer Engineering – Software Engineering

2004 – 2010

Payame Noor University, Iran

PUBLICATIONS

1. Mohammad Abdollahi, Xinan Yang and Michael Fairbank (2026). Efficient Forecast-Based Routing and Dynamic Time Window Management for Attended Home Deliveries. *Annals of Operations Research* . DOI: 10.1007/s10479-026-07285-9. Open access.
2. Mohammad Abdollahi, Xinan Yang, Moncef Ilies Nasri and Michael Fairbank (2023). Demand Management in Time-Slotted Last-Mile Delivery via Dynamic Routing with Forecast Orders. *European Journal of Operational Research* , 309(2), 704–718. DOI: 10.1016/j.ejor.2023.01.023.
3. Seyed Mohammad Hossein Hosseini Amini, Mohammad Abdollahi and Maryam Amir Haeri (2020). Rule-centred genetic programming (RCGP): an imperialist competitive approach. *Applied Intelligence* , 50, 2589–2609. DOI: 10.1007/s10489-019-01601-6.
4. Mohammad Abdollahi and Mahdi Aliyari Shoorehdeli (2020). Shuffled Frog-Leaping Programming for Solving Regression Problems. *Journal of AI and Data Mining* , 8(3), 331–341. DOI: 10.22044/JADM.2020.7847.1924.
5. Mohammad Abdollahi and Mahdi Aliyari Shoorehdeli (2013). Cartesian Genetic Programming with Crossover for Solving Elliptic Partial Differential Equations. *11th Intelligent Systems Conference* .

Manuscripts in progress

- A unified forecasting framework with global and demand-type-gated local models: evidence from deployment in a small packaging business. *Manuscript complete; preparing for submission*.
- Enhancing Opportunity Cost Approximation through Incorporation of Delivery Price Reduction. *Under revision (revise and resubmit)*.

TEACHING

- University of Essex (2021–2023), Teaching Assistant: Artificial Intelligence and Machine Learning Applications; Neural Networks and Deep Learning; Applied Statistics; Python; R; SQL; Java; Databases; Data Structures and Algorithms; Stochastic Processes; Mathematics for Data Science. Practical sessions, problem-solving support, assessment support and formative feedback.
- Pooyesh Higher Education Institute (2012–2014), Lecturer in Computer Science: programming, algorithms, data structures, artificial intelligence and related computing modules; supervision of practical software projects.
- Approach: concise conceptual explanation, worked examples and coding activities; baselines and honest evaluation; adaptation for students from different disciplinary backgrounds.

TECHNICAL SKILLS

Programming and data	Python (pandas, NumPy, SciPy, scikit-learn, Statsmodels), SQL, R, MATLAB, Java, C#; SQL Server, SQLite, PostgreSQL, SAP Business One
Forecasting and machine learning	ETS, ARIMA, Theta, intermittent-demand methods, XGBoost, LightGBM, Random Forest, neural forecasting, regression and classification, feature engineering, model evaluation
Operational research	Dynamic pricing, demand management, vehicle routing with time windows, dynamic programming, simulation, stochastic optimisation, metaheuristics
Engineering and reporting	Git/GitHub, CI/CD, Docker, MLflow, Airflow, DVC, Optuna, Power BI, Power Query, DAX

RECOGNITION AND PROFESSIONAL DEVELOPMENT

- 6th place, VN2 Inventory Planning Challenge (2025). A public, independently scored inventory-planning competition with around 180 participants. Only 25 entries beat the organiser’s benchmark.
- Certificate Program in Agentic AI (Johns Hopkins University / Great Learning) – In progress (2026); End-to-End MLOps Bootcamp – In progress (2026); AI Engineering Buildcamp: From RAG to Agents – Completed 2026; Python Forecasting Masterclass (Maven) – Completed 2024; NATCOR Forecasting & Predictive Modelling; Stochastic Modelling (NATCOR (UK OR doctoral training)) – Completed.

References available on request. Generated from the same record as www.mohammadabdollahi.co.uk.