NASSAR NAIF ALSHARIF

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RESEARCH INTERESTS

Forecast-to-decision systems: when improvements in predictive accuracy translate into better operational decisions, and when they do not. Related interests include decision-focused and predict-then-optimize evaluation; resource allocation under uncertainty; probabilistic forecasting and calibration; reproducible benchmarking and leakage-controlled temporal evaluation; and retrieval-augmented generation with large language models.

EDUCATION

Master of Artificial Intelligence (MAI)
University of Technology Sydney (UTS) | *Sydney, Australia*
Aug 2023 - Jul 2025 | GPA 6.13 / 7.0 | Sub-major: Natural Language Processing

- Fully funded by the Saudi Arabian Government Scholarship. High Distinction in five subjects, including 99/100 in Natural Language Processing Algorithms.

Bachelor of Computer Engineering
Umm Al-Qura University | *Makkah, Saudi Arabia*
Jul 2017 - Aug 2022 | 178 credit hours

- Faculty of Computers and Information Systems. A+ in Advanced Computer Architecture, Operating Systems and Digital System Design.

RESEARCH EXPERIENCE

Forecast-to-Decision Evaluation for Capacity Allocation
Independent Research | *Manuscript under review, 2026 IEEE International Conference on Big Data (IEEE BigData 2026)*
2025 - 2026

- Built a reproducible four-city benchmark of next-day service demand from 36.8M acquired records (30.2M retained), with versioned harmonisation, provenance manifests, SHA-256 checksums and leakage-controlled temporal evaluation regenerable end to end by a single command.
- Enforced the evaluation protocol through 16 automated guards and a 37-test regression suite covering frozen training-only parameters, validation-only model selection and stage-censored pooled training.
- Established that, under an equal-weight coverage objective, a degenerate point forecast leaves the allocation problem non-identified, with 92-100% of sequential allocation steps tied; recovered identification through a proportional secondary rule or quantile-interpolated predictive distribution.
- Formulated the capacity-allocation problem and proved optimality of the greedy incremental algorithm for the resulting separable discrete-concave objective by an exchange argument, verified against exhaustive enumeration.
- Evaluated probabilistic forecasts using pinball loss and empirical coverage, applied split-conformal recalibration, and used block-bootstrap inference with a Newey-West trend diagnostic; retained and reported negative and null results.

AI Researcher and Engineer - Subsurface Characterisation Pipeline
Saudi AI Co-Innovation Program - RDIA, with Aramco, IBM and CNTXT | *Selected 1 of 32 from 700+ applicants*
Aug - Nov 2025

- Applied unsupervised hierarchical clustering to high-dimensional seismic attribute data for automated facies characterisation, addressing operator bias in manual interpretation.
- Designed a three-tier validation framework combining statistical significance, internal cluster quality and spatial continuity, benchmarked against well-log ground truth across multiple basins.
- Delivered a reproducible pipeline spanning ingestion, inference, validation and interactive 3D visualisation, deployed as a production API on GPU-accelerated cloud infrastructure.

Master's Research Project - Temporal Forecasting Model Comparison
University of Technology Sydney (UTS)
2025 | 95/100, High Distinction

- Conducted a controlled comparison of recurrent and ensemble estimators for temporal prediction.
- Investigated Gaussian-noise augmentation as a temporally aware alternative to SMOTE for class balancing in time-series data.

MANUSCRIPTS

- Alsharif, N. (2026). “Next-Day Reported Municipal Service-Demand Forecasting Across Four Cities: A Reproducible Benchmark with Simulated Allocation Evaluation.” Under review, 2026 IEEE International Conference on Big Data (IEEE BigData 2026).

ACADEMIC SERVICE

- Program Committee Member, 10th INFORMS Workshop on Data Science (DS 2026), hosted by the INFORMS College on Artificial Intelligence; peer reviewed two submissions.

APPLIED RESEARCH CONTEXT

Project Specialist - Operations

Ascend Solutions | *Makkah, Saudi Arabia*

Sep 2025 - Present

- Work within a mass-gathering service operation for the General Authority for the Care of the Two Holy Mosques, involving instrumented operational assets, live data and large but substantially anticipable demand surges - an environment that informs my research interest in decision-making and allocation under uncertainty.
- Lead the operational definition of an AI agent programme covering 34 operational assets using knowledge-base RAG over large language models, and contribute to a digital twin platform for Al Masjid Al Haram.

Content and Review Specialist

CJEL Imaging Technology Education Solution | *Sydney, Australia*

Feb - Nov 2024

- Developed and reviewed technical material on machine learning, data science and applied AI.

TECHNICAL & METHODOLOGICAL COMPETENCIES

Research Methods: Experimental design, leakage-controlled temporal evaluation, block-bootstrap inference, Newey-West diagnostics, conformal prediction, cluster validity assessment, discrete optimisation and optimality proofs, predict-then-optimize evaluation

Modelling: Time-series and probabilistic forecasting, quantile regression, gradient boosting, random forests, generalised linear models, deep learning, unsupervised clustering, retrieval-augmented generation

Computing: Python (primary), C++, SQL, Bash, Linux, PyTorch, TensorFlow, scikit-learn, LightGBM, LangChain, Docker, FastAPI, AWS, GPU computing

Reproducibility: Versioned datasets, provenance manifests, integrity checksums, deterministic seeding, automated protocol guards, regression test suites

Languages: Arabic (native), English (fluent - Master's completed in Australia)

SELECTED TECHNICAL WORK & PROFESSIONAL DEVELOPMENT

- MeetNassar.com - bilingual research portfolio with a conversational agent specified and validated using the OpenAI Responses API over a curated vector-store knowledge base, with retrieval routing, structured-output validation against retrieved evidence and a 120-question bilingual regression suite.
- Applied AI Bootcamp - CNTXT Academy and RDIA. Data Classification and Summarization Using IBM Granite - IBM.