Ahmad Salehiyan

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Stillwater, OK | Oklahoma State University

Summary

PhD researcher in Industrial Engineering focusing on **data science**, **machine learning**, and **decision intelligence**. Built end-to-end analytics for **multi-sensor predictive maintenance**, **EHR disease cluster analysis**, and **operations** data products. Comfortable with large, messy datasets; rigorous validation; and clear communication to technical and non-technical audiences.

Technical Skills

- **Programming & Data:** Python, R, Julia, SQL/PostgreSQL
- **ML / DS:** scikit-learn, XGBoost, PyTorch, pandas, NumPy, statsmodels
- **MLOps & Analytics:** Power BI, Tableau, Git, Jupyter (familiar: Azure ML)
- **Optimization & Modeling:** GAMS (exposure: Pyomo), MIP/LP, POMDP, simulation
- **Methods:** Experimental design/ANOVA, A/B testing, data cleaning & feature engineering

Education

- **Oklahoma State University**
  Ph.D., Industrial Engineering and Management (Expected 2028) *Advisor: Dr. Akash Deep*
  – Research: Predictive maintenance with multi-sensor data, POMDPs, control-limit policies, risk-aware decision-making.
- **K. N. Toosi University of Technology**
  M.S., Industrial Engineering (2019–2022) *Advisor: Dr. Abdollah Aghaie*
  – Thesis: *Predictive Maintenance of Advanced Industrial Machines Using AI Techniques*.
- **Azad University**
  B.S., Industrial Engineering (2014–2019)
  – Thesis: *Feasibility Study for Manufacturing Carbonless Paper*.

Experience

- **Graduate Research Assistant — Oklahoma State University** Aug 2023 – Present
  – Built **predictive maintenance** pipelines for multi-sensor streams: preprocessing, feature extraction, supervised learning, and reliability KPIs.
  – Implemented decision modules via **POMDPs** to trigger preventive actions; tuned **control-limit** thresholds for cost/risk trade-offs.
  – Led large-scale **EHR clustering** analysis; produced figures and reproducible Python code for conference submission.
- **Research Assistant — K. N. Toosi University of Technology** Oct 2018 – Apr 2020
  – Applied data mining & ML for **early machine-fault detection**; authored technical reports and presented findings to industry partners.
- **Industrial Engineer — Karin Crane Company** Apr 2019 – Oct 2019
  – Implemented quality-control checks and process documentation; coordinated multi-team project timelines and deliverables.

Selected Data Science Projects

- **EHR Disease Cluster Analysis (IISE 2025)** — Unsupervised learning (hierarchical, k-means) + association analysis to identify **comorbidity clusters** and mortality risk groups; summarized into clinical personas and dashboards.
- **Multi-Sensor Predictive Maintenance** — Tree ensembles and regularized GLMs for failure-risk prediction; features from multi-rate sensor logs; evaluation via PR/ROC and cost-based metrics; integrated **POMDP** decision module for optimal intervention timing.
- **Reliability Forecasting at Scale** — Time-to-event style features over operational histories; **control-limit** tuning to balance *false alarms* vs. *late maintenance* costs.

Publications & Manuscripts

- **POMDP-based Optimal Maintenance Planning Using Multiple Sensor Signals**. *Manuscript submitted*, 2024.

Presentations & Posters

- **Disease Cluster Analysis in Electronic Health Records: Insights into Mortality and Comorbidity Patterns**. *IISE Annual Conference & Expo*, 2025 (scheduled).
- **A Scalable Algorithm for Condition-Based Maintenance with High-Dimensional Sensor Data**. *INFORMS Annual Conference*, 2024.
- **POMDP-based Optimal Maintenance Planning Using Multiple Sensor Signals**. *OSU Student Research Symposium (Poster)*, 2024.
- **Prioritizing Equipment Maintenance Programs by Clustering Algorithms**. *14th Intl. Conf. of Iranian Operations Research Society*.
- **A Scalable Algorithm for Condition-Based Maintenance with High-Dimensional Sensor Data**. *RAMS (Poster)*, 2025.

Professional Memberships

- **INFORMS** — Member (since 2024)
- **IISE & IISE Reliability & Maintenance Society** — Member (since 2024)
- **SME (Society of Manufacturing Engineers)** — Member

Honors & Achievements

- **3rd Place**, OSU Student Research Symposium (Graduate Poster), 2024
- Ranked **9th** among M.Sc. Systems Optimization cohort, 2021
- Ranked **4th** among B.Sc. Industrial Engineering cohort, 2017

Languages

- Persian (Native/Bilingual), English (Full Professional)