Saviz Saei

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PROFESSIONAL SUMMARY

AI/ML and Optimization professional with 5+ years of experience building data products and decision-support systems across academia and industry. Expertise spans supervised/unsupervised learning, reinforcement learning, stochastic optimization, and network resilience, with a strong track record of deploying production solutions on Azure cloud (APIM, containers, vector search) and leading cross-functional efforts. Designed and shipped RAG-based agents, recommendation systems, and analytics pipelines that cut costs, accelerate decisions, and make complex findings actionable. Equally comfortable coding end-to-end systems (Python, TensorFlow, PyTorch, SQL, JS/React) and conducting rigorous statistical studies (A/B tests, non-parametric methods, regression) to drive measurable impact.

WORK EXPERIENCE

Social Science Research Center - Starkville MS ***Apr 2025-Present***
Lead Research Scientist (AI/ML)

- **Student Risk Assessment System:** Full-stack app for conducting/tracking assessments, managing student profiles, and generating early-intervention reports; includes a role-based RAG chatbot (Node.js).
- **Health Behavior Analytics:** Ran statistical experiments and modeling on customer-care data for older adults, Tests (t-tests/chi-square), non-parametric tests (e.g., Mann-Whitney U for eHEALS), and regression, using Python, R, and SPSS to quantify information-seeking patterns.
- **RAG & Agent Systems:** Designed vector-database–backed RAG and AI agents (Llama, OpenAI) to match users to services (healthcare, housing, legal aid); built retrieval and orchestration pipelines for accurate, explainable recommendations.

Archer Daniels Midland (ADM) - Erlanger KY ***Apr 2024-Feb 2025***
Machine Learning Engineer

- **Re-architecture LLM SAP Report and deploy**: Rebuilt SAP-generated reporting with Python/JavaScript; delivered containerized services using FastAPI and Faiss (vector DB), integrated with APIM and React, and deployed to Azure cloud, reduced reporting cost ~30% and increased throughput.
- **GenAI Q&A (RAG) Compass Report**: Delivered an Azure-hosted RAG system (Python, Dash) leveraging embedding-based cosine similarity to improve findability and self-service analytics.
- **GenAI Q&A HR Recommendation System**: Built an embedded similarity search–based candidate matching engine on Azure, cut screening time ~40%.
- **Cost Optimization**: Monitoring cost in Azure cloud and adjust the usage of AI team based on their projects.

Social Science Research Center - Starkville MS ***May 2023-Aug 2023***
Research Scientist / Intern

- **NLP for Public Health**: Analyzed social media to assess mental-health trends during critical events (e.g., COVID-19) using Pandas, NumPy, and NLP (NLTK, NRCLex, regex).
- **Data Storytelling**: Built interactive visualizations (JavaScript, Matplotlib) to translate complex findings into clear insights for stakeholders.

Mississippi State University - Starkville, MS ***May 2021-Dec 2024***
Research Assistant & Teaching Assistant

- I**nfrastructure Resilience:** Conducted research an in-depth on disaster resilience across engineering, ecology, and social sciences to detect vulnerabilities and guide mitigation strategies.
- **OR (Gurobi):** Scenario-based network-resilience optimization combining vulnerability assessments with traffic flow.
- **Scenario Generation: Ranked nodes via different network** metrics to build disruption scenarios for the optimization model.
- **Game AI:** Developed strategic board-game AI with machine learning and neural networks; integrated A* search and deep reinforcement learning to improve decision quality.
- **Deep RL Methods:** Independent research into policy gradients, Q-learning, and actor-critic methods to advance sequential decision-making.

Ohio University - Athens, OH ***Jan 2021-May 2021***
Research Assistant & Teaching Assistant

- **Human-Trafficking Analytics (with IBM):** Led and executed regression modeling and data preprocessing in Python/SQL to strengthen predictive insights for risk identification.
- **TA Business Analytics**: Led SQL, Access, and Excel lab sessions.

Golrang System Company (IT) - Tehran, Iran ***Jul 2017-Nov 2020***
Project Manager & Data Scientist

- **Delivery & Collaboration (Azure DevOps)**: Managed portfolios across data analytics, sales, and web development; streamlined task management and team collaboration, improved delivery timelines ~25%.
- **Agile Execution**: Applied agile methodologies to optimize workflows, strengthen cross-functional alignment, and accelerate releases.
- **Data-Driven Solutions**: Developed and deployed analytics to enhance decision-making, customer engagement, and boost sales performance (~15%).
- **Stakeholder Partnership**: Translated business requirements into technical roadmaps with senior leadership; ensured measurable value and adoption.
- **Key Contribution**: Enabled large-scale IT and data initiatives that increased operational efficiency and advanced digital transformation across Golrang Industrial Group.

Hamrahe Aval (MCI) ***Jul 2014 – Jul 2017***
Project Manager & Sr. Data Analyst

- **Nationwide Network Launch**: Supported rollout of mobile broadband (mBB) and 3G services; coordinated milestones across Marketing, Sales, Customer Service, and Network Roll-out.
- KPI Design & Reporting: Defined KPIs and communicated progress to the Chief Marketing Officer (CMO) and Customer Care; produced weekly executive updates highlighting risks and mitigations.
- **PMO & Planning**: Built project documentation, schedules, and resource plans for CMO initiatives.
- **Infrastructure Customer Experience Analytics**: Coordinated BTS tower location allocation, customer-care improvements, customer-journey surveys, and loyalty analysis, applied insights to optimize infrastructure and enhance retention.
- **Consulting Liaison**: Acted as primary interface with Arthur D. Little, aligning recommendations with business objectives.
- **Cross-Functional Alignment**: Maintained continuous alignment of CMO deliverables with parallel technical and business workstreams.
- **Key Contribution**: Played a pivotal role in the successful nationwide 3G (and select 4G) rollout through tight coordination between technical and commercial teams.

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EDUCATION

- **PhD - Industrial and System Engineering**
  Mississippi State University, Starkville, MS (Jan 2021 - Dec 2024)
  Dissertation: On the Nexus of Topological Measures and Their Ability to Elucidate Network Vulnerability Patterns.
  Minor - Computer Science
  Relevant courses: ML, AI with Python, Algorithms, Data Science with R, Data Structures with C++
- **Master of Science - Industrial Engineering**
  Azad University, Science & Research Branch, Tehran, Iran (August 2010 - Jan 2013)
  Thesis: Multi-Depot Vehicle Routing Problem in Natural Disasters; PSO-based solution.
- **Bachelor of Science – Statistics Engineering**
  Imam Khomeini International University, Qazvin, Iran (Sep 2004 - Oct 2008)

SKILLS

Python, Gurobi, Operation Research, Scikit-Learn, TensorFlow, PyTorch, NumPy, Pandas, SQL, R, Dash

CERTIFICATIONS

- Azure AI Fundamentals (AI-900) - Microsoft | Dec 2024
- Python 3 Programming Specialization - University of Michigan (Coursera) | Jan 2023
- Supervised Machine Learning: Regression & Classification - Stanford University (Coursera) | Jan 2023
- Neural Networks and Deep Learning - DeepLearning.AI (Coursera) | Dec 2022
- Network Data Science with NetworkX and Python | Aug 2021

SELECTED PUBLICATIONS

- Saei, S., Barker, K., Tajik, N., & Ermagun, A. (2025). On topological measures and network vulnerability patterns: A comparative analysis. *Reliability Engineering & System Safety*. Advance online publication. https://doi.org/10.1016/j.ress.2025.111608
- Saei, S., Ghimire, S., & Anreddy, S. (2025). Beyond accuracy: Evaluating LLMs for validating community service provider information. In *Proceedings of the 34th International Conference on Software Engineering and Data Engineering (SEDE 2025)*. Springer Nature. (Ready for production)
- Saei, S., & Anreddy, S. (2025). A comparative analysis of RAG and non-RAG models to improve access to service provider information for older adults in Mississippi. In *Proceedings of the 34th International Conference on Software Engineering and Data Engineering (SEDE 2025)*. Springer Nature. (Ready for production)
- Saei, S., & Tajik, N. (2025). Scenario-based optimization of network resilience: Integrating vulnerability assessments and traffic flow. *arXiv preprint*. https://arxiv.org/abs/2503.23251
- Pirim, H., Rahman, Z., Saei, S., Gyawali, S., Marufuzzaman, M., Tajik, N., & Tekedar, H. C. (2025). Machine learning and network analysis to predict hypothetical protein functions of *Aeromonas hydrophila*. *bioRxiv*. https://doi.org/10.1101/2025.07.22.666223.
- Saei, S., & Tajik, N. (2024, October). Risk neutral, risk averse, and hybrid approaches for scenario-based two-stage stochastic programming in disrupted transportation networks. Paper presented at the INFORMS Annual Meeting, Seattle, WA.
- Saei, S., Wang, Y., Marufuzzaman, M., Morshedlou, N., & Wang, H. (2022). Prediction of community transmission level of COVID-19 using machine learning algorithms based on the CDC Social Vulnerability Index. *Biomedical Sciences Instrumentation, 58*(3), 9–16. https://doi.org/10.34107/LWWJ5713168.
- Saei, S., & Tajik, N. (2022). Time-dependent restoration routing problem: An efficient initial solution. *Findings*. https://doi.org/10.32866/001c.37396.
- Saei, S., Mohammadi, M., Fekriseri, M., & Jenab, K. (2019). A computational method for estimating Burr XII parameters with complete and multiple censored data. *arXiv preprint* arXiv:1901.09299. https://arxiv.org/abs/1901.09299.
- Saei, S., Tavakoli Moghaddam, R., & Alinaghian, M. (2013). A new mathematical model for a multi-depot vehicle routing problem in a natural disaster situation and its solution using a particle swarm optimization algorithm. Journal of Transportation Research, 12(142), 37–51.