Saviz Saei

Starkville, MS | U.S. Permanent Resident | (740)818-8877 | savizsaei@gmail.com | LinkedIn | Website | GitHub

PROFESSIONAL SUMMARY

AI/ML and optimization scientist with 7+ years delivering production AI/ML data products. 2+ years leading multi-member initiatives to design, build, and deploy scalable ML services and GenAI/RAG applications (agents, vector search, recommendation systems) with strong MLOps practices (CI/CD, automated testing, monitoring) and containerized microservices. Hands-on across the full lifecycle: problem formulation and success metrics, feature engineering, model training/validation (classification, regression, recommendation, time-series forecasting), and deployment to reliable inference endpoints. Strong stack in Python/SQL (plus R), Spark (PySpark), scikit-learn, TensorFlow/PyTorch, and Gurobi, with rigorous experimentation (A/B tests, statistical methods). Cloud-native on Azure (APIM, containers) with demonstrated ability to deliver on AWS/GCP stacks (e.g., Lambda/S3/EC2/EKS and BigQuery/Vertex AI/Cloud Run), plus an infrastructure-as-code mindset. Strong software engineering foundation (DSA, SDLC, code review, incident response) and a focus on resilient, cost-efficient, well-documented solutions that meet security, risk, and explainability needs.

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 with Pyspark, AI with Python, Algorithms, Data Science with R, Data Structures with C++
- **Master of Science - Industrial Engineering**
  Azad University, Science & Research Branch (August 2010 - Jan 2013)
  Thesis: Multi-Depot Vehicle Routing Problem in Natural Disasters; PSO-based solution.
  Key Achievement: Developed a PSO (Particle Swarm Optimization) model to solve the complex Multi-Depot Vehicle Routing Problem in disaster relief, directly applicable to supply chain logistics and optimization.
- **Bachelor of Science - Statistics**
  IK International University (Sep 2004 - Oct 2008)

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. (https://link.springer.com/chapter/10.1007/978-3-032-08649-5_23)
- **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 38th International Conference on Computer Applications in Industry and Engineering, CAINE 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.

WORK EXPERIENCE

Cullen College of Engineering, University of Houston - Houston TX ***Jan 2026- Present***
Lecturer (Department of Data Science and AI)

- **Graduate Instruction:** Deliver specialized curriculum to **Master's students** in the Engineering Data Science and AI program, focusing on advanced technical proficiency and industry-ready analytical skills.
- **Big Data Analytics & Distributed Computing (EDS 6397):** Direct graduate-level instruction on processing massive datasets using **Apache Spark**. Curriculum covers RDDs, DataFrames, Spark SQL, and Spark MLlib to enable high-performance distributed data processing.
- **Advanced Statistical Modeling (EDS 6333):** Facilitate Master's-level coursework in Probability and Statistics, focusing on stochastic processes and statistical inference critical for engineering-grade AI models.
- **Enterprise Database Management (EDS 6354):** Lead instruction on architecting and optimizing scalable database systems, preparing students to manage complex data lifecycles in professional engineering settings.
- **Technical Mentorship:** Advise graduate students on the implementation of advanced ML pipelines and optimization workflows, ensuring projects meet the high standards of both academic research and industry application

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

- Led interdisciplinary data science research supporting population health, healthcare access, and social determinants of health in Mississippi.
- Conducted statistical modeling (A/B tests, non-parametric regression) to understand information-seeking behaviors among older adults.
- Supervised student assistants and collaborated with faculty on federally funded studies.
- Developed a full-stack Student Risk Assessment System for tracking student profiles and generating early-intervention reports, including a role-based RAG chatbot (Node.js).
- Ran statistical experiments and modeling on customer-care data for older adults, A/B 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.

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

Machine Learning Engineer

- Applied data-driven optimization and AI modeling to large-scale supply chain systems.
- Developed and deployed analytical dashboards and retrieval-based systems to support decision-making and research reproducibility.
- 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, reduced reporting cost ~30% and increased throughput.
- Delivered an Azure-hosted RAG system (Python, Dash) leveraging embedding-based cosine similarity to improve findability and self-service analytics.
- Led cost optimization playbooks (GPU/CPU, spot instances, autoscaling) and batch vs. online routing, lowering training time 20% and GPU idle by 30%.

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

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

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

- Assisted in teaching graduate courses in data analytics, optimization, and reinforcement learning.
- Mentored undergraduate students on research projects and data-driven analysis.
- Conducted research in-depth on disaster resilience across engineering, ecology, and social sciences to detect vulnerabilities and guide mitigation strategies.
- Ranked nodes via different network metrics to build disruption scenarios for the optimization model (Scenario Generation).
- Trained deep RL agents on GPU for game/search tasks; captured experiment metadata, seed control, and artifact logging for reproducibility.
- Developed strategic board-game AI with machine learning and neural networks, integrating A* search and deep reinforcement learning to improve decision quality (Game AI).

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

- Taught and led lab sessions for Business Analytics, covering practical applications of data management: SQL, Access, and Excel.
- Led and executed regression modeling and data preprocessing in Python/SQL (with IBM) to strengthen predictive insights for risk identification in Human-Trafficking Analytics.

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

- Managed portfolios across data analytics, sales, and web development; streamlined task management and team collaboration, improved delivery timelines ~25%.
- Applied agile methodologies to optimize workflows, strengthen cross-functional alignment, and accelerate releases.
- Developed and deployed analytics to enhance decision-making, customer engagement, and boost sales performance (~15%).

- Translated business requirements into technical roadmaps with senior leadership; ensured measurable value and adoption.

SKILLS

- Machine Learning, Statistics, and Optimization
- Data Science for Population Health
- Teaching and Curriculum Development
- Tools: Python, R, SQL, TensorFlow, PyTorch, Gurobi

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