Saviz Saei, Ph.D.
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U.S. Permanent Resident

Profile

5+ years of experience in **machine learning, statistical modeling, and optimization**. Proficient in Python, TensorFlow, and PyTorch, with extensive experience deploying ML models in cloud environments, particularly Azure. Proven ability to lead interdisciplinary teams and deliver impactful solutions.

Skills

Programming/ Tools: Python, PySpark, SQL, RStudio, scikit-learn, LangChain, TensorFlow, PyTorch, Gurobi, JavaScript, React.

Machine Learning Libraries: Optimization in Transportation, Two-Stage Stochastic Programming with Risk-Neutral, Risk-Averse, and Hybrid Approaches, System Resiliency, GenAI Modeling, Supervised/Unsupervised Learning, Reinforcement Learning, Gradient-Based Optimization, Statistical Analysis, Time Series Analysis.

Cloud Computing: Azure, cloud deployment, APIs, Docker, Git, Power BI.

Experience

Social Science Research Center | Starkville, MS | Apr 2025 – Present

- Conducted statistical analyses—including A/B testing (t-tests and chi-square tests), non-parametric tests (e.g., Mann-Whitney U for eHEALS scores), and regression modeling—on customer care data using Python, R, and SPSS to examine health information-seeking behavior among older adults.
- Designed AI RAG model, Vector Databases, and AI Agent systems with llama and openai to match users with appropriate services, including healthcare, housing, and legal aid.

Archer Daniels Midland (ADM) | Machine Learning Engineer Apr 2024 – Feb 2025

- Re-architected SAP-generated reports using Python and JavaScript; implemented containerized apps with Faiss (vector DB) and FastAPI, integrated with APIM and React, and deployed in Azure — reducing costs by 30% and improving efficiency.
- Designed and deployed a GenAI Q&A system using Retrieval-Augmented Generation (RAG) with Python, Dash, and Azure; leveraged embedding-based cosine similarity to optimize retrieval and enhance accessibility.
- Built an advanced HR recommendation system using embedded similarity search in Azure; reduced candidate screening time by 40%.

Social Science Research Center | Research Scientist/Intern May 2023 – Aug 2023

- Analyzed social media data for an NSF-funded research project; utilized Pandas, NumPy, and NLP techniques (NLTK, NRCLex, regex) to assess mental health trends during critical events such as COVID-19.
- Developed interactive data visualizations using JavaScript and Matplotlib; transformed complex research findings into clear, insightful visuals to enhance data interpretation and communication.

Mississippi State University | Research Assistant Jun 2021 – Apr 2024

- Conducted an in-depth study on infrastructure system resilience; analyzed disaster resilience across engineering, ecology, and social sciences to identify key vulnerabilities and improve mitigation strategies.
- Developed strategic board game AI using machine learning and neural networks; integrated A search and deep reinforcement learning to enhance decision-making and optimize gameplay performance.
- Independently researched deep reinforcement learning techniques; explored policy gradients, Q-learning, and actor-critic methods to advance AI decision-making and optimize learning efficiency.

Ohio University | Research Assistant and Teaching Assistant Jan 2021 – May 2021

- Conducted regression analysis and data preprocessing using Python and SQL in collaboration with IBM, optimizing data quality and modeling to enhance predictive insights into human trafficking patterns.

Golrang System Company- IT | Project Mng & Data Scientist Jul 2017 – Nov 2020

- Managed multiple projects using Azure DevOps; task management, and team collaboration to improve project efficiency and delivery timelines by 25%.
- Optimized sales process performance using SQL, Power BI, and Azure to increase sales by 15%.

Education

- *Ph.D. in Industrial and Systems Engineering*
  Mississippi State University, Starkville, MS, United States Jul 2021 – Dec 2024
  Dissertation: On the Nexus of Topological Measures and Their Ability to Elucidate Network Vulnerability Patterns.
  Advisor: Dr. Nazanin Tajik
  Relevant courses: Optimization, Machine Learning with PySpark, Deep Learning, Advanced Data Analysis, Time Series.
- *Minor in Computer Science*
  Advisor: Dr. Max Young
  Relevant courses: Machine Learning, Artificial intelligence with Python, Introduction to Algorithms, Data Science with R, Data Structures with C++.
- *M.S. in Industrial Engineering*
  Science & Research Branch Azad University, Tehran, Iran Sep 2010 – Jan 2013
  Dissertation: 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.
  Advisor: Dr. Reza Tavakoli-Moghadam
  Relevant courses: Simulation of freight transport, System analysis of air pollution.
- *B.S. in Statistics*
  Imam Khomeini International University, Qazvin, Iran Sep 2004 – Oct 2008

Publications

- Saei, S., Ghimire, S., & Anreddy, S. (2025). "Beyond Accuracy: Evaluating LLMs for Validating Community Service Provider." SEDE-2025 Springer Nature.
- Saviz, 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", SEDE-2025 Springer Nature.
- Saei, S. (2025). Scenario-Based Optimization of Network Resilience: Integrating Vulnerability Assessments and Traffic Flow. arXiv:2503.23251.
- Saei, S., & Tajik, N. (2024). "Risk-Neutral, Risk-Averse, and Hybrid Approaches for Scenario-Based Two-Stage Stochastic Programming in Disrupted Transportation Networks." Presented at the 2024 Annual INFORMS Conference page 1151/1276.
- Saei, S., & Tajik, N. (2022). "Time-Dependent Restoration Routing Problem: An Efficient Initial Solution." Findings.
- Saei, S., Mohammadi, M., Fekriseri, M., & Jenab K. (2019). "A computational method for estimating Burr XII parameters with complete and multiple censored data", arXiv: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.
- 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, 2025-07.

Machine Learning:

- Saei, S., Wang, Y., Marufuzzaman, M., Tajik, N., & Wang, H. (2022). "Prediction of Community Transmission Levels of COVID-19 Using Machine Learning Algorithms Based on the CDC Social Vulnerability Index." Biomedical Sciences Instrumentation, 58(3), 9. International Academic Express (IAE).

Certificates

- Python 3 Programming Specialization – University of Michigan (Coursera)
- Azure AI Fundamentals (AI-900) – Microsoft
- Supervised Machine Learning: Regression and Classification – Stanford University (Coursera)
- Neural Networks and Deep Learning – DeepLearning.AI (Coursera)

- SQL Server Design and Implementation – Fad.ir