Saleh Safarnejad

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Research Interests

Responsible Data Science, Algorithmic Fairness, Causal Inference, Explainable AI, Anomaly detection, Probabilistic Modeling, Theory of Computation, Representation Learning, Robustness in AI, Information Retrieval, Bioinformatics

Education

2020 - 2024 B.Sc. in Computer Engineering at **Sharif University of Technology** - GPA 3.64
2016 - 2019 Diploma of Mathematics and Physics at **Alborz Highschool** - GPA 4

Publications

IEEE International Conference on Communications (ICC) - June 2025, Montreal, Canada

NORRIS: Devising a Robust, Noise-Resilient and Resource-Efficient, Representation Learnign based Data Transmission for Internet of Things

Research Experience

CBB: Complex Biological Systems and Bioinformatics - University of Tehran

- Investigated **cancer drug responses** using **Spatial Single-Cell Transcriptomics data**.
- Applied **Graph Learning** and **Adversarial Models** to predict drug sensitivity/resistance.
- Focused on **causal inference** and **data integration** for high-dimensional biological datasets.

RADIAN: Reliable and Durable IoT Applications & Networks - Sharif University of Technology

- Developed a **Deep Learning-based framework** for efficient **Point Cloud transmission and recognition**.
- Optimized **semantic communication** for **IoT devices**, enhancing computational efficiency and data encoding.

Teaching Assistant Experience

Probability & Statistics - Prof. Ali Sharifi Zarchi

- Designed interactive R Jupyter notebooks to teach core probabilistic concepts
- Utilized R packages (`ggplot2`, `dplyr`, `tidyr`) to create engaging, practical examples that promote accurate data interpretation and informed decision-making.

Linear Algebra - Prof. Samira Hosseinghorban

- Guided projects on matrix decomposition, SVD, and PCA for data compression and dimensionality reduction.
- Demonstrated applications of linear algebra in building data-driven models.

Theory of Computation & Languages - Prof. Mahdi Dolati

- Taught foundational concepts such as automata theory, Turing machines, and complexity classes

Sharif MicroMaster: Programming for Data Analysis - Prof. Sadegh Zadeh

- Taught data visualization, interpretation, and analysis using Python.
- Facilitated interactive sessions to explore real-world data practices and foster student engagement.
- Guided students in developing insights through hands-on programming projects.

Data Structures & Algorithms - Prof. Mahdi Safarnejad Broujeni

- Published coding assignments using automated grading system
- Designed assessments focusing on optimizing algorithmic complexity

Bioinformatics - Prof. Alireza Fotohi Siahpirani

- Conducted workshops on **Hidden Markov Models (HMMs)** and probabilistic modeling, focusing on accessible techniques for understanding and interpreting uncertain data.
- Developed problem sets to bridge theoretical models with real-world data scenarios.

Projects

Fairness in Machine Learning through Causal Data Repair **GitHub**

- Developed a framework to preprocess datasets using causal-based fairness techniques, ensuring interventional fairness without a complete causal model.
- Designed modules for visualizing causal pathways and fairness metrics before and after repair.
- **Tools:** Python, pandas, DoWhy, Jupyter Notebooks.

Causal OLAP: Bias Detection and Mitigation **GitHub**

- Implemented a system integrating OLAP operations with causal analysis to detect, explain, and mitigate bias in query results.
- Developed an interactive dashboard for visualizing bias and mitigation strategies.
- **Tools:** Python, PostgreSQL, Plotly.

Skills

Languages	R, Python, Shell, Java, C/C++
Causal Inference	DoWhy, pgmpy
Deep Learning Frameworks	PyTorch, TensorFlow, CUDA
Machine Learning	Supervised and unsupervised learning, Scikit-learn
Data Management	Data wrangling, cleaning, transformation, integration
Data Analysis	Statistical analysis, hypothesis testing
Data Visualization	ggplot2, Seaborn, Plotly
Databases	PostgreSQL, MySQL, MongoDB
Cloud	AWS, Google Cloud Platform
Other Skills	Git, Linux, Pandas, Numpy, Jupyter Notebooks

Other Experience

STAR Data Analytic Platform - Co-Up

Collaborated on the development of a scalable platform for analyzing large datasets, optimizing workflows for data cleaning, integration, and visualization.

Related Courses

Probability & Statistics Prof. Ali Sharifi Zarchi GPA 4

Linear Algebra Prof. Hamidreza Rabiee GPA 4

Fundamentals of 3D Computer Vision Prof. Hanieh Naderi GPA 4

Design of Algorithms Prof. Mohammad Ali Abam GPA 4

Deep Learning Prof. Hamid Beigy

Languages

English TOEFL IBT 98
Persian Native
German Basic
Arabic Elementary