Curriculum Vitae

Ahmad Mohammadshirazi

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EXPERTISE

Programming	Data Analytics	Teaching
.NET.	Artificial Intelligence & Smart Systems.	Advanced Computer Science.
MS SQL.	High-Performance Supercomputing.	Design of Experiment.
Oracle SQL.	Machine Learning & Deep Learning.	Foundations of Speech & Language Processing.
Python.	Optimization (Nonlinear & Multi-Objective).	Linear Regression.
R.	Parallel Computing.	Probability & Statistics.

EDUCATION

Ph.D. Student, Computer Science and Engineering

The Ohio State University (08/2020-current)

- Advisor: Prof. Rajiv Ramnath.
- Concentration: Machine Learning, Time Series Optimization, Image Processing, Natural Language Processing (NLP), Sustainable Energy.
- Research: Smart Ventilation & Air Quality Models in Building Using Sensor Data, Advanced Deep Learning, Advanced NLP, & Advanced Semantic Segmentation.

WORK EXPERIENCE

Software Engineering Intern

FlairSoft Company, Columbus, OH (05/2022-current).

- Collaborated with a team of developers to write complex SQL queries to extract, transform, and load data from various sources into a final table
- Applied machine learning techniques, including LSTM, Transformers, and BERT, to predict the probability of condemnation for a given property
- Extracted information from documents using NLP and other machine learning models
- Conducted data analysis to identify patterns, trends, and insights
- Participated in code reviews, testing, and debugging activities
- Assisted in the development of documentation and user manuals for new software features and products

Graduate Research Associate

The Ohio State University, Columbus, OH (01/2021-current)

- Proposed Advanced Machine Learning Models to Predict Air Quality Pollutants.
- Develop Self-Suppervised Learning Method to Estimate Ventilation Rate.

Graduate Teaching Associate

The Ohio State University, Columbus, OH (01/2023-current)

- Foundations of Speech & Language Processing (CSE 5525).

Data Analytic & Technical Trader Self-Employed

Freelancer®, Columbus, OH (09/2017-07/2020)

- Developed Statistical & Machine Learning Models to Analyze Experimental Data.
- Developed Statistical Models to Analyze Health Insurance Companies ER Spending.
- Performed Data Productions, Mgmt., Mining, Enrichments, Feature Extractions, & Dimensionality Reductions.
- Performed Experimental & Computational Research in Area of Food Production.

TECHNICAL EXPERTISE

Area
Artificial Intelligence, Computer Science, Data Analytics, High-Performance Supercomputing, & Optimization.

Computer
Hands-on experience with .NET, MS SQL, Oracle SQL, Parallel Computing, Python, R, SAS, & SPSS.

Machine Learning
Familiarity with machine learning models such as BERT, GLM, GAN, GBA, GRU, FDA, LDA, LSTM, KNN, PCA, & SVM.

Optimization
Proficient in various optimization techniques including Linear, Multi-Objective, and Nonlinear.

PEER-REVIEWED JOURNAL PUBLICATIONS (AS OF 12/2023, OVER 400 CITATIONS AND H-INDEX OF 5)

Mohammadshirazi, A., Nadafian, A., Monsefi, A. K., Rafiei, M. H., & Ramnath, R. (2023). Novel Physics-Based Machine-Learning Models for Indoor Air Quality Approximations. arXiv preprint arXiv:2308.01438.

Karimi Monsefi, A., Shiri, P., **Mohammadshirazi, A.**, Karimi Monsefi, N., Davies, R., Moosavi, S., & Ramnath, R. (2023, November). CrashFormer: A Multimodal Architecture to Predict the Risk of Crash. In Proceedings of the 1st ACM SIGSPATIAL International Workshop on Advances in Urban-AI (pp. 42-51).

Mohammadshirazi, A., Kalkhorani, V. A., Humes, J., Speno, B., Rike, J., Ramnath, R., & Clark, J. D. (2022). Predicting airborne pollutant concentrations and events in a commercial building using low-cost pollutant sensors and machine learning: A case study. Building and Environment, 108833.

Mohammadshirazi, A., & Kalhor, E. B. (2016). Energy & Cost Analyses of Kombucha Beverage Production. Renewable & Sustainable Energy Reviews, 55, 668-673.

Mohammadshirazi, A., Akram, A., Rafiee, S., & Kalhor, E. B. (2015). On the Study of Energy & Cost Analyses of Orange Production in Mazandaran Province. Sustainable Energy Technologies & Assessments, 10, 22-28.

Mohammadshirazi, A., Akram, A., Rafiee, S., & Kalhor, E. B. (2014). Energy & Cost Analyses of Biodiesel Production from Waste Cooking Oil. Renewable & Sustainable Energy Reviews, 33, 44-49.

Mohammadshirazi, A., Akram, A., Rafiee, S., Avval, S. H. M., & Kalhor, E. B. (2012). An Analysis of Energy Use & Relation Between Energy Inputs & Yield in Tangerine Production. Renewable & Sustainable Energy Reviews, 16(7), 4515-4521.

PATENTS

Mohammadshirazi, A. (2017). Earthworms Powder Machine to Feed Fish. Iran Patent # 13955, Field in 01/2017, Issued in 05/2017.

Mohammadshirazi, A. (2015). Kombucha Brewing System (by Application of Acidity Control). Iran Patent # 85554, Field in 11/2014, Issued in 04/2015.

MANUSCRIPT REVIEWS

Served as a Reviewer of about 20 Journal Publications for **(1)** Applied Energy Journal & **(2)** Journal of Cleaner Production (2014-Present).