Esmaeil Rezaei

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May 2024 Graduate | Available to Begin Work Immediately

Experience

Research Assistant, *University of Massachusetts*, Dartmouth, MA — *Dec 2022 - present*
- Developed several predictive machine learning and dimensional reduction algorithms for **big data**.
- Conducted data analysis and probabilistic modeling for an **NSF**-funded project and a **Michelin**-funded project.

Teaching Assistant, *University of Massachusetts*, Dartmouth, MA — *Aug 2022 - Dec 2022*
- Tutored students with learning challenges in coding engineering solutions with Matlab

Research Assistant, *University of Massachusetts*, Dartmouth, MA — *Sep 2021 - Aug 2022*
- Explored the applicability of numerical methods for PDEs in the context of dimensional reduction.
- Reviewed **Gaussian process** regression models for big data.

Research Assistant, *Iran University of Science and Technology*, Tehran, Iran — *Sep 2016 - Jun 2017*
- Developed mathematical models to assess the reliability of complex systems and analyze failure data.
- Reviewed and coded up non-linear models on supply chain management from selected papers.

SHARIFNEGAR, *Founder and Manager*, Tehran, Iran — *Nov 2015 - Aug 2021*
- Led an 6-person team to develop a **e-learning platform** specializing in industrial engineering tutorials.
- Offered a variety of courses in supply chain management, data analysis, decision making, and more.

Education

3.93/4.0 **Ph.D. of Computational Science and Engineering**, *University of Massachusetts Dartmouth* | MA, USA — *Sep 2021 - May 2024*

4.0/4.0 **M.Sc. of Data Science**, *University of Massachusetts Dartmouth* | MA, USA — *Sep 2021 - May 2024*

3.61/4.0 **M.Sc. of Industrial Engineering**, Iran — *Sep 2013 - Sep 2015*

3.05/4.0 **B.Sc., Mathematics**, Iran — *Jan 2009 - Jul 2012*

Courses: Machine Learning and AI for Civil & Environmental Engineering | Advanced Data Mining | Machine Learning | Numerical Optimization | Advanced Mathematical Statistics | Numerical Methods | High-Performance Scientific Computing | Linear Algebra | Numerical Solution for PDEs | Operations Research | Quantitative Methods in Industrial Engineering | Management Information Systems | Supply Chain Management | Quality Management and Productivity | Six Sigma | Statistics and Probability | Econometrics | Economic | Advanced Microeconomics | Decision Making | Modeling of Economic and Social Systems | Advanced Mathematical Methods

Skills

Programming	Python, R, SQL, C, C++, Matlab, LaTeX, Mathematica
Libraries	NumPy, Pandas, Scikit-learn, TensorFlow, Matplotlib, Seaborn, OpenCV, Keras, ggplot2, pROC, rpart
Software	Tableau, CPLEX, Microsoft Power BI, GAMS, Excel, PowerPoint, Word, SPSS, Minitab, Visio
Machine Learning	Deep Learning, Neural Networks, Data Cleaning, Data Preprocessing, Clustering Techniques, Unsupervised Learning, Random Forest, Gradient Boosting, NLP, Text Classification, Sentiment Analysis, Cross-Validation, Gaussian Process Regression, Data Analysis, Hypothesis Testing, Data Visualization, Bagging, Gradient Descent Optimization, Adaptive Moment Estimation (ADAM) Optimization, Newton's Method, Evolutionary Algorithms (Genetic, Particle Swarm Optimization)

Projects

Near-Miss Traffic Vehicle — *Dec 2022 - present*

Michelin, North America
- Collaborated with the MIT and UMass team to create a near-miss warning system using 180 million telematic data points (Skills: **Python**, **SQL**, **Tableau**, and **MATLAB**).

CMV Safety Countermeasures — *Dec 2022 - present*

US Department of Transportation
- Collaborated with the Morgan State University and UMass team to develop a driving behavior risk warning system using machine learning algorithms. We developed a statistical-based approach for classifying and recognizing driving behavior using Bayesian probability with kernel density estimation (Skills: **Python**, **SQL**).

Demand Prediction for ComEd Utility Demand, Illinois — *Jan 2023 - April 2023*

University of Massachusetts Dartmouth
- Developed a demand forecasting model for 3.7 million utility customers. Utilized hierarchical dimensional reduction algorithms, Gaussian Process Regression, and Support Vector Regression, and Linear Regression (Skills: **Python**, **SQL**, **Tableau**, and **MATLAB**).

Airlines Delay Prediction — *Aug 2022 - Dec 2022*

University of Massachusetts Dartmouth
- Applied the Online Parametric Gaussian Process Regression algorithm to a large dataset of various airlines' data available on Kaggle to predict delays. (Skills: **Python**, **R**).

HYBRID: HYper-reduced Basis Reduction via Interactive Decomposition — *Sep 2021 - Dec 2022*

University of Massachusetts Dartmouth
- Developed a super-fast dimensional reduction algorithm (HYBRID) for large-scale high-dimensional data.
- We leveraged numerical solutions for partial differential equations (PDEs) to develop HYBRID (Skills: **Python**, **SQL**).

Online Parametric Gaussian Process Regression — *Sep 2021 - Aug 2022*

University of Massachusetts Dartmouth
- Developed a **predictive online machine learning model** that **continuously improves** by new arriving new data (Skills: **Python**).