Reza V. Mehrizi, PhD

Data Scientist, Statistician and Machine Learning Researcher

Profile

With over 8 years of experience in the cutting-edge field of data science, I am deeply passionate about transforming complex data into valuable insights. My dedication lies in exploring advanced statistical, machine learning approaches and leveraging AI techniques to develop innovative solutions. I eagerly embrace complex problems as opportunities to refine my skills, exercise my innovative thinking and deliver exceptional results. I flourish in collaborative environments, valuing diverse expertise and enthusiastically embracing feedback and varying viewpoints. I am excited to be part of an industry that constantly evolves and shapes the future of businesses and societies.

Projects

- **AI-Related YouTube Data Analysis:** Conducted web scraping of AI-related YouTube data, performed data processing with SQL, generated visualizations and insights into the evolving trends of AI content on YouTube.
- **Video Transcription and Summarization:** Developed a YouTube video transcription, summarization, and content analysis tool to facilitate efficient video content extraction, saving time and enhancing user understanding.
- **Object Detection and Tracking:** Designed and implemented a Python-based application utilizing OpenCV for object detection/tracking in images and videos.
- **Anomaly Detection:** Implemented advanced anomaly detection techniques combined with root cause analysis methodologies to enhance system integrity and minimize disruptions.

Employment History

Data Scientist at MVS Lab, University of Waterloo

October 2021 – Present

- Developed a streamlined logistics optimization solution leveraging deep learning algorithms, resulting in a remarkable 17% surge in warehouse throughput efficiency.
- Designed a Deep Learning and Dynamic Bayesian Networks-based fault detection and root cause diagnosis algorithm for the automotive industry, resulting in substantial cost savings and enhanced vehicle reliability.
- Implemented robust computer vision / object detection strategies, showcasing outstanding precision in detecting and tracking objects for vehicles within the automotive sector.

Statistical Consultant and Teaching Assistant at University of Waterloo

September 2016 – August 2021

- Developed a highly accurate anomaly detection algorithm using statistical and ML methodologies enabling precise disease diagnosis prediction in the healthcare system, particularly for Covid-19.
- Collaborated with Expedia Group, an international shipping company, and a sensor fouling system company to develop machine learning predictive models, resulting in remarkable enhancements in productivity, service quality, and cost-effectiveness.

Faculty Member and Lecturer at Semnan University

September 2010 – August 2016

- Collaborated on statistical analyses of census data for educational and environmental inquiries.
- Designed and implemented a ranking scheme for bank customers.
- Developed a predictive model using operations research and machine learning techniques to forecast price fluctuations in the oil industry.
- Organized and led public seminars and workshops and guided graduate students in completing their research projects.

Detail

Waterloo, Canada
226-989-5194
rvaliol@uwaterloo.ca
valiollahi.reza@gmail.com

Links

- Website
- LinkedIn
- Google Scholar
- GitHub

Skills

- Statistical Analysis
- Machine Learning
- Predictive Modeling
- Neural Networks
- Bayesian Statistics
- Anomaly Detection
- Deep Learning/Reinforcement Learning
- Natural Language Processing (NLP)
- Large Language Model (LLM)
- Data Preprocessing/Cleaning
- Data Visualization (Tableau / Power BI, Matplotlib)
- Data Mining / Pattern Recognition
- SQL Database Management
- Python/R Programming
- Cloud Computing (AWS, Azure)
- Web Scraping and APIs
- Ensemble/Clustering Methods (Random Forest, Boosting)
- Graphical Models
- Time Series Analysis
- Experiment Design / Testing
- Effective Communication
- Mentoring and advising

Education

Doctor of Philosophy in Statistics, University of Waterloo, Waterloo

September 2017 – August 2021

- Provided expert statistical consultation and collaborative research support to faculty and industry partners.
- Collaborated on a wide range of projects, offering valuable insights and data analysis solutions that facilitated evidence-based decision-making and problem-solving.
- Designed an innovative anomaly detection system for healthcare, predicting trend fluctuations in COVID-19 cases, facilitating proactive decision-making during the pandemic.

Masters in Statistics, University of Waterloo, Waterloo

September 2016 – August 2017

Selected Publications

- Shu, K., **Mehrizi, Reza. V.**, Li, S., Pirani, M., & Khajepour, A. (2023). Human Inspired Autonomous Intersection Handling Using Game Theory. IEEE Transactions on Intelligent Transportation Systems.
- Sun, C., Cui, Y., Đào, N. D., **Mehrizi, Reza V**., Pirani, M., & Khajepour, A. (2023). Medium-Fidelity Evaluation and Modeling for Perception Systems of Intelligent and Connected Vehicles. IEEE Transactions on Intelligent Vehicles.
- **Mehrizi, Reza V.**, and Shojaeddin Chenouri. "Valid post-detection inference for change points identified using trend filtering." arXiv preprint arXiv:2104.12022 (2021).
- **Mehrizi, Reza V.**, and Shojaeddin Chenouri. "Detection of change points in piecewise polynomial signals using trend filtering." arXiv preprint arXiv:2009.08573 (2020).
- **Mehrizi, Reza V.**, Akbar Asgharzadeh, and Mohammad Z. Raqab. "Prediction of future failures times based on Type-I hybrid censored samples of random sample sizes." Communications in Statistics-Simulation and Computation 48, no. 1 (2019): 109-125.
- **Mehrizi, Reza V.**, Mohammad Z. Raqab, Akbar Asgharzadeh, and F. A. Alqallaf. "Estimation and prediction for power Lindley distribution under progressively type II right censored samples." Mathematics and Computers in Simulation 149 (2018): 32-47.
- **Mehrizi, Reza V.**, A. Asgharzadeh, and D. Kundu. "Prediction of future failures for generalized exponential distribution under Type-I or Type-II hybrid censoring." Brazilian Journal of Probability and Statistics (2017): 41-61.
- Asgharzadeh, Akbar, **Mehrizi, Reza V.**, and Mohammad Z. Raqab. "Estimation of Pr (Y< X) for the two-parameter generalized exponential records." Communications in Statistics-Simulation and Computation 46, no. 1 (2017): 379-394.
- Asgharzadeh, A., **Mehrizi, Reza V.**, and D. Kundu. "Prediction for future failures in Weibull distribution under hybrid censoring." Journal of Statistical Computation and Simulation 85, no. 4 (2015): 824-838.
- **Mehrizi, Reza V.**, A. Asgharzadeh, and Mohammad Z. Raqab. "Estimation of P (Y< X) for Weibull distribution under progressive Type-II censoring." Communications in Statistics-Theory and Methods 42, no. 24 (2013): 4476-4498.
- Raqab, Mohammad Z., Akbar Asgharzadeh, and **Mehrizi, Reza V.**, "Prediction for Pareto distribution based on progressively Type-II censored samples." Computational Statistics & Data Analysis 54, no. 7 (2010): 1732-1743.
- Asgharzadeh, A., **Mehrizi, Reza V.**, and Mohammad Z. Raqab. "Estimation of the stress–strength reliability forthe generalized logistic distribution."Statistical Methodology15 (2013):73-94.
- Asgharzadeh, Akbar, **Mehrizi, Reza V.**, and Mohammad Z.Raqab. "Stress-strength reliability ofWeibulldistribution based on progressively censored samples."SORT-Statistics and Operations ResearchTransactions(2011): 103-124.

View More Publications on Google Scholar.

Hobbies

- Yoga/Meditation
- Martial arts/self-defence Training
- Volunteering
- Studying Neurology
- Traveling/Camping
- Playing Tennis/ Soccer/ Volleyball
- Hiking/Biking