MANUSHA VEMULAPALLI

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OBJECTIVE

To leverage my academic background and research experience in Industrial Engineering and Computer Science to pursue a PhD in Industrial Engineering at New Mexico State University. I aim to contribute to the field through innovative research in supply chain management, focusing on the integration of Digital Twins and AI for predictive maintenance, real-time optimization, and sustainability. I seek to collaborate with esteemed faculty to advance knowledge and practical applications in these areas, ultimately enhancing efficiency and sustainability in industrial processes.

EDUCATION

Master of Engg. in Industrial Engineering, New Mexico State University — May 2023

Bachelor of Computer Science, Jawaharlal Nehru Technological University, Kakinada — May 2020

SKILLS

Technical Proficiency: Python, R, SQL, Numpy, Tensor Flow, Pandas, Matplotlib, Seaborn, Microsoft Excel and Tableau.

Research Skills: Data Analysis, Machine Learning, Statistical Modeling, Simulation, Optimization Techniques

Soft Skills: Communication, Team Collaboration, Problem-Solving, Time Management.

EXPERIENCE

Data Analyst — July 2023 - Present
Zenspace IT — *Charlotte, NC*

- Designed and implemented data-driven solutions, collaborating with engineering and product teams.
- Identified risks and proposed mitigations to align projects with business goals. Defined success criteria, tracked project schedules, and developed advanced queries for decision support.
- Drove continuous improvements by validating use cases and collecting performance metrics. Provided technical support and customer service, engaging directly with customers.
- Retrieved and analysed large datasets using Excel, SQL, other data management systems and building dashboards to identify trends and opportunities.

Graduate Research Assistant — Aug 2022 - May 2023
New Mexico State University — *Las Cruces, NM*

- Led data management efforts, ingesting, and transforming diverse datasets to ensure data quality and accuracy.
- Utilized MS Excel at a master level to perform complex data analysis and reporting tasks.
- Leveraged basic programming skills in Python and R to enhance data analysis capabilities.
- Performed a demographic data analysis, based on university's population, and generated reports. Applied data visualization through different formats such as graphs, tables, and PowerPoint slides.

Graduate Assistant — Jan 2022 - July 2022
New Mexico State University — *Las Cruces, NM*

- Designed and developed Office of Equity Inclusion Diversity web-pages using HTML, CSS and Cascade.
- Designed posters, flyers using canva and Adobe photoshop.
- Created presentations and other duties as assigned.

Teaching Assistant Jan 2021 - Dec 2021
New Mexico State University *Las Cruces, NM*

- Worked as TA for CS 111 for Introduction to CS principles
- Conducted lab sessions and helped students learn CS principles and basics of Java Programming.
- Held individual office hours for students and help them resolve queries.
- Graded lab assignments, homework and projects.

Data Analyst May 2020 - Dec 2020
Tata AIA Life Insurance *Hyderabad, TS, INDIA*

- Conducted data analysis to identify trends, patterns, and insights to inform business strategy. Created and maintained dashboards for internal stakeholders.
- Coordinated with cross-functional teams to ensure alignment and timely delivery of project milestones.
- Trained and supported end-users on data tools and processes.

PROJECTS

Breast Cancer Detection using Machine Learning . This project involves developing a machine learning model to detect breast cancer using Python, employing key libraries such as Pandas, Numpy, and Matplotlib for data manipulation, numerical computations, and visualization. The model uses Support Vector Machines (SVM) and Artificial Neural Networks (ANN) to classify tumors as malignant or benign. Data preprocessing includes handling missing values, feature scaling, and splitting the dataset. The models are trained and optimized, with performance evaluated using accuracy, precision, recall, and F1-score. The goal is to achieve high detection accuracy for early diagnosis, potentially improving patient outcomes.

Breast Cancer Classification using Machine Learning: Analyzing Predictive Features for Accurate Diagnosis. focuses on developing a machine learning model to classify breast cancer as malignant or benign. Using the publicly available Breast Cancer Wisconsin dataset from the UCI Machine Learning Repository, the team performs extensive data cleaning, including removing irrelevant columns and handling missing values. Exploratory Data Analysis (EDA) is conducted to uncover patterns and correlations, followed by data normalization to standardize feature values. Feature selection is meticulously carried out to identify the most predictive attributes, using various methods like chi-square and tree-based classifiers. The project aims to build, validate, and optimize machine learning models, ultimately leading to accurate and efficient breast cancer detection, thereby contributing to early diagnosis and better patient outcomes.

Implementing Markov Chains for Stock Exchange Analysis in Python. This project involves analyzing stock market data using Python, incorporating Markov's chain to identify optimal stationary values. The data includes stock values of a company, which are tested and analyzed to understand market behavior. Sequential pairs of data are examined for both positive and negative outcomes, recording the highest stock market moves. The project's goal is to gain insights into market trends and behaviors amidst the stock market's volatility, particularly influenced by the recent pandemic.

Analysis and Mitigation of Impacts of Uncertainty on Resource Planning and Real-time Operation of Power Systems. The project focuses on examining the critical impact of uncertainties introduced by renewable energy resources on power system operations, particularly in resource planning and real-time operations. This entails identifying sources of uncertainty such as variable renewable energy generation (wind, solar), fluctuations in electricity demand, and potential disruptions in transmission networks. Advanced optimization models like the Unit Commitment (UC) and Economic Dispatch (ED) models are employed to simulate scenarios and optimize resource allocation for cost minimization while ensuring system reliability. Impact analysis quantifies how uncertainties affect these models, guiding the development of algorithms to mitigate risks through robust optimization techniques and stochastic programming. Integration of renewable energy involves accurate forecasting and optimal utilization through UC models, aiming to reduce reliance on expensive backup resources. Economic evaluations assess the cost implications of mitigation strategies, ensuring alignment with efficiency goals. Validation and implementation using real-world data validate these approaches, with continuous refinement based on operational feedback ensuring ongoing effectiveness in dynamic power system environments.