KAMAL PATEL

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EDUCATION

Rutgers, The State University of New Jersey • New Jersey *September 2024 - Present*
***PhD** in Industrial & Systems Engineering*

***MS** in Industrial & Systems Engineering (GPA: 3.8/4)* *May 2024*

Courses: ML Statistics, Forecasting Analytics, Computational Methods, Deterministic Modeling, Systems Reliability, Data Mining II
Certification: Lean Six Sigma Green Belt

SKILLS

Data Analysis Tools/Packages	Python(Pandas, NumPy, Scikit-learn), PyTorch, TensorFlow, R, MATLAB , Julia, SQL, Minitab
Software Packages	AutoCAD, Flexsim, Gurobi, AnyLogic, SolidWorks, PTC Creo, ANSYS, MS Project, Visio.

ACADEMIC PROJECTS

Paper Implementation - Barzilai-Borwein Step Size for Stochastic Gradient Descent - Computational Methods Course *Spring 2025*
- Implemented the Barzilai-Borwein adaptive step size method for Stochastic Variance Reduced Gradient(SVRG) in Python.
- Compared three algorithms - SGD vs Stochastic Variance Reduced Gradient and SVGR using the Barzilai-Borwein method. Achieved 15% faster convergence on MNIST dataset using the proposed method). GitHub

Electricity Price Forecasting using Autoregressive and LSTM Model (GitHub) – Forecasting Analytics Course *Spring 2025*
- Developed and optimized PyTorch LSTM model for forecasting Location Marginal Price and compared to autoregressive models. Implemented feature engineering and time-series analysis. LSTM model outperformed traditional statistical methods, achieving a MAE of 3.92 and RMSE of 9.21—outperformed the benchmark SARIMAX model (MAE: 4.05, RMSE: 9.87).

Building Energy Consumption Analysis (GitHub) *Spring 2024*
- Visualized shopping mall energy consumption for energy saving options, accelerated pre-processing and feature engineering on 100K time-series data. Applied **K-means** to cluster daily load profiles and build **K-neighbor** regression model to predict consumption, achieving MAPE of 25%.

Loan Default Risk Prediction (GitHub**) -** Data Mining II Course *Fall 2023*
- Preprocessed 300K loan applications addressing missing values, anomalies, and outliers using python exploratory data analysis.
- Built XGBoost and LightGBM model, achieved best leading AUC score of **74.37%** with LightGBM, nearing the top-performing score of **79.5%** on Kaggle competition.

Pattern Visualization for 9 years of US Vehicle Accidents (GitHub) – Data Analytics in Systems Engineering Course *Fall 2022*
- Investigated 2.8M US accidents from 2016-2022 using EDA and studied impact of environmental stimuli on traffic behavior.
- Performed extensive patterns analysis using **R & ggplot2** to identify safety risks and proposed data-driven policies for road safety.
- Developed interactive visualizations in **Tableau** and built a web app using **Streamlit** for 800K data points.

WORK EXPERIENCE

Rutgers University – Industrial & Systems Engineering Department *Jan 2025 - Present*
Teaching Assistant
- Assisted in teaching graduate **Applied Optimization** and undergraduate **Intro to Reliability Engineering** courses.
- Supported professors in course management, student engagement, evaluate assignments and proctor exams.

Kismet Technologies *May 2023 - Aug 2023*
Industrial Engineer Intern
- Revamped batch manufacturing data tracking by building PowerApps application, boosting R&D efficiency by **11%.**
- Built performance dashboard in **PowerBI** to track production KPI's, increased Overall Operation Effectiveness (OOE) by **15%**.
- Initiated the first production schedule for nano-surface coating, ensured quality compliance with ISO 9001 standard.
- Authored **SOPs** for batch acceptance testing, implemented product recall procedures and developed production schedules.
- Implemented Katana MRP software for inventory management, resulting in a 20% improvement in inventory accuracy.

Mareana: Industry Consulting *Nov 2022 - Dec 2022*
Project Head
- Spearheaded a team of 4 engineers, ensured effective communication and task delegation resulting in timely project completions.
- Analyzed turbine simulation data in **Minitab**, identified production bottlenecks and proposed improvement solutions.
- Evaluated and built **FlexSim** discrete event model, optimized line balancing, reducing production time by 23.5%.

Susha Founders and Engineers *Dec 2021 - May 2022*
Manufacturing Engineer Intern
- Conducted time study for assembly processes for 2 production stages, reduced production time by 8%.
- Examined inventory data using **VLOOKUPs** and **Pivot Tables** to forecast new reorder level and EOQ.
- Enforced **5S** principle for tool accessibility and safety, rearranged tool crib for space optimization increasing productivity by 10%.
- Optimized monthly OEE, streamlined production reviews, and improvement reports generated, resulting in a 10% boost in operational efficiency within **six** months.

LEADERSHIP

Lead Mechanical Engineer - NYU Autonomous Vehicle
- Led a team of 10 engineers in the design and development of a self-driving vehicle, achieved 3rd place in the competition.