

- Bengaluru
- Ahmedabad

PROFILE

Ph.D. from NIT, Surat. MNC work experience. Highly motivated and detail-oriented, with a passion for solving complex problems and a desire to continuously learn and improve. Published papers and presented work at conferences. Seeking a challenging and rewarding opportunity in a dynamic organization.

SKILLS

Get data	SQL, Web Scraping, API Libraries: Selenium, BeautifulSoup, Scrapy, pandas datareader
Store data	Cloud, CSV, JSON, Databases
Clean data	Languages: Python, R (Basic), Libraries: Pandas, Numpy
Analyse data	Techniques: EDA, Feature engineering Visualization: Tableau, Matplotlib, Seaborn, Squarify, Plotly Statistics: Descriptive Statistics, Inferential Statistics, Hypothesis Testing, ANOVA Machine Learning: Supervised- LR, Log Reg, DT, RF, KNN, NB, SVM, Adaboost, XGBoost, Ensemble Unsupervised- K-means Clustering, Agglomerative Clustering, Market Basket Analysis NLP- BOW, N-gram, TF-IDF Libraries: sklearn, xgboost, mlxtend, NLTK, Spacy, Textblob, Regex, Flair Dimension reduction: PCA, Correlation checks, Recursive feature elimination, TSNE Lasso regularization, Feature importance, Chi-square filter, LCA Anomaly detection: Cascading- Isolation Forest, Local outlier factor, One class SVM Deep Learning: DNN, CNN, NLP, RNN, GAN, Time series forecasting, Reinforcement Learning Models: ResNet50, Word2Vec, Glove, BERT, LSTM, GRU, GPT Libraries: Tensorflow, Keras, Gensim, gTTS, pyaudio, speechrecognition, flair
Deploy model	Tools: Git, Linux MLOPs: PySpark, Hadoop, Sqoop, Hive Web: Flask, AWS EC2

PUBLICATIONS

Summary:

Patent: 1, Journals: 11, Book Chapters: 7, Conference papers: 6, Conference proceedings: 4

Recent Research papers:

- 1) **‘Machine learning and regression analysis approaches for investigation of mechanical properties of FDM manufactured re-entrant auxetic structures under flexural loading’** in Journal of Advanced Manufacturing Systems
- 2) **‘FDM manufactured auxetic structures: An investigation of mechanical properties using machine learning techniques’** in International Journal of Solids and Structures

WORK EXPERIENCE

- **Data Scientist**, Datainsights, April 2022 – Till date
- **Doctoral Researcher**, Sardar Vallabhbhai National Institute of Technology, July 2018 – March 2022
- **Assistant Professor**, Dr. Vithalrao Vikhe Patil College of Engineering, July 2014 – July 2018
- **CAE Engineer**, Faurecia Interior Systems India Pvt. Ltd., July 2011 – July 2014

INDUSTRY PROJECTS

- Developed a machine learning model to **cluster** journals using a content-based **Recommendation System**. Library used- ast. Algorithms used- BOW, BERT and multi-qa-mpnet-base-dot-v1. Similarity is evaluated using cosine similarity. Recommendation of journals is accomplished.
- Developed a machine learning model for **predicting presence or absence of Cardio Vascular Disease**. Feature selection- Chi square statistical test, Feature importance in DT and RF. Algorithms used- KNN, SVM, Log R,

DT, Bagging classifier, RF, Extra tree classifier, NB, Adaboost, Gradient Boosting, XGBoost. Accuracy of 96.3% is achieved using RF.

- Solved **E-commerce Domain** Problem of **Clustering customers** as per RFM approach, i.e., Recency, Frequency, and Monetization. Datetime library is used to convert Date column from object to datetime. Done Manual clustering using quantiles. Also used K-Means algorithm for clustering.
- Created a **Time Series Forecasting** model to forecast **Supply Chain management**. Packages used- Prophet, pystan, statsmodels.tsa.seasonal. Plotted trend, seasonality, and residual. Forecasting is done.
- Created a machine learning model to classify presence or absence of **Defect in Manufacturing**. Dimensionality reduction is done using PCA. Algorithms used- Log R, RF. Accuracy of 95.9% is achieved using RF.
- Implemented a machine learning model to **classify** person eligible for giving **Loan** or not. Handled imbalance dataset using RandomOverSampler. Used voting and stacking ensemble techniques. Trained and evaluated NB and SVM algorithms. NB algorithms performed better than SVM.
- Developed **Association rules** for predicting purchase of items. Library used- apyori, Algorithms used- apriori. Association rules are developed for prediction of purchase of second item when one item is purchased.
- Implemented a machine learning model to **classify** transaction into **Fraud** or not. Trained and evaluated Log R, DT, RF, XGBoost, Isolation Forest, Local outlier factor, One class SVM. Isolation forest algorithm performed better than others with 99.74% accuracy.
- Implemented a machine learning model to **classify Churn of an employee**. Used Pycaret library for automating ML model development. Trained and evaluated XGBoost, Gradient Boosting Decision Tree, Adabost. K-Fold cross validation is used for checking accuracy of training and testing set. XGBoost algorithm performed better than others. Calculated predicted probability using Logistic Regression.

RESEARCH PROJECTS

- Developed a CNN model to **predict Mechanical Properties** of additively manufactured parts from images of cross-section after destructive testing. Pre-processing- Imagedatagenerator is used for Data Augmentation. Pre-trained models used are VGG16 and ResNet50. Functional API with Fine tuning is used. Transfer learning model developed from ResNet50 performed better.
- Developed a machine learning model to **predict Strength, Stiffness, and SEA** of auxetic structures manufactured by FDM AM technique. Pre-processed the data by performing feature engineering techniques like treatment of outlier, feature scaling. Trained and evaluated multiple regression models, such as XGB Regressor and MLP Regressor for its high accuracy. Achieved best Adjusted R2 score of 91.7% for XGB Regressor.
- Developed a machine learning model to **classify Surface Morphology** of parts manufactured by SLM AM technique. Trained and evaluated multiple classification models, such as Log R, XGB Classifier, SVM. Achieved 98.2% accuracy for XGB Classifier and SVM. Process maps are constructed for different value of hyperparameter C to predict process condition effective for fabricating part with low pore density.
- Implemented a machine learning model to **predict Part Filling Degree** of AM parts. Trained and evaluated multiple models, such as LR, RF, XGB Regressor, MLP Regressor for its high accuracy. Hyperparameter tuning using RandomizedSearchCV. Achieved best Adjusted R2 score of 86.7% for RF.
- Created a machine learning model to **predict Melting Efficiency** of wire arc AM technique. Trained and evaluated regression models, such as LR, XGB Regressor, MLP Regressor for its high accuracy. Hyperparameter tuning using GridSearchCV. Accomplished 20% improvement in melting efficiency by tuning process parameters.
- Developed a machine learning model to **predict Density** of PBF AM parts. Trained and evaluated LR model. Checks performed for validating results of linear regression such as normally distributed dataset, value of Adjusted R2 and p-value, no auto-correlation, no multicollinearity. Achieved Adjusted R2 score of 98.7%.

EDUCATION

2018-22	Ph.D. , Sardar Vallabhbhai National Institute of Technology, Surat	CPI: 9.08/10
2009-11	M. Tech. , University of Mumbai, Mumbai	CPI: 8.5/10
2005-09	B.E. , University of Pune, Pune	Percentage: 61.03/100

HOBBIES

Reading books	3D printing	Planning
Writing research articles	Watching movies	