

## PROFILE

Recent Ph.D. having industrial experience. Highly motivated and detail-oriented, with a passion for solving complex problems and a desire to continuously learn and improve. Published papers, presented work at conferences, and taught undergraduate-level courses. Seeking a challenging and rewarding opportunity in a dynamic organization.

## SKILLS

Get data	SQL, Web Scraping, Selenium, bs4, API, Scrapy
Store data	CSV, JSON, Databases, AWS
Clean data	<b>Languages:</b> Python, R (Basic) <b>Libraries:</b> Pandas, Numpy
Analyse data	<b>Visualization:</b> Tableau, Matplotlib, Seaborn, EDA, Feature engineering <b>Statistics:</b> Descriptive Statistics, Inferential Statistics, Hypothesis Testing, ANOVA <b>Machine Learning:</b> 1) Supervised- LR, Log R, DT, RF, KNN, NB, SVM, Adaboost, XGBoost, Stacking 2) Unsupervised- K-means Clustering, Agglomerative Clustering, Market Basket Analysis 3) NLP- BOW, TF-IDF. <b>Libraries:</b> sklearn, xgboost <b>Dimensionality reduction:</b> PCA, Correlation checks, Recursive feature elimination, Chi-square filter, Lasso regularization, Feature importance <b>Anomaly detection:</b> Cascading- Isolation Forest, Local outlier factor, One class SVM <b>Deep Learning (Basic):</b> DNN, CNN, NLP, Time series forecasting, Word2Vec, BERT <b>Libraries:</b> Tensorflow, Keras, NLTK, Spacy, Textblob, Gensim.
Deploy	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
- **Ph.D. 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 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
- Developed a machine learning model to cluster movies using a **Recommendation System**. Pre-processed data using lambda and apply function. Library used- ast. Algorithms used- BOW, Bidirectional encoder representation from transformers (BERT). Recommendation of movies is accomplished.
- 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

- Created a machine learning model to classify presence or absence of **Parkinson Disease**. Dimensionality reduction is done using PCA. Algorithms used- Log R, DT, RF, SVM, NB, Voting Classifier, XGBoost, DNN. Accuracy of 99% is achieved using RF and DNN
- 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. Trained and evaluated NB and SVM algorithms. NB algorithms performed better than SVM
- Created a machine learning model to classify presence or absence of **Liver Disease**. Libraries used are pycaret and numba. Drawn Feature importance plot. Algorithms used- Log R and Extra Tree Classifier. Accuracy of 76.03% is achieved using Extra Tree Classifier
- 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**. 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

## RESEARCH PROJECTS

- 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 outlier, no auto-correlation, no multicollinearity. Achieved Adjusted R2 score of 98.7%
- Designed a machine learning model to predict **roughness, tensile strength, and elongation** of parts manufactured by AM technique. 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 outlier, no auto-correlation, no multicollinearity

## EDUCATION

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

## HOBBIES

Reading books	3D printing	Planning
Writing research articles	Watching movies	