BVRIT HYDERABAD
College of Engineering for Women
Department of Information Technology
Major Project - Academic Year 2021-22

TEAM 1

Model for Diabetes Prediction

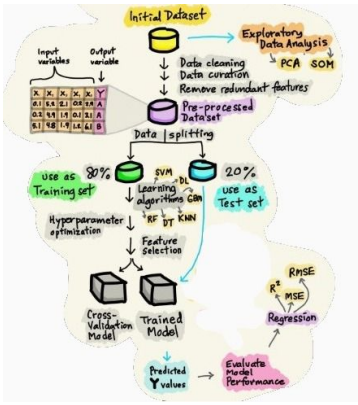
Abstract

In this project, we focused on models to determine whether a patient admitted to an ICU has been diagnosed with a particular type of diabetes, Diabetes mellitus. The dataset contains 130,157 patients data, where 70 percent are used for training and 30 percent are used for testing. Since the dataset has 371 attributes, we used feature engineering to optimize the data and then im -plemented various Machine Learning algorithms like XGB, Random forest and LightGBM to predict diabetes mellitus which results in AUC score 0.86.For improving results we have applied Hyper Parameter tuning which resulted in 0.872 AUC score.

Modules

Exploratory Data Analysis
Data Preprocessing
Feature Selection
Correlation
Hyper Parameter Tuning

Project Design



Tools and Technologies

- **Python**
- **Machine learning libraries**
- **Data Science**
- **Streamlit**
- **Visual Studio and Colab.**

Conclusion and Future Scope

The main aim of this project was to design and implement Diabetes Prediction Using Machine Learning Methods and Performance Analysis of that methods and it has been achieved successfully. As of now the risk of diabetes was predi cted using different algorithms like XGBoost and Light GBM.LightGBM classifier performs better on integer encoded categorical values.Some techniques like resampling,extraction of indicators using the blood pressure columns into new features, missing value handling of BMI and Blood. pressure columns,5-fold cross validation are the major reasons for the better accuracy.A combination of both feature engineering and Hyper Parameter Optimization can result in best acc -urate results.Streamlit is used to build a interactive Data Science web application with all visualization part and predic -tions.

Guide

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Github Links:

1. https://github.com/Satya-Anusha/Major-Project
2. https://github.com/HarshithaDiddi/Major-Project
3. https://github.com/18WH1A1233/Major-Project
4. https://github.com/KujalaDivya25/Major-Project