Model Development Phase Template

Date	4 july 2024
Team ID	SWTID1720110187
Project Title	Revolutionizing Liver Care: Predicting Liver Cirrhosis Using Advanced Machine Learning Techniques
Maximum Marks	5 Marks

Model Selection Report

In the model selection report for the liver cirrhosis prediction project, various machine learning models were evaluated. Factors such as performance, complexity, and computational requirements were considered to determine the most suitable model for predicting liver cirrhosis.

Model Selection Report:

Model	Description
Logistic Regression	A linear model for binary classification that estimates the probability of a binary outcome based on input features. This model is simple and interpretable.
Logistic Regression CV	An advanced version of logistic regression that uses cross-validation to find the best hyperparameters, improving model performance. Achieved the highest accuracy and f1-score in the evaluation.
Random Forest	An ensemble learning method that constructs multiple decision trees during training and outputs the mode of the classes for classification. It provides good performance but had the lowest accuracy among the models evaluated.

K-Nearest Neighbors	A non-parametric method that classifies data based on the majority class among the k-nearest neighbors. Suitable for smaller datasets and performed well after hyperparameter tuning.
Ridge Classifier	A linear classifier that applies L2 regularization to prevent overfitting, providing a balance between bias and variance
Support Vector Classifier (SVC)	A powerful classifier that finds the optimal hyperplane separating the classes in a high-dimensional space. It performs well on complex datasets but can be computationally expensive.
XGBoost	An efficient and scalable implementation of gradient boosting that uses decision trees. It provides high accuracy and efficiency, making it the final model chosen for this project due to its highest precision and accuracy.