

Model Development Phase Template

Date	19 June 2025
Team ID	SWTID1749622322
Project Title	HealthCareApp – Mental Health Prediction Model Using ML
Maximum Marks	6 Marks

Model Selection Report

In the forthcoming Model Selection Report, various models will be outlined, detailing their descriptions, hyperparameters, and performance metrics, including Accuracy or F1 Score. This comprehensive report will provide insights into the chosen models and their effectiveness.

Model	Description	Hyperparameters	Performance Metric (e.g., Accuracy, F1 Score)
Random Forest	Ensemble of decision trees; robust, handles complex relationships, reduces overfitting, and provides feature importance for loan approval prediction.	-	Accuracy score = 83.73%
Decision Tree	Simple tree structure; interpretable, captures non-linear relationships, suitable for initial insights into loan approval patterns.	-	Accuracy score = 76.27%
KNN	Classifies based on nearest neighbors; adapts well to data patterns, effective	-	Accuracy score = 77.33%

	for local variations in loan approval criteria.		
Gradient Boosting	Gradient boosting with trees; optimizes predictive performance, handles complex relationships, and is suitable for accurate loan approval predictions.	-	Accuracy score =84%
Logistic Regression	A simple, interpretable classification algorithm that predicts the probability of a binary outcome. It works well for linearly separable data.	-	Accuracy score =85.07%
GaussianNb	A probabilistic classifier based on Bayes' Theorem assuming normal distribution of features. It is fast and performs well with small datasets.	-	Accuracy score =84.53%
SVC model	A powerful algorithm that finds the optimal boundary (hyperplane) to separate classes. It works well for high-dimensional data and non-linear problems.	-	Accuracy score =85.33%
AdaBoost	An ensemble model that combines weak learners (usually decision trees) in sequence. It focuses on misclassified instances to improve accuracy.	-	Accuracy score =86.93%

XG Boost	An advanced boosting algorithm known for speed and performance. It builds decision trees in a sequential manner and reduces errors through regularization.	-	Accuracy score =84%
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