Model	Description	Hyperparameters	Performance Metric(e.g., Accuracy,F1 Score)
Random Forest	Randomforest:Ensemble learningmethodcombining multipledecisiontreestopredict mentalhealthoutcomes.Handles complexrelationshipsandavoids overfitting,achievinghigh accuracyindiversedatasets.	-	Accuracyscore = 78%
Decision Tree	Decisiontrees:Graphicalmodels thatpartitiondatabasedon featurestopredictmentalhealth outcomes.Intuitive,interpretable, andusefulforidentifying significantpredictorsincomplex datasets.	-	Accuracyscore = 73%
KNN	K-NearestNeighbors(KNN):Nonparametricmethodpredicting mentalhealthbasedonsimilarity toneighboringdatapoints. Simple,interpretable,but sensitivetoirrelevantfeatures andrequirescarefulselectionof K.	-	Accuracyscore = 51%

XGB Classifier	XGBoost(ExtremeGradient Boosting)Classifier:Advanced machinelearningalgorithmfor mentalhealthprediction, optimizingdecisiontrees sequentiallytoenhanceaccuracy, handlingcomplexrelationships,		Accuracyscore =83%
	andavoidingoverfittingwith regularizationtechniques.		
Logistic Regression	LogisticRegression:Statistical methodmodelingtheprobability ofmentalhealthoutcomesbased oninputvariables.Linear relationshipassumption, interpretablecoefficients, suitableforbinaryclassification taskswithwell-defineddecision boundaries.		Accuracyscore =51%

ModelDevelopmentPhaseTemplate

Date	20June2024
TeamID	740007
ProjectTitle	Mentalhealthprediction
MaximumMarks	6Marks

ModelSelectionReport:

Comparedlogisticregression,XGBClassifier,andrandomforestformentalhealth prediction.XGBClassifieroutperformedotherswith83%accuracy,robustto overfittingandhandlingnonlinearrelationships.