Model Development Phase Template

Date	11 July 2024
Team ID	SWTID1720075414
Project Title	Panic Disorder Detection
Maximum Marks	6 Marks

Model Selection Report :

In the 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 Selection Report :

Model	Description	Hyperparameters	Performance Metric (e.g., Accuracy, F1 Score)
Random Forest	This model utilises multiple decision trees to boost prediction accuracy, captures complex relationships and minimises overfitting. Also highlights key causes of panic disorder.	Fitting 5 folds for each of 162 candidates, totalling 810 fits Best Hyperparameters: {'max_depth': None, 'max_features': 'sqrt', 'min_samples_leaf': 1, 'min_samples_split': 2, 'n_estimators': 200} **Best Score 0.9909575301676853**	Accuracy: 98.4%

Decision Tree	Provide a clear, framework to identify critical risk factors and understand the progression of panic disorder by mapping out relationships between elements.	Fitting 5 folds for each of 216 candidates, totalling 1080 fits Best Hyperparameters: {'criterion': 'entropy', 'max_depth': None, 'max_features': None, 'min_samples_leaf': 1, 'min_samples_split': 2} **Best Score 0.9915112573786763**	Accuracy: 98.7%
KNN	Shows the proximity of similar cases to predict panic disorder, helping us better understand individual symptoms and their triggers.	-	Accuracy: 77.2%
Extra Tree Classifier	Uses a collection of decision trees that are randomly generated to predict panic disorder, highlighting diverse symptom patterns and their triggers.	-	Accuracy: 97.6%
XGBoost	Predicts panic disorder by orderly refining predictions and finding complex relationships between symptoms and risk factors. This model is very beneficial in this project because of the scale of the dataset.	Fitting 5 folds for each of 54 candidates, totalling 270 fits Best Hyperparameters: {'colsample_bytree': 0.8, 'gamma': 0, 'max_depth': 6, 'min_child_weight': 10} **Best Score 0.9889933657211513**	Accuracy: 86.7%