Model Development Phase Template

Date	12 July2024
Team ID	SWTID1720174957
Project Title	Human Resource Management: Predicting Employee Promotions Using Machine Learning
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 Selection Report:

Model	Description	Hyperparameters	Performance Metric (e.g., Accuracy, F1 Score)
decision Tree	Designed for both regression and classification applications, a decision tree is a supervised machine learning technique. In order to create a decision tree model, it divides the data into subsets according to the input feature values.	criterion='entropy', max_depth=5, min_samples_split=10, min_samples_leaf=5,random_state=42	Accuracy Score=93.73%

randomForest	In order to improve prediction accuracy and robustness through a reduction in overfitting and an increase in model generalization ability, Random Forests, one of the key algorithms of ensemble learning, integrate many decision trees.Because Random Forest surpasses the accuracy of individual decision trees in this way, it is widely used for problems involving classification and regression.	n_estimators=100, max_depth=5, random_state=42	Accuracy Score=94.94%
KNN	K-Nearest Neighbors (KNN) is a simple yet effective machine learning algorithm that predicts the output of a new instance by finding the most similar instances in the training data and voting on their labels, resulting in accurate	n_neighbors=3, weights='uniform',algorithm='auto',leaf_size=10	Accuracy Score=89.52%
xgboost	XGBoost is a highly efficient and flexible gradient boosting algorithm that excels in handling	n_estimators=100, learning_rate=0.1, max_depth=3, random_state=42	Accuracy Score=86.43%

	structured/tabular data. Several data scientists and machine learning practitioners use it exclusively because of its speed, accuracy, and scalability.		