

Model Development Phase Template

Date	15 July 2024
Team ID	XXXXXX
Project Title	Human Resource Management: Predicting Employee Promotions Using Machine Learning
Maximum Marks	6 Marks

Model Selection Report

Model	Description	Hyperparameters	Performance Metric (e.g., Accuracy, F1 Score)
Decision Tree	Simple tree structure; interpretable, captures non-linear relationships, suitable for initial insights into promotion patterns	random_state=42	Accuracy Score: 0.94
Random Forest	Ensemble of decision trees; robust, handles complex relationships, reduces overfitting, and provides feature	random_state=42, n_estimators=100	Accuracy Score: 0.96

	importance for promotion prediction		
K-Nearest Neighbors (KNN)	Classifies based on nearest neighbors; adapts well to data patterns, effective for local variations in promotion criteria	n_neighbors=5	Accuracy Score: 0.91
Gradient Boosting	Gradient boosting with trees; optimizes predictive performance, handles complex relationships, and is suitable for accurate promotion predictions	random_state=42	Accuracy Score: 0.87

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.