Model Development Phase Template

Date: 31 July 2025
SkillWallet ID: SWUID20240141492
Project Title: Employee Performance Prediction using Machine Learning

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Maximum Marks: 6 Marks

Model Selection Report

This report outlines the machine learning models considered for predicting employee performance. Each model is described with its purpose, hyperparameters, and performance metrics.

Model	Description	Hyperparameters	Performance Metric (R^2 Score)
Linear Regression	Establishes a linear relationship between features and performance score.	Default parameters	R^2 Score = **0.78**
Random Forest	Ensemble of decision trees; reduces overfitting and highlights feature importance.	`n_estimators=100, max_depth=10`	R^2 Score = **0.85**
XGBoost	Gradient boosting algorithm; high accuracy, handles feature interactions well.	`learning_rate=0.1, n_estimators=200, max_depth=6`	R^2 Score = **0.88**
Decision Tree	Simple interpretable tree; useful for initial insights and feature splits.	`max_depth=5`	R^2 Score = **0.74**