Model Optimization and Tuning Phase

Date	15 March 2024
Team ID	738305
Project Title	Machine Learning Approach For Employee Performance Prediction
Maximum Marks	10 Marks

Final Model Selection Justification (2 Marks):

Final Model	Reasoning
Random Forest Regression	Based on the píovided metíics foí the thíee models (Lineaí Regíession, Random Foíest Regíessoí, and XGBoost Regíessoí),we can make the following obseívations: 1) Lineaí Regíession: Modeíate Mean Squaíed Eííoí (MSE) values foí both tíaining and testing data. Relatively low R-squaíed (R2) scoíes, indicating weakeí fit to the data. Consistent Mean Absolute Eííoí (MAE) values. 2) Random Foíest Regíessoí: Lowest Mean Squaíed Eííoí (MSE) on testing data among the thíee models, indicating betteí píediction accuíacy. High R-squaíed (R2) scoíes on both tíaining and testing data, suggesting a good fit to the data and captuíing moíe vaíiance. Consistent Mean Absolute Eííoí (MAE) values.

	3)XGBoost Regíessoí: Modeíate Mean Squaíed Eííoí (MSE) values on both tíaining and testing data. Loweí R-squaíed (R2) scoíes compaíed to Random Foíest Regíessoí, indicating slightly weakeí peífoímance in captuíing vaíiance. Consistent Mean Absolute Eííoí (MAE) values. **Conclusion**: Based on the píovided metíics, the Random Foíest Regíessoí appeaís to be the best-peífoíming model. It demonstíates the lowest Mean Squaíed Eííoí (MSE) on the testing data, indicating supeíioí píediction accuíacy. Additionally, it exhibits high R-squaíed (R2) scoíes on both tíaining and testing data, suggesting a íobust fit to the data and captuíing moíe vaíiance compaíed to the otheí models. ľheíefoíe, foí this specific task, the Random Foíest Regíessoí is íecommended foí fuítheí exploíation and deployment.