Model Development Phase Template

Date	29 JUNE 2024
Team ID	739773
Project Title	A Comprehensive Measure of Well-Being: The Human Development Index 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	Description	Hyperparameters	Performance Metric (e.g., MSE,SCORE)

Random Forest	Random forests are widely used in various machine learning tasks due to their robustness, accuracy, and ability to handle complex datasets with highdimensional features. They are particularly effective when individual decision trees may overfit the data or when interpretability of individual trees is less critical compared to overall predictive performance.	-	Random Forest MSE: 0.001971249999999999 Random Forest Train Score: 0.9947387758915783 Random Forest Test Score: 0.9743873613771092
Decision Tree	Decision trees are popular in machine learning and data mining because they are easy to understand and interpret. They can handle both numerical and categorical data and can be applied to both classification and regression tasks. A decision tree for the Human Development Index (HDI) would aim to classify or predict the HDI value of a region or country based on various factors that contribute to human development.	-	MSE:0.0006954529970833289 Train Score: 1.0 Test Score:0.9274014000

Linear Regression	Linear regression is a statistical method used to model the relationship between a dependent variable and one or more independent variables The equation of this line is typically expressed as $y = mx + b$, where y is the dependent variable, x is the independent variable, m is the slope, and b is the y-intercept. Linear regression is used for predictive analysis and to determine the strength and character of the relationship between variables.	-	MSE: 0.00079211369306 Train: 0.95348095293 Test: 0.970827472375

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