**Model Optimization and Tuning Phase Report**

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| Date | 5 July 2024 |
| Team ID | 739860 |
| Project Title | A Comprehensive Measure Of Well-Being: A  Human Development Index Using Machine Learning |
| Maximum Marks | 10 Marks |

**Model Optimization and Tuning Phase**

The Model Optimization and Tuning Phase involves refining machine learning models for peak performance. It includes optimized model code, fine-tuning hyperparameters, comparing performance metrics, and justifying the final model selection for enhanced predictive accuracy and efficiency.

**Hyperparameter Tuning Documentation (6 Marks):**

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| --- | --- | --- |
| **Model** | **Tuned Hyperparameters** | **Optimal values** |
| Linear Regression | - | - |
| Decision Tree | - | - |
| Random Forest | - | - |

**Performance Metrics Comparison Report (2 Marks):**

|  |  |  |
| --- | --- | --- |
| **Model** |  | **Optimized Metric** |
| Decision Tree | - |  |

|  |  |
| --- | --- |
| Random Forest | - |

**Final Model Selection Justification (2 Marks):**

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| --- | --- |
| **Final Model** | **Reasoning** |
| Linear Regression | The Linear Regression model was selected for its superior performance, exhibiting high accuracy . Its ability to handle complex relationships, minimize overfitting, and optimize predictive accuracy aligns with project objectives, justifying its selection as the final model. |