

## Model Optimization and Tuning Phase Report

Date	5 July 2024
Team ID	739800
Project Title	Predictive Pulse: Harnessing Machine Learning For Blood Pressure Analysis
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):

Model	Tuned Hyperparameters	Optimal values

Linear Regression	-	-
Decision Tree	-	-
Random Forest	-	-

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

Model	Optimized Metric

Decision Tree	-
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Random Forest	-
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**Final Model Selection Justification (2 Marks):**

<b>Final Model</b>	<b>Reasoning</b>
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## Random Forest Regressor

The Random Forest Regressor is an ensemble learning method used for regression tasks. Here it got the high performance. It operates by constructing a multitude of decision trees during training and outputting the mean prediction of the individual trees. Key features include:

- **Robustness:** Reduces overfitting by averaging multiple decision trees.
- **Feature Importance:** Provides insights into the importance of different features in the prediction process.
- **Versatility:** Can handle both linear and non-linear relationships.