Model Development Phase Template

Date	July 2024
Team ID	739871
Project Title	Smart Home Temperature Prediction using Machine Learning
Maximum Marks	5 Marks

Model Selection Report

The objective of this report is to select the best model for predicting the indoor temperature of a smart home using machine learning techniques. The evaluation criteria include model accuracy, robustness, and computational efficiency.

Model Selection Report:

Model	Description
Linear Regressor	Assumes a linear relationship between input variables and the temperature. While easy to implement and interpret, it does not capture the complex relationships between variables as effectively as other models.
Random Forest Classifier	Builds multiple decision trees and merges them for more accurate predictions. Provides good accuracy and robustness by averaging the results of multiple decision trees, reducing overfitting.
LGBM Regressor	LightGBM, a gradient boosting framework that uses tree-based learning algorithms, known for efficiency and speed. Offers fast training and prediction times, along with high accuracy. It effectively handles large datasets and complex patterns.

XGBoost Classifier	The XGBoost due to its superior performance in handling large datasets, capability to capture complex relationships in data, robustness against overfitting, and ability to optimize predictive accuracy through boosting techniques, ensuring reliable and efficient shipping logistics predictions.