Model Optimization and Tuning Phase Template

Date	15 July 2024
Team ID	739834
Project Title	Market Segmentation 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
KMeans	-	-

Performance Metrics Comparison Report (2 Marks):

Model	Baseline Metric	Optimized Metric
KMeans	-	-

Final Model Selection Justification (2 Marks):

Final Model	Reasoning

KMeans	K-means clustering is an unsupervised machine learning algorithm that partitions a dataset into K distinct clusters by iteratively assigning data points to the nearest of K randomly initialized centroids and updating the centroids to the mean of their assigned points. This process repeats until the centroids stabilize or a maximum number of iterations is reached, effectively grouping similar data points together by minimizing intra-cluster variance and maximizing inter-cluster variance. It's widely used for tasks like market segmentation, image compression, and pattern recognition.