Model Optimization and Tuning Phase

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Team ID	739806
Project Title	Occupancy Rates and Demand in the Hospitality Industry.
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
Logistic Regression	-	-
K-Neighbors Classifier	-	-
Decision Tree Classifier	-	-
SVC	-	-

Performance Metrics Comparison Report (2 Marks):

Model	Optimized Metric
Logistic Regression	```from sklearn.linear_model import LogisticRegression
lr = LogisticRegression()
lr.fit(x_train, y_train)

/usr/local/lib/python3.10/dist-packages/sklearn/utils/validation.py:1143: DataConversionWarning: A column-vector y was passed when a 1d array was expected. Please change the shap
  y = column_or_1d(y, warn=True)

▾ LogisticRegression
LogisticRegression()``` |
| Decision Tree Classifier | ```from sklearn.tree import DecisionTreeClassifier
classifier = DecisionTreeClassifier(random_state = 0)
classifier.fit(x_train,y_train)

▾   DecisionTreeClassifier
DecisionTreeClassifier(random_state=0)``` |

| SVC | ```python
from sklearn.svm import SVC
sv=SVC()
sv.fit(x_train,y_train)

/usr/local/lib/python3.10/dist-packages/sklearn/utils/validation.p
  y = column_or_1d(y, warn=True)
▼ SVC
SVC()
``` |
| K-Neighbors Classifier | ```python
from sklearn.neighbors import KNeighborsClassifier
Kn=KNeighborsClassifier()
Kn.fit(x_train, y_train)

/usr/local/lib/python3.10/dist-packages/sklearn/neighbors/_classification.py
  return self._fit(X, y)
▼ KNeighborsClassifier
KNeighborsClassifier()
``` |

Final Model Selection Justification (2 Marks):

Final Model	Reasoning

K-Neighbors Classifier	It is used to find Classification and Regression. KNN classifier is a simple, instance-based learning algorithm. It is a fast and real-time performance.