

## Model Optimization and Tuning Phase

Date	July 2024
Team ID	739888
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
<p>Logistic Regression</p>	<pre>from sklearn.linear_model import LogisticRegression lr = LogisticRegression() lr.fit(x_train, y_train)</pre> <p>/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 shape of y to (n_samples, ), for example using y = column_or_1d(y, warn=True)</p> <p>LogisticRegression</p> <p>LogisticRegression()</p>
<p>Decision Tree Classifier</p>	<pre>from sklearn.tree import DecisionTreeClassifier classifier = DecisionTreeClassifier(random_state = 0) classifier.fit(x_train,y_train)</pre> <p>DecisionTreeClassifier</p> <p>DecisionTreeClassifier(random_state=0)</p>

SVC	<pre>from sklearn.svm import SVC sv=SVC() sv.fit(x_train,y_train)</pre> <pre>/usr/local/lib/python3.10/dist-packages/sklearn/utils/validation.py     y = column_or_1d(y, warn=True)</pre> <div>             ▼ SVC             <div>SVC()</div> </div>
K-Neighbors Classifier	<pre>from sklearn.neighbors import KNeighborsClassifier Kn=KNeighborsClassifier() Kn.fit(x_train, y_train)</pre> <pre>/usr/local/lib/python3.10/dist-packages/sklearn/neighbors/_classification.py     return self._fit(X, y)</pre> <div>             ▼ KNeighborsClassifier             <div>KNeighborsClassifier()</div> </div>

**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.