

- Task-3-->Cuisine Classification
- Importing Libraries

```
import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestClassifier
from sklearn.preprocessing import LabelEncoder
from sklearn.metrics import classification_report, confusion_matrix
from sklearn.utils.multiclass import unique_labels
```

Loading Data

```
df=pd.read_csv("/content/Dataset .csv")
```

Filling Missing Values

```
df['Cuisines'] = df['Cuisines'].fillna('Unknown')
df = df.dropna()
```

```
df['Main Cuisine'] = df['Cuisines'].apply(lambda x: x.split(',')[0].strip())
```

```
features = ['Has Table booking', 'Has Online delivery', 'Price range', 'Aggregate rating']
df = df[features + ['Main Cuisine']]
```

```
df['Has Table booking'] = df['Has Table booking'].map({'Yes': 1, 'No': 0})
df['Has Online delivery'] = df['Has Online delivery'].map({'Yes': 1, 'No': 0})
```

Handle Missing Values

```
le = LabelEncoder()
df['Cuisine_Label'] = le.fit_transform(df['Main Cuisine'])
```

```
X = df[features]
y = df['Cuisine_Label']
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
```

Model Building

```
model = RandomForestClassifier(n_estimators=100, random_state=42)
model.fit(X_train, y_train)
```



```
RandomForestClassifier
RandomForestClassifier(random_state=42)
```

```
y_pred = model.predict(X_test)
```

```
labels = unique_labels(y_test, y_pred)
class_names = le.inverse_transform(labels)
print("Classification Report:\n", classification_report(y_test, y_pred, labels=labels, target_names=class_names))
```



Classification Report:

	precision	recall	f1-score	support
American	0.14	0.07	0.09	46
Andhra	0.00	0.00	0.00	1
Asian	0.00	0.00	0.00	13
BBQ	0.00	0.00	0.00	3
Bakery	0.17	0.12	0.14	112
Bar Food	0.00	0.00	0.00	5
Bengali	0.00	0.00	0.00	3
Beverages	0.00	0.00	0.00	19
Bihari	0.00	0.00	0.00	1
Biryani	0.00	0.00	0.00	18
Brazilian	0.00	0.00	0.00	3
Breakfast	0.00	0.00	0.00	8
British	0.00	0.00	0.00	4
Burger	0.00	0.00	0.00	20
Burmese	0.33	0.33	0.33	3

Cafe	0.12	0.11	0.12	126
Chinese	0.06	0.01	0.02	164
Coffee and Tea	0.00	0.00	0.00	4
Contemporary	0.00	0.00	0.00	2
Continental	0.12	0.05	0.07	41
Desserts	0.20	0.03	0.05	33
Drinks Only	0.00	0.00	0.00	1
European	0.00	0.00	0.00	14
Fast Food	0.09	0.03	0.04	138
Filipino	0.00	0.00	0.00	3
Finger Food	0.08	0.04	0.06	23
French	0.00	0.00	0.00	5
Goan	0.00	0.00	0.00	6
Greek	0.00	0.00	0.00	2
Gujarati	0.00	0.00	0.00	2
Healthy Food	0.00	0.00	0.00	10
Hyderabadi	0.00	0.00	0.00	3
Ice Cream	0.00	0.00	0.00	31
Indian	0.00	0.00	0.00	9
International	0.00	0.00	0.00	2
Irish	0.00	0.00	0.00	1
Italian	0.18	0.12	0.15	56
Japanese	0.00	0.00	0.00	18
Juices	0.00	0.00	0.00	5
Kashmiri	0.00	0.00	0.00	2
Kerala	0.00	0.00	0.00	3
Korean	0.00	0.00	0.00	1
Latin American	0.00	0.00	0.00	1
Lebanese	0.00	0.00	0.00	6
Lucknowi	0.00	0.00	0.00	2
Malaysian	0.00	0.00	0.00	3
Mediterranean	0.00	0.00	0.00	6
Mexican	0.00	0.00	0.00	15
Middle Eastern	0.00	0.00	0.00	1
Mithai	0.00	0.00	0.00	40
Modern Indian	0.00	0.00	0.00	2
Mughlai	0.00	0.00	0.00	47
Naga	0.00	0.00	0.00	1
New American	0.00	0.00	0.00	1

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