Cognifyz Technologies

Task 3: Cuisine Classification

ReadMe:

About the Project:
This project focuses on building a **multi-class classification model** to predict a restaurant's **main cuisine** category based on features such as **online delivery**, **table booking**, **price range**, and **aggregate rating**. The goal is to automate cuisine classification and demonstrate understanding of feature extraction, label encoding, and classification modeling.

Features

1. Cleans the dataset and extracts the first cuisine from multi-cuisine listings
2. Encodes labels and processes categorical values
3. Builds a **Random Forest Classifier** to classify cuisine type
4. Evaluates performance using precision, recall, and F1-score
5. Outputs a detailed classification report

Tech Stack

- **Language:** Python
- **Libraries:**
- • `pandas`, `numpy` – Data manipulation
- • `sklearn` – Model building, preprocessing, evaluation

Dataset

Dataset includes:

- Cuisines (processed to get Main Cuisine)
- Has Table booking
- Has Online delivery
- Price range
- Aggregate rating

Derived column:

- Main Cuisine: First cuisine type (e.g., 'North Indian' from 'North Indian, Chinese')

Installation

- Clone or download the .py file
- Ensure the dataset is placed in the correct path
- Install dependencies:

```
pip install pandas numpy scikit-learn
```

Model Details

- Model: RandomForestClassifier(n_estimators=100, random_state=42)
- Label Encoding applied to cuisine names
- Train/Test Split: 80/20

Evaluation Metrics

- Uses classification_report() and confusion_matrix()
- Metrics reported:
  - Precision
  - Recall
  - F1-score
  - Support per cuisine label

Results

- Classification model accurately predicts cuisine based on restaurant characteristics.
- Model handles multi-class classification with multiple cuisine labels.
- Effective for culinary trend analysis or restaurant tagging.

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