🧠Customer Personality Predictor

A modern Machine Learning & Streamlit-based dashboard that predicts customer segments and generates personalized marketing strategies using:

✅ KMeans Clustering (Customer Segmentation) ✅Random Forest Classifier (Cluster Prediction) ✅ StandardScaler (Feature Scaling) ✅Interactive Streamlit UI

😥Project Overview

This project analyzes customer purchasing behavior and classifies users into meaningful market segments. Based on the input details, the system:

- Predicts customer cluster
- Identifies generation group
- Provides financial and engagement insights
- Suggests personalized marketing strategies
- Displays model training and performance details

This helps businesses: ✅Understand customer behavior ✅Improve targeting & retention ✅Increase conversion rates ✅Optimize marketing spend

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😖Features

✅ Real-time customer prediction ✅Customer segmentation (6 clusters) ✅Personalized marketing strategies ✅Insights dashboard ✅Model information & training summary ✅Visualization charts: - Accuracy chart - Inertia metric (KMeans) - Spend behavior ✅Modern UI with glass theme

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🧠Machine Learning Pipeline

1. Data Processing

- Removed missing values
- Cleaned inconsistent entries
- Feature engineering:
- Total_Spend
- Purchase_Frequency
- Tenure
- Income ratios
- Scaled numeric features using **StandardScaler**

2. Segmentation Model

```
KMeans(n_clusters=6, random_state=42)
```

Used for grouping customers by: ✅Spending ✅Engagement ✅Purchase channels

3. Classification Model

```
RandomForestClassifier(n_estimators=200, random_state=42)
```

Used for predicting cluster labels for new customers

❤️‍🩹Project Structure

```
customer_personality_project/
│
├── app.py
├── model/
│   ├── scaler.pkl
│   ├── kmeans_model.pkl
│   └── best_classifier.pkl
├── data/
│   └── marketing_campaign.csv (optional)
├── README.md
├── requirements.txt
└── venv/
```

👉🏿Installation

1. Clone the repository

```
git clone <repo-url>
cd customer_personality_project
```

2. Create virtual environment (optional)

```
python -m venv venv
source venv/bin/activate   # Mac/Linux
venv\Scripts\activate     # Windows
```

3. Install dependencies

```
pip install -r requirements.txt
```

4. Run the app

```
streamlit run app.py
```

👹Business Use Cases

✅ Customer segmentation ✅Targeted marketing ✅Retention strategy planning ✅Cross-selling & upselling ✅Customer lifetime value prediction

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👇🏿Requirements

Add this to `requirements.txt`:

```
streamlit
pandas
numpy
scikit-learn
joblib
matplotlib
seaborn
```

🎉Author

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If you want: ✅badges ✅deployment instructions ✅screenshots in README ✅animated preview

Tell me and I will upgrade it professionally 🚫