Tourism Experience Analytics

Enhancing Tourist Experiences through Data Science. Project hosted at github.com/Shamprasath3/Tourism-Experience-Analytics.

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Project Overview

Goals

Improve tourism using data analytics and machine learning.

Key Components

- Personalized Recommendations
- Behavior Classification
- Satisfaction Prediction

Technologies & Data

Python, ML Models, Scikit-learn, Pandas; tourist surveys

Travel logs, reviews.

Personalized Recommendations

Objective & Method

Suggest tailored attractions using collaborative filtering and content-based methods.

Data & Metrics

- User preferences and past choices
- Item features analyzed
- CTR improved by 15%

Example

User A interested in history is recommended historical sites.

Tourist Behavior Classification

Segmentation

Classify tourists based on demographics, style, and activities.

Methods

Use clustering algorithms like K-means, DBSCAN to define groups.

Segments & Use

- Budget Travelers
- Luxury Tourists
- Adventure Seekers

Enables 20% higher marketing conversion rates.

Tourist Satisfaction Prediction

Purpose & Approach

Forecast satisfaction using regression models: linear and random forest.

Data Sources

- Reviews and survey responses
- Trip details tracked

Impact

RMSE reduced by 10%, enabling proactive problem solving on trips.

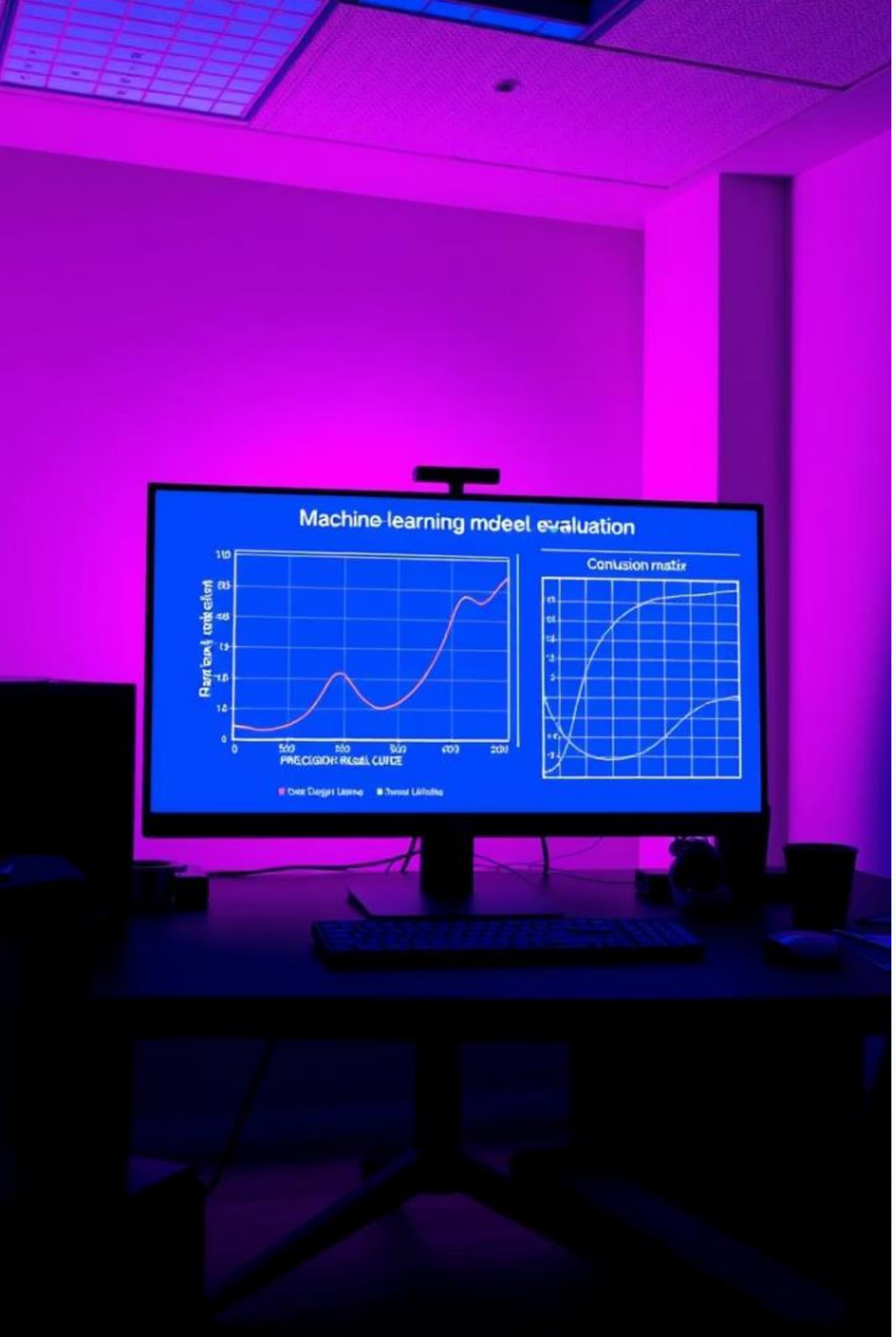
Data Preprocessing & Feature Engineering

Handle missing data via imputation techniques.

Select features and importance metrics.

Clean data by removing outliers carefully.

Transform data with scaling and normalization.



Model Evaluation & Validation

Data Split

80% training and 20% testing split for robust modeling.

Evaluation Metrics

Accuracy, Precision, Recall, and F1-Score analyzed.

Cross-Validation

Use K-fold technique to prevent overfitting.

Tuning

Grid and Random Search optimize hyperparameters.

Technical Architecture

Data Collection

Gather data via APIs and web scraping.

Storage

Cloud databases powered by AWS or Azure.

Model Deployment

Use Flask and REST APIs for scalable service delivery.

Scalability

Built for large datasets and high user traffic.

Results and Impact

0.5

Tourist Satisfaction

Average score increased by 0.5 points.

8%

Revenue Growth

Tourism revenue rose 8% in pilot regions.

100%

Positive Feedback

Strong endorsements from tourism boards and businesses.

Future Directions

Real-Time Personalization

Using streaming data for instant recommendations.

AR Integration

Augmented Reality apps to enhance onsite experiences.

Expansion

Extend project to new regions and tourism sectors.

Open Source

Encourage community contributions for ongoing innovation.