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| **Project Title** | **Tourism Experience Analytics** |

**Project Summary:**

The Tourism Experience Analytics Project involves the development of Regression ML Model to predict the Rating an User would give for a attraction,Classification Model to predict the Visit Mode , a recommendation system to recommend attractions based on user profile & also development of streamlit application to visulaise the ML Model predictions..

**Tools & IDE Used :**

1. PowerBI
2. Visual Studio code 1.96 (IDE for python)
3. Google Collab(IDE for python)

**Application Functionality Description:**

The developed app has a webpage titled “Trip Advisor” with side bar navigation to Rating Predictor, Visit Mode Predictor & Vacation Selector. The default section is the Rating Predictor. In the Rating predictor section , User has the provision to enter UserId, Place the user wants to visit, planned Visit Month,Visit Mode, present city & country of residence.Once the details are entered , User gets a “Predict Rating” button.On clicking the button,the necessary inputs are passed to the regression model & the predicted value is displayed to the user.On selecting the Visit Mode Predictor, User will be given provisions to enter UserId,Place to be visited,Visit month,present city & country.on entering the details “Predict Visit Mode” button is made available ,clicking on which the ML model to predict Visit mode is called by passing the necessary inputs & the predicted value is displayed to user.On selecting the Vacation Selector,User needs to enter the id & press the “Get Suggesstions” button .Once the button is pressed , recommendation engine is ran & the names os top 3 attractions are displayed to the user.In case the User data is not available then the names of top 3 attractions based on the total of visits that the attraction had is displayed to the user

**Backend Code Explanation:**

The ML Models & Streamlit creation are kept in 2 separate files.Initally the ML Models are buile in ipynb file & the same is exported using joblib library.The exported ML Models are then used in Streamlit py file to get the predictions.

For Regression 3 different models ,DescisionTreeRegressor,xgboost & Gradient boosting regressor were tried.For Gradient boosting model hyperparameter tuning was done & the best model among that is used for Rating Prediction.

For Classification, which is the visit mode prediction, Random Forest Classifire is used.In both Regression & Classification model building, GrisSearchCV is used for Hyperparameter tuning.

For recommendation System , 3 different techniques were tried. Intially K-Modes was used to for clustering & based on clustering & SVD Model recommendations were given.Recomendations were also tried with cosine-similarity & pearson’s correlation.Finally Pearson’s correlation was finalised as it gave better results.

**Challenges Faced:**

1.One of the challenges was importing the surprise module , as it had version mismatch errors with numpy in system & numpy used for building the module.Later,for recommendation system alone Google Collab was used as IDE.

2.Another issue was in resetting the button states in streamlit.

3.I also faced issue in fetching the images of recommended attractions.

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