MY 4 WEEKS PROGRESS REPORT

Udit Katyal

Features:

1. Song Recommendation (minimalistic feature)
2. Recommendation on the basis of Genre and Year of Release (old or new)
3. Depicting the Importance of Acousticness, Loudness, Tempo, Liveness, danceability and valence using Feature Correlation
4. Used Spotify API to play songs on the WebApp
5. Redirecting to the recommended Songs on the your personal Spotify app with one click.
6. Calculated the Accuracy and Area under curve of each algorithm to see which is best for Prediction and Recommendation
7. Depicted a 3-D earth Model predicting popularity of most famous song(Blinding Lights) in my dataset in different location.

Week 1: (4th May - 10th May)

Sprint -1 (Exploring and learning)

Decided to explore all 3 given projects, and took 1-2 days and finalized to work on Recommendation engine.

a) **Product Building**
   i. Researched about the shortcomings of recommendation engine.
   ii. Drafted how I am going to build it and which algorithms should be preferred while building this product.

Reason to choose recommendation engine -: I was recently building an Ecommerce platform and I was curious to know how are they able to recommend products so similar to our searches.

Within recommendation I decided to work on either music or job recommendation engine.

Week 2: (11th May – 17th May)

Sprint - 2: (Planning and determining libraries/frameworks to utilize)

Finalized Music Recommendation Engine.

a) **Gathering resources and Analyzing**
   i. Read a few research papers on Recommendation Engine and their working.
      1) https://bit.ly/3t2NiF6
      2) https://bit.ly/3wQPEbj

      ii.   Analyzed product requirements, divided engine among various filtering methods and defined a clear data flow.

  b) Searching Required Dataset
      i.   Analyzed many dataset and searched for the required columns.
      ii.   Finally considered Spotify Gen Track Dataset and filtered it's content.
      iii.   Datasets used:
             i.   https://bit.ly/3z4lm7G
             ii.   https://bit.ly/3lS0s3G

Week 3: (18th May – 24th May)

Sprint – 3: Implementation of the algorithm and Accuracy Tests

  a) Training ML Model
      i.   Configured the dataset and started with Training the ML Model
      ii.   Used KNN Algorithm prior and filtered songs on the basis of content.

  b) Enhancing Algorithms for Recommendation
      i.   Trained the model using **Random Forest Classifier** and got great accuracy of 0.93573
      ii.   Decided to explore other Algorithms - **Decision Tree Classifier, Support Vector, Linear Regression** and **Support Vector**.

      The MOST efficient algorithm with **0.93573** accuracy on 0 – 1 scale was **RANDOM FOREST**

  c) Building UI for deploying the ML Model
      i.   Picked Streamlit for designing the Web App
      ii.   Loaded ML model onto the page
      iii.   Loaded custom widgets and graphs using streamlit, Ploty, Express, Pydeck etc.

Week 4: (25th May – 29th May)

Sprint - 4: Debugging and Deployment

  a) Graphs and Data Allocation
      i.   Pushed graphs and Performance Summary Model
      ii.   Linked Spotify App to the list of recommended songs.

  b) Deployment and Github setup
      i.   Deployed the app on Streamlit
             Link: https://share.streamlit.io/uditkatyal/songfitt_/main/app.py
      ii.   To run and deploy in local, check for README.md file on Github.