



SYMPHONY MEETS

GROUP MEMBERS:

- ASHOK NAYAK 22B0455
- HARSH KAVEDIYA 210100067
- AMITKUMAR KUMAVAT 20D100003
- RITESH DAHAKE 210110092
- TANISHK SAXENA 21D180041
- RAMESH KUMAR 22M0566

OBJECTIVE

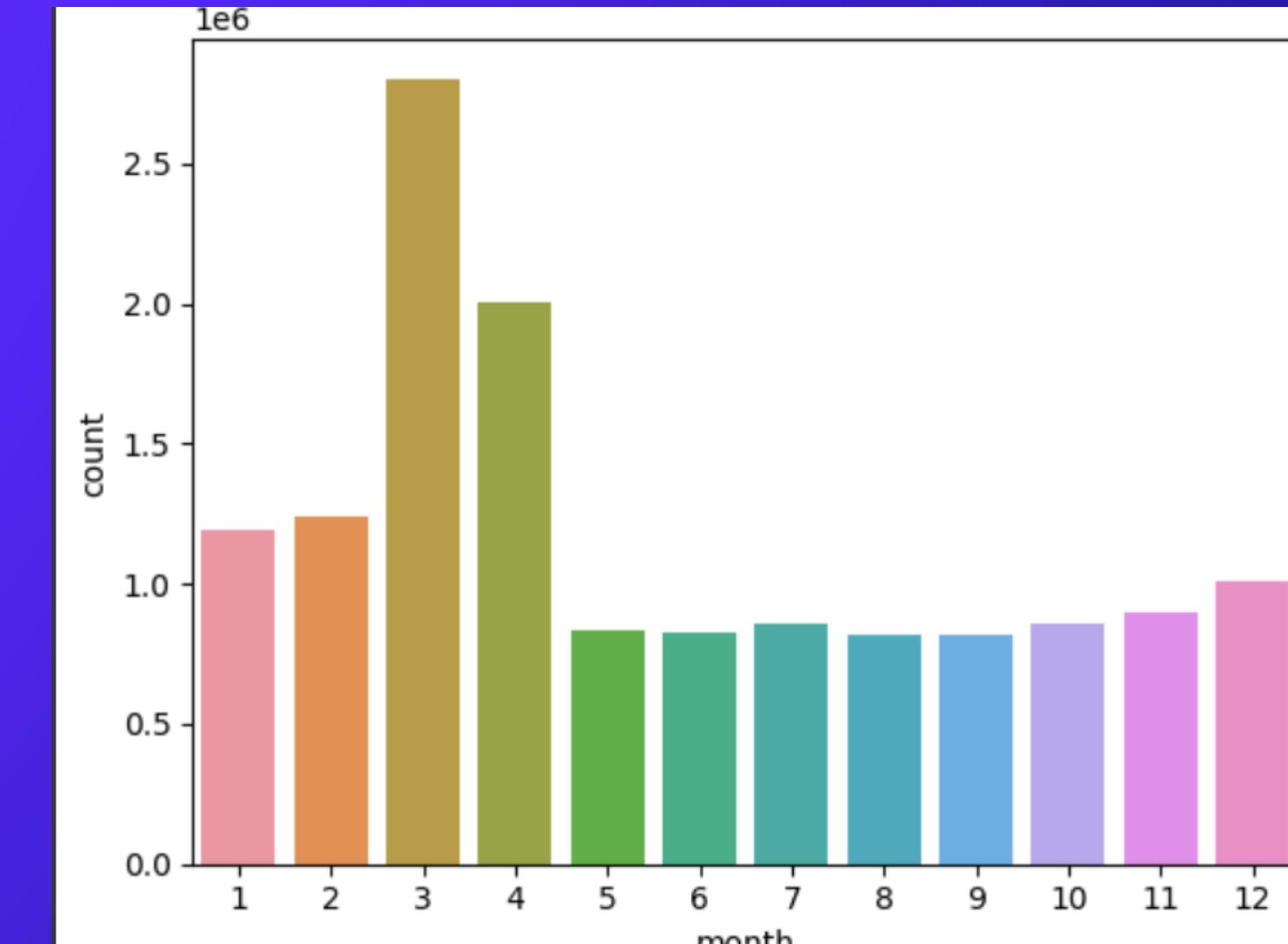
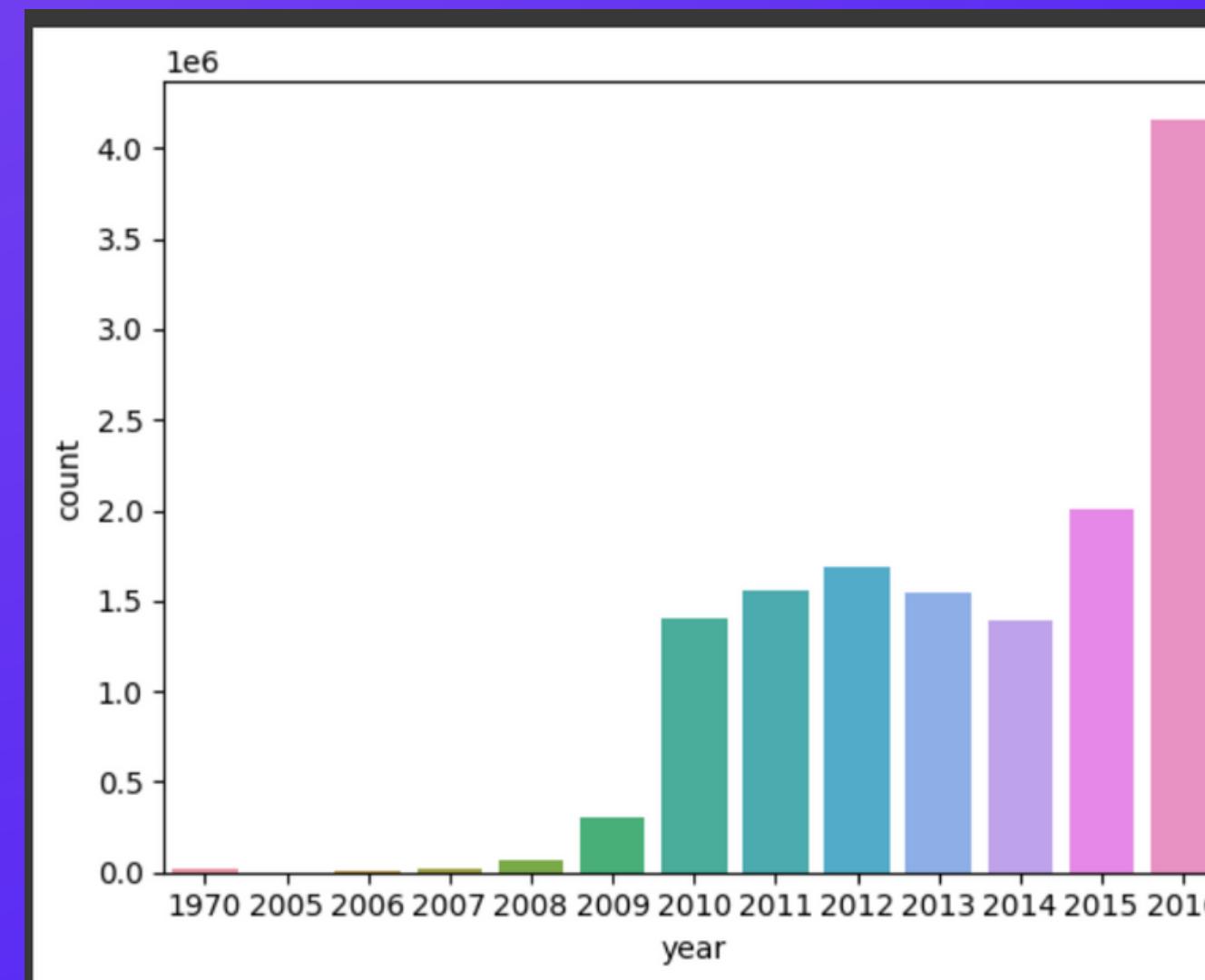
The primary goal of our project was to develop a machine learning model that accurately predicts individuals with music preferences similar to yours. This project enables us to forge meaningful connections by pairing users who not only share common interests but also align with the nuances of their musical inclinations. By delving deep into the intricacies of musical genres, artists, and even specific tracks, our model ensures a finely tuned matchmaking experience. Through this pioneering approach, we aim to enhance the quality of connections, fostering relationships based on a shared passion for music.

MODEL DETAILS

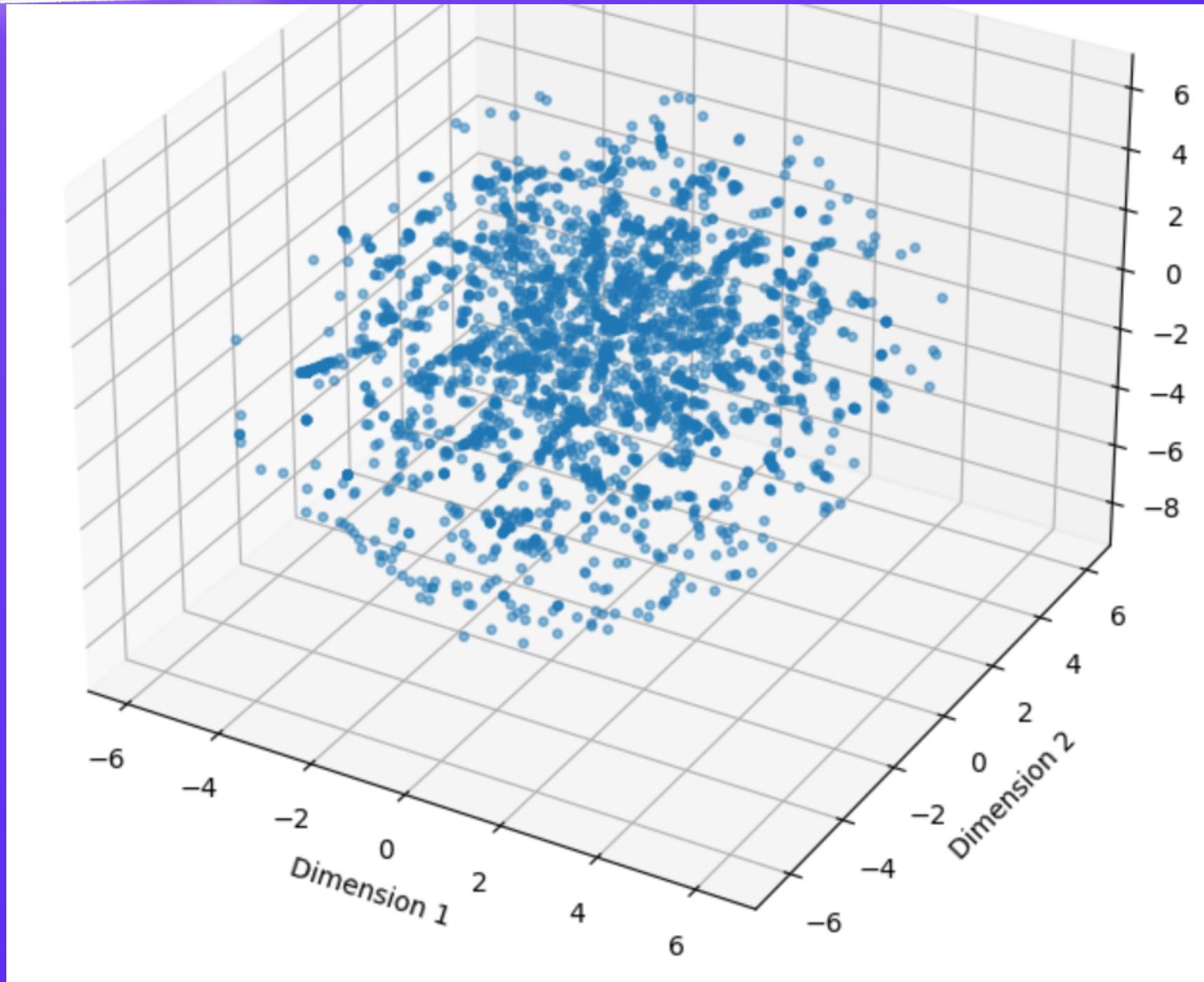
- Utilized a dataset containing user listening history, including artists, tracks, and timestamps
- Explored the dataset to understand unique users, artists, and tracks. Handled missing values and converted timestamp data to extract date components
- Constructed a matrix representing user preferences for each unique track using one-hot encoding.
- Applied Principal Component Analysis (PCA) for 3D visualization of user music tastes.
- Employed K-Means clustering to group users with similar music preferences
- Used the elbow method to determine an optimal number of clusters (80 clusters in this case).
- Assessed model performance using Inertia, Silhouette Score, and Davies-Bouldin Index.
- Developed a recommender system to suggest friends with similar music tastes and recommend favorite artists.

MODEL TRAINING AND TESTING

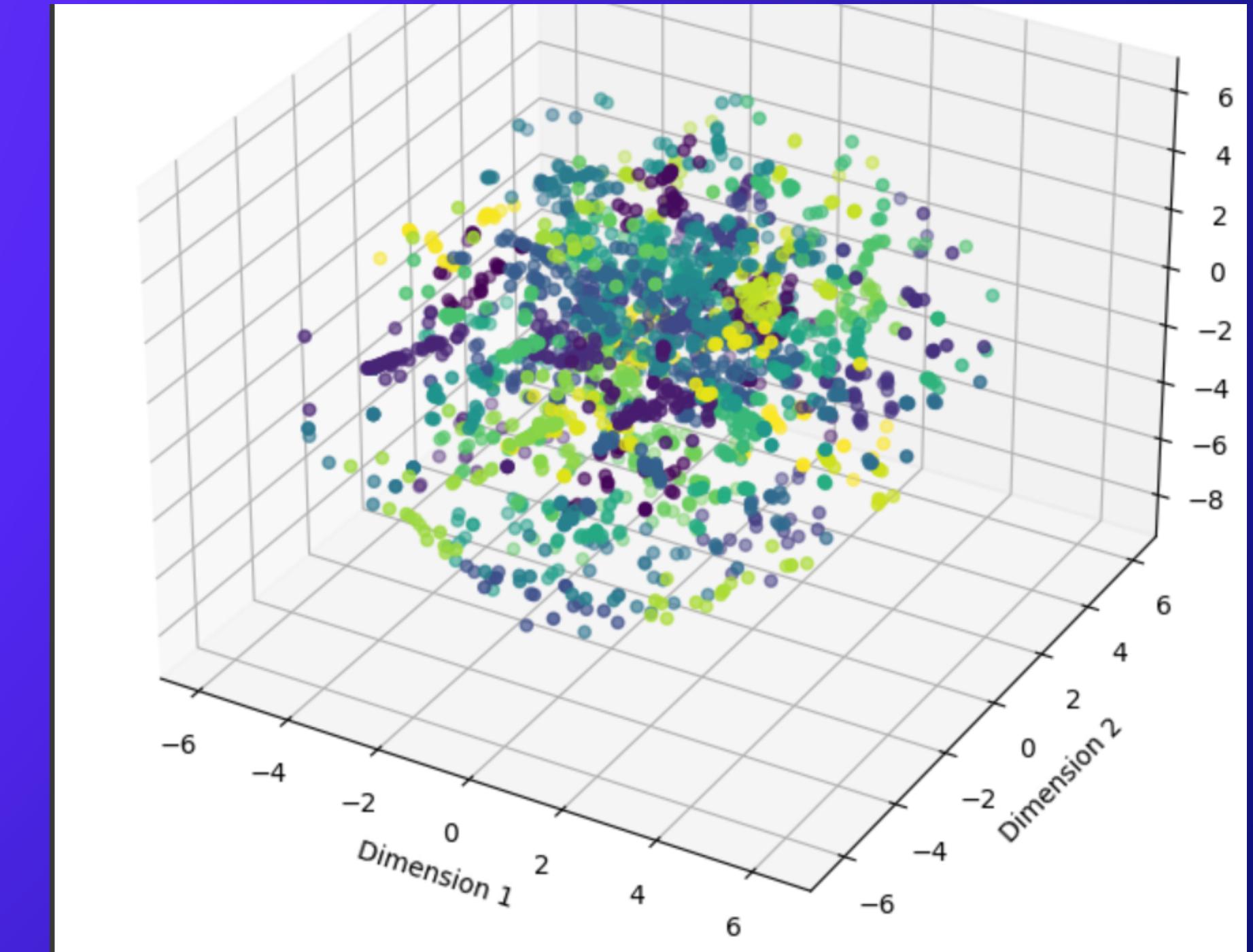
We chose our training and testing data set based on the graphs below, our main goal was to choose a set that would have enough data points, but no “too many” as, it was very difficult to handle so many data points on platforms such as google colab.



Model training and testing

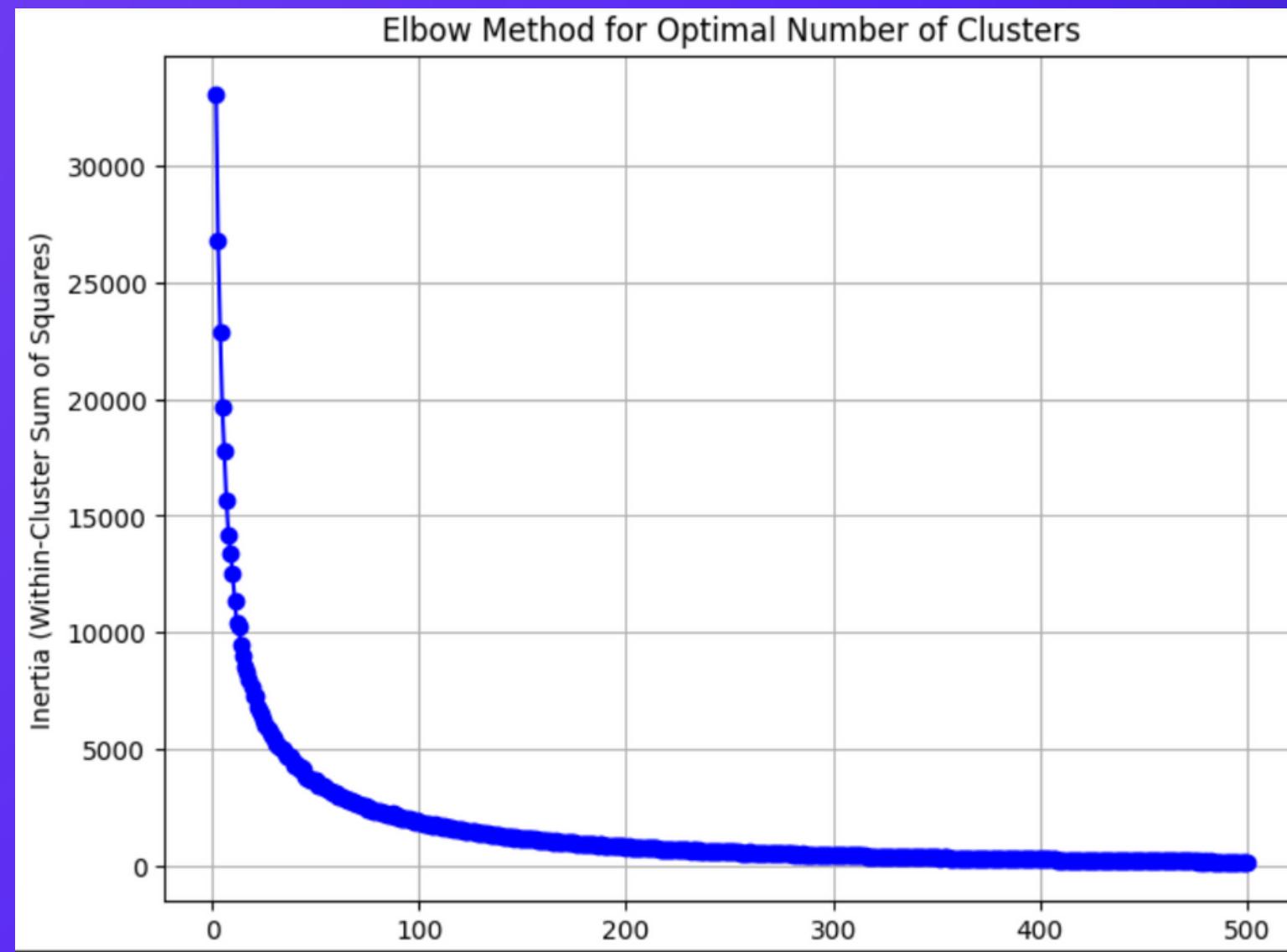


Principal component analysis for data visualization



3D clustering of training data set obtained by implementing K means clustering

Model training and testing



The number of optimal clusters in the code decided via elbow method

We used some other methods to find the optimal number of clusters, but chose to go forward with this method, because in this method there were decent number of people in every cluster, while according to other methods, for the optimal number of clusters, there were only 2 or 3 people per cluster.

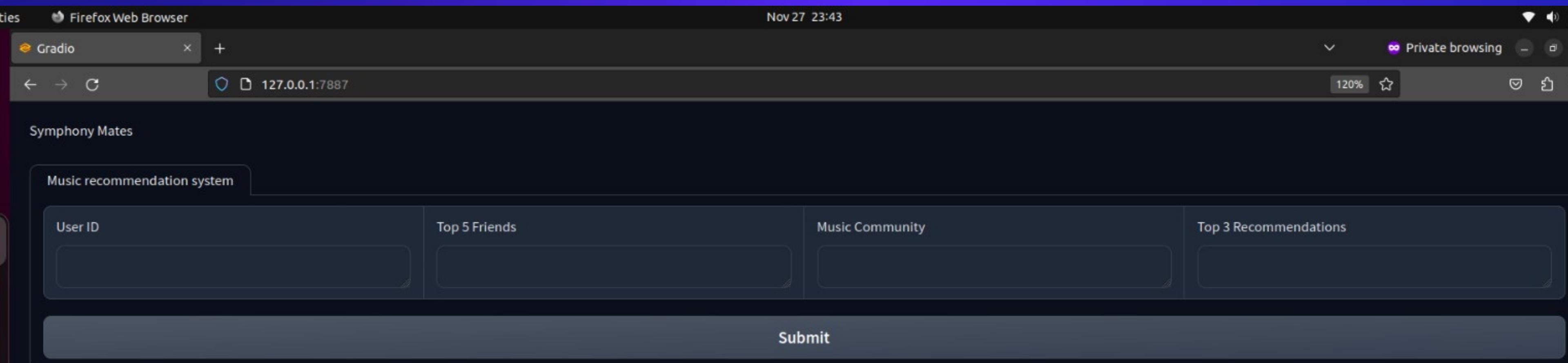
USAGE GUIDE

Our model is quite easy to use, all that need to be done by the user is to provide the user-id based on which the model will provide all the calculated results, after displaying the results the code will provide the user with an option to continue further to obtain information about other user-id or stop the algorithm. An example of of the results has been shown in the image below.

```
Enter your user id  00fieldsy
Top 5 Friends based on Similar Music Tastes
['sjsmith88', 'c_lombard', 'sciura', 'dugone', 'fergoid']
People in your Music Community
['00fieldsy', 'Adds102', 'GavyDee', 'Gaz_ITFC', 'GregRyanM', 'JT5508', 'KyleKadson', 'Laurendanielle', 'NOSREDNAC', 'OASISriffs', 'Olya_Valentine']
Top 3 Recommendations
{'icks', "allagher's High Flying Birds", 'm'}
Do you wish to continue (y/n) n
```

SCREENSHOTS OF USER INTERFACE

The following images are some of the screenshots of the user interface



SCREENSHOTS OF USER INTERFACE

A screenshot of a Firefox Web Browser window titled "Gradio". The address bar shows the URL `127.0.0.1:7887`. The main content area displays a "Music recommendation system" interface. At the top left is a "User ID" input field containing "funcoder". To the right are four sections: "Top 5 Friends" listing "Discopants09, cardiffthomas, agzdaredz, cypussycry, jakebuck_"; "Music Community" listing "DaveyEd, Discopants09, DonaldKelly, ElmoBerry, ForgottenRach, Harrison101, IndieSkies, Jaseonrobinson, agzdaredz, bfalava, buriedbirds, cardiffthomas, chesterbbb, cypussycry, darefordistance, dodgyfox, ewan_p, funcoder, gouniche"; and "Top 3 Recommendations" listing "atrol, ay, re". A large "Submit" button is at the bottom.

Nov 27 23:43

Gradio

Private browsing

120%

127.0.0.1:7887

Symphony Mates

Music recommendation system

User ID

funcoder

Top 5 Friends

Discopants09, cardiffthomas, agzdaredz, cypussycry, jakebuck_

Music Community

DaveyEd, Discopants09, DonaldKelly, ElmoBerry, ForgottenRach, Harrison101, IndieSkies, Jaseonrobinson, agzdaredz, bfalava, buriedbirds, cardiffthomas, chesterbbb, cypussycry, darefordistance, dodgyfox, ewan_p, funcoder, gouniche

Top 3 Recommendations

atrol, ay, re

Submit