

MOOD TAPES

Audio Music

Classification System



Ironhack Final Project
8 Oct 2021
By Anne Ihle

'R YOU IN THE MOOD FOR COFFEE?

- Emotions & Moods drive Customer Decisions -

Lisa runs a booming coffee shop in Berlin. The other day, she realised that her **customers stay longer & buy more coffee when she's playing positive tunes** in the background.

As she is very busy, she asked Ironhack students to **create different playlist profiles** for her business with the help of science.

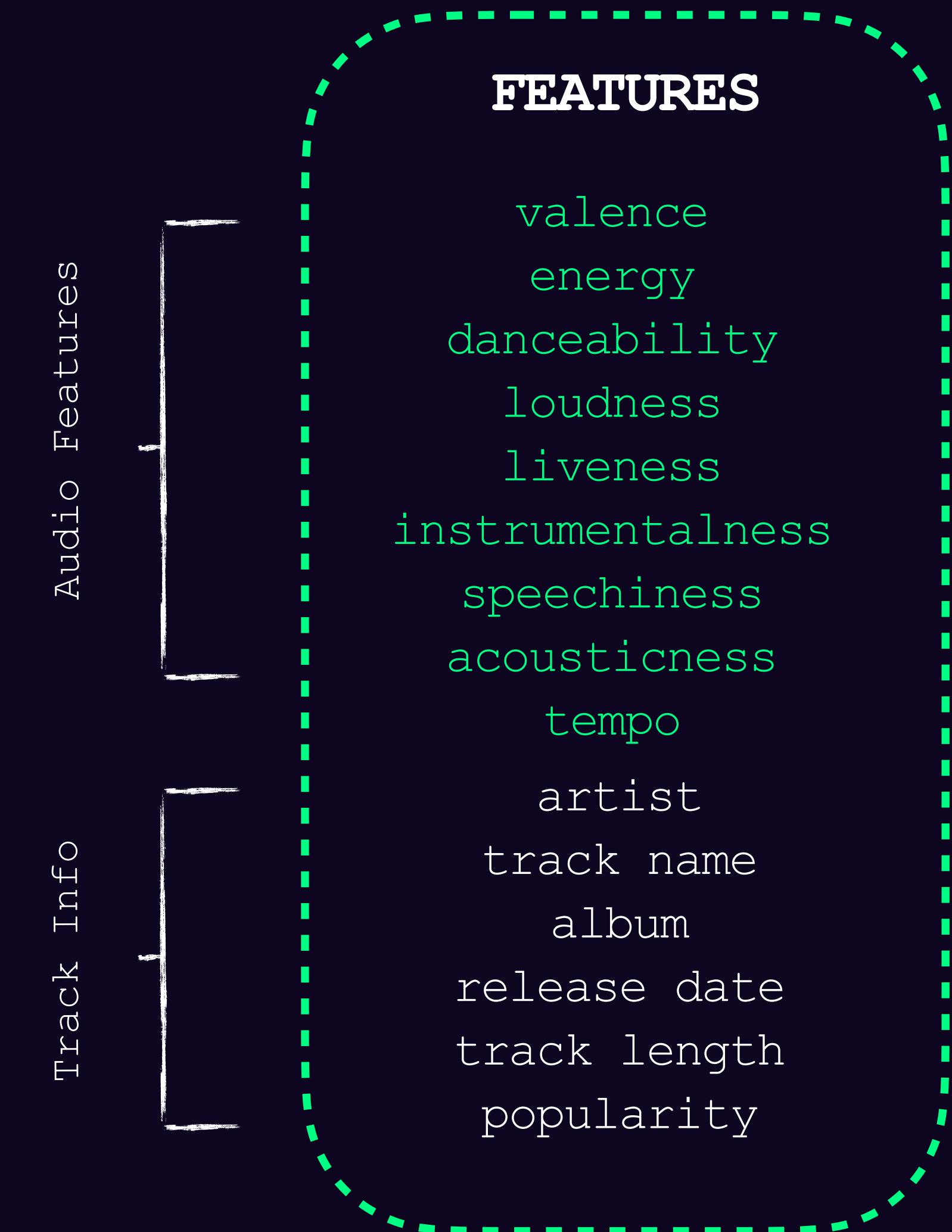
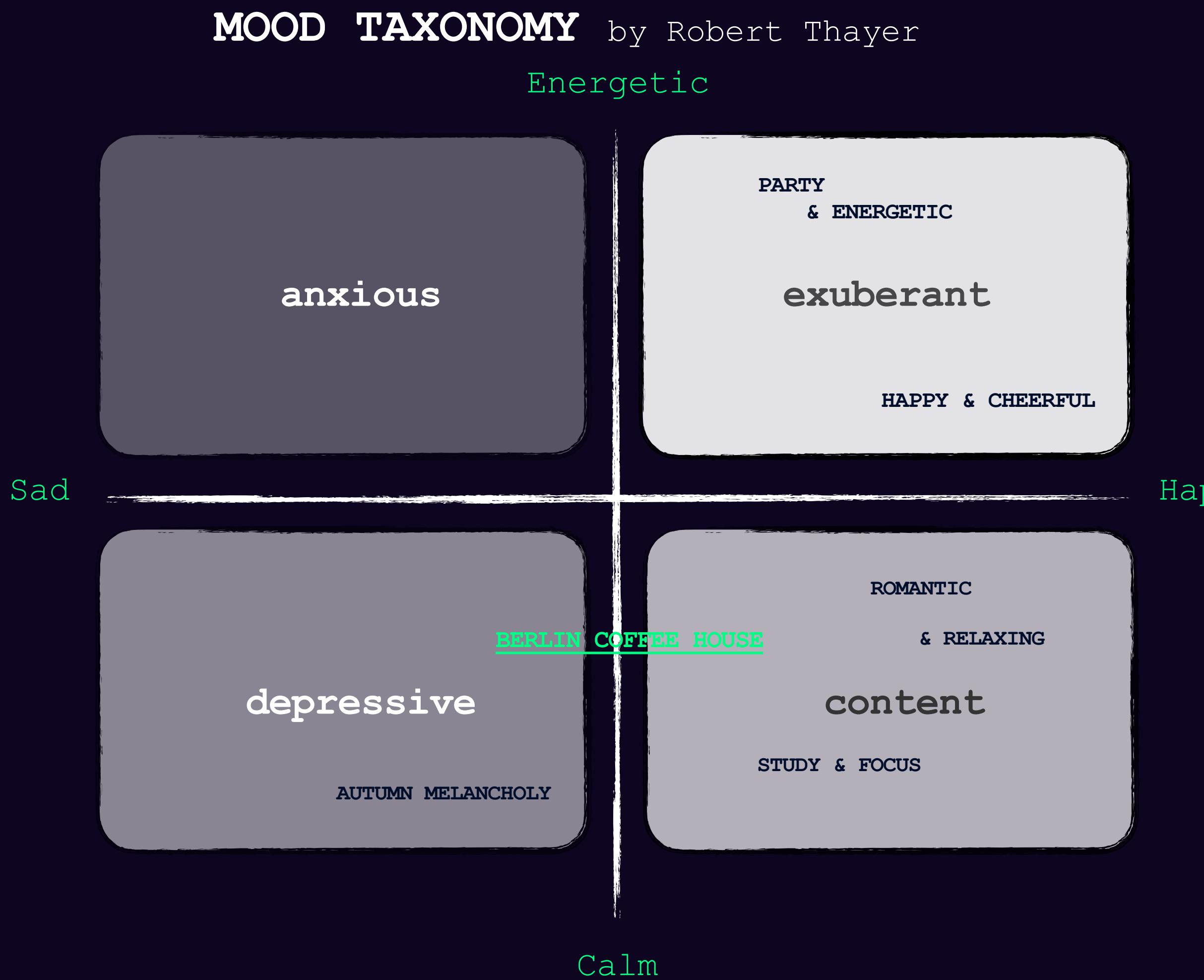
Audio Mood
Classification System



Lisa, 32,
CEO & entrepreneur,
BERLIN COFFEE HOUSE

DATASET: IDENTIFYING MOODS, SONGS & THEIR AUDIO FEATURES

Compiled a dataset of 6,259 songs with audio features & mood labels with Spotify API

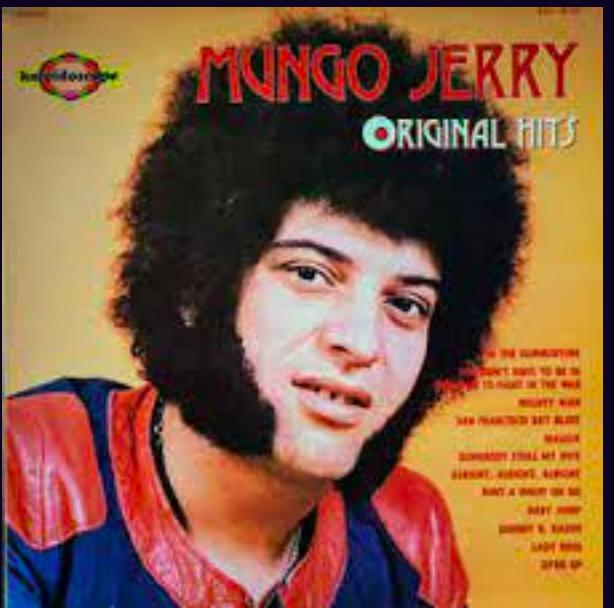


EXPLORING AUDIO FEATURES & MOOD LABELLING

The Mood Battle

MOOD PROFILE EXAMPLES

- **Happy & Cheerful**
“In the Summertime” by Mungo Jerry



- **Calm & Melancholic**
“End of the Day” by Nofeels



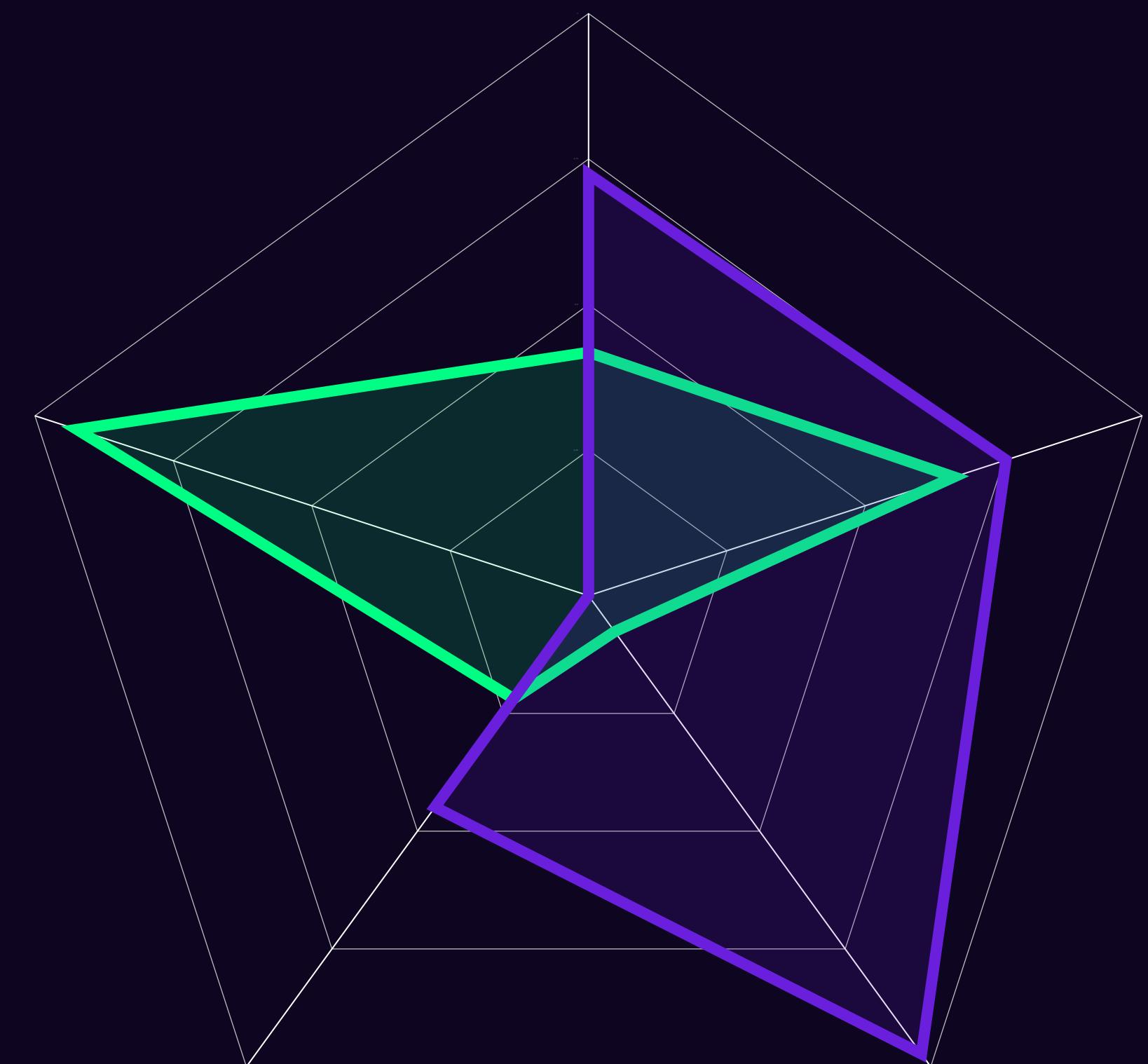
instrumentalness

acousticness

energy

valence

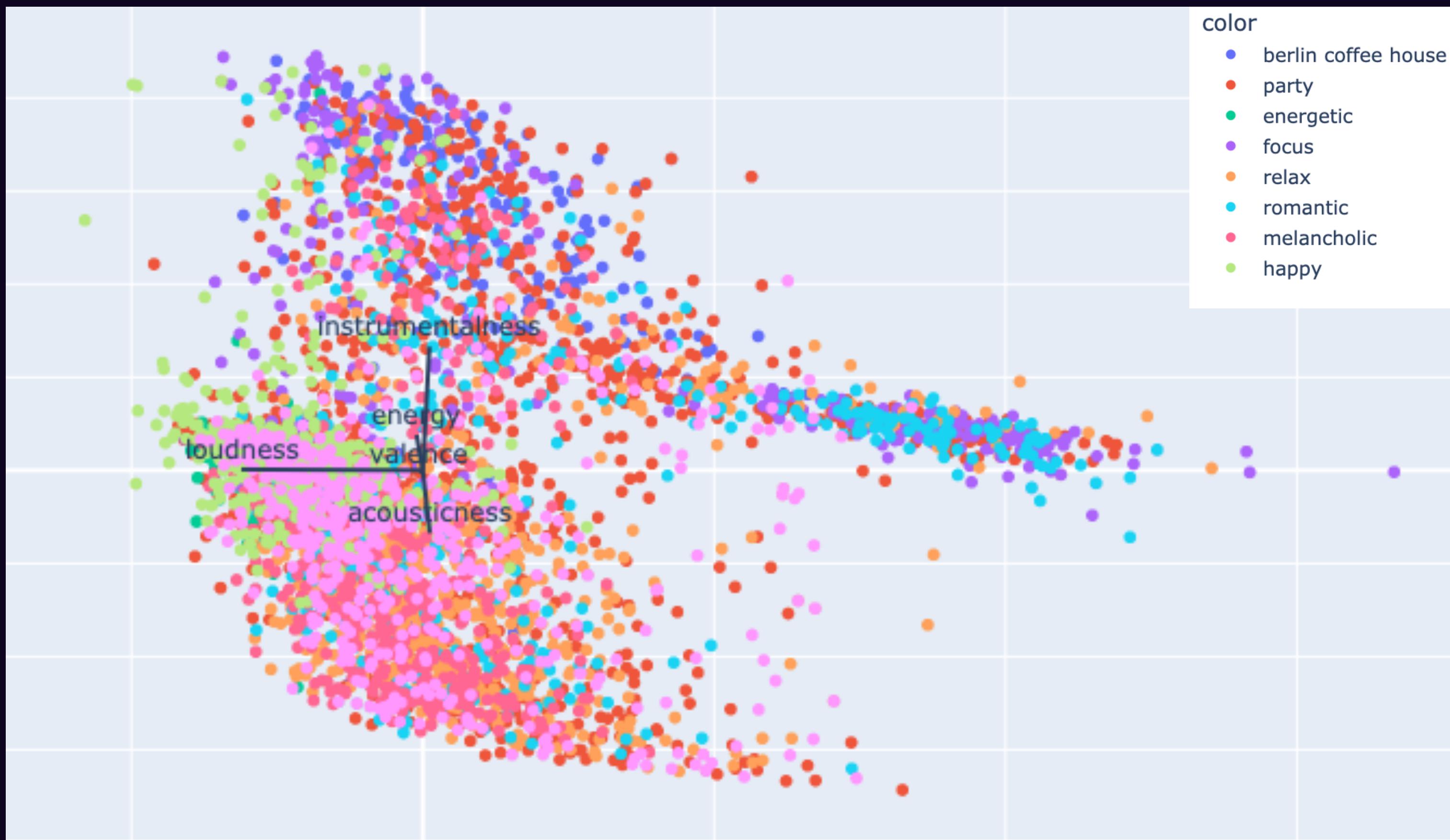
danceability



Graph 2: Audio Features Impacting Moods Profiles

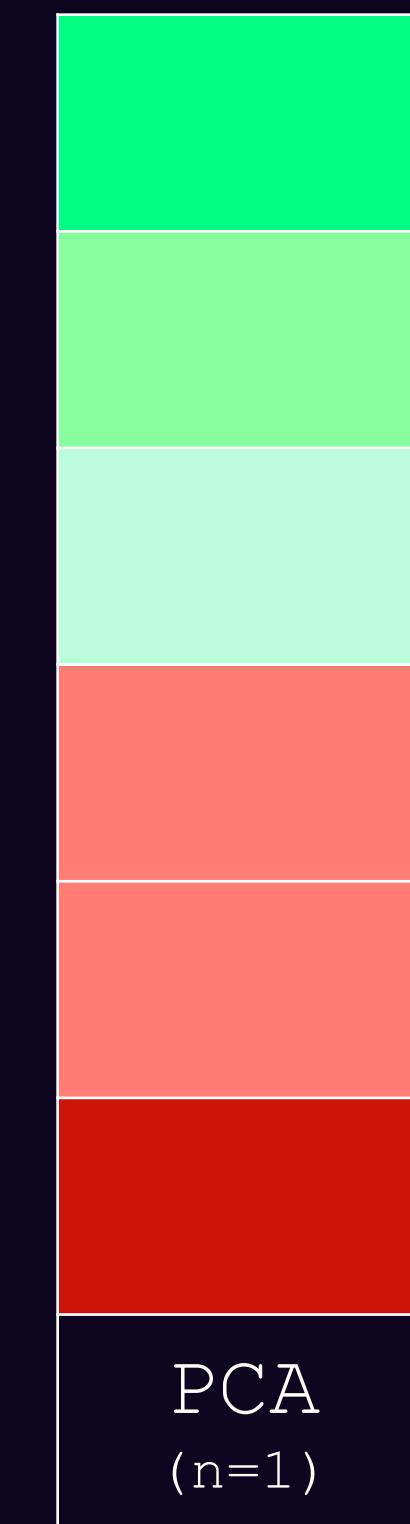
FEATURE ENGINEERING: EXPLORING THE DATA

Try & Error (PCA, ANOVA, RFC) to find most important features & process for classification



Graph 3: 2-Component (explained variance = 54%) PCA Loading Visualisation

TOP & FLOP 3 AUDIO FEATURES



Energy

Acousticness

Instrumentalness

Liveness

Speechiness

Tempo

PCA
(n=1)

CLASSIFIER PERFORMANCE: CONFUSION MATRIX

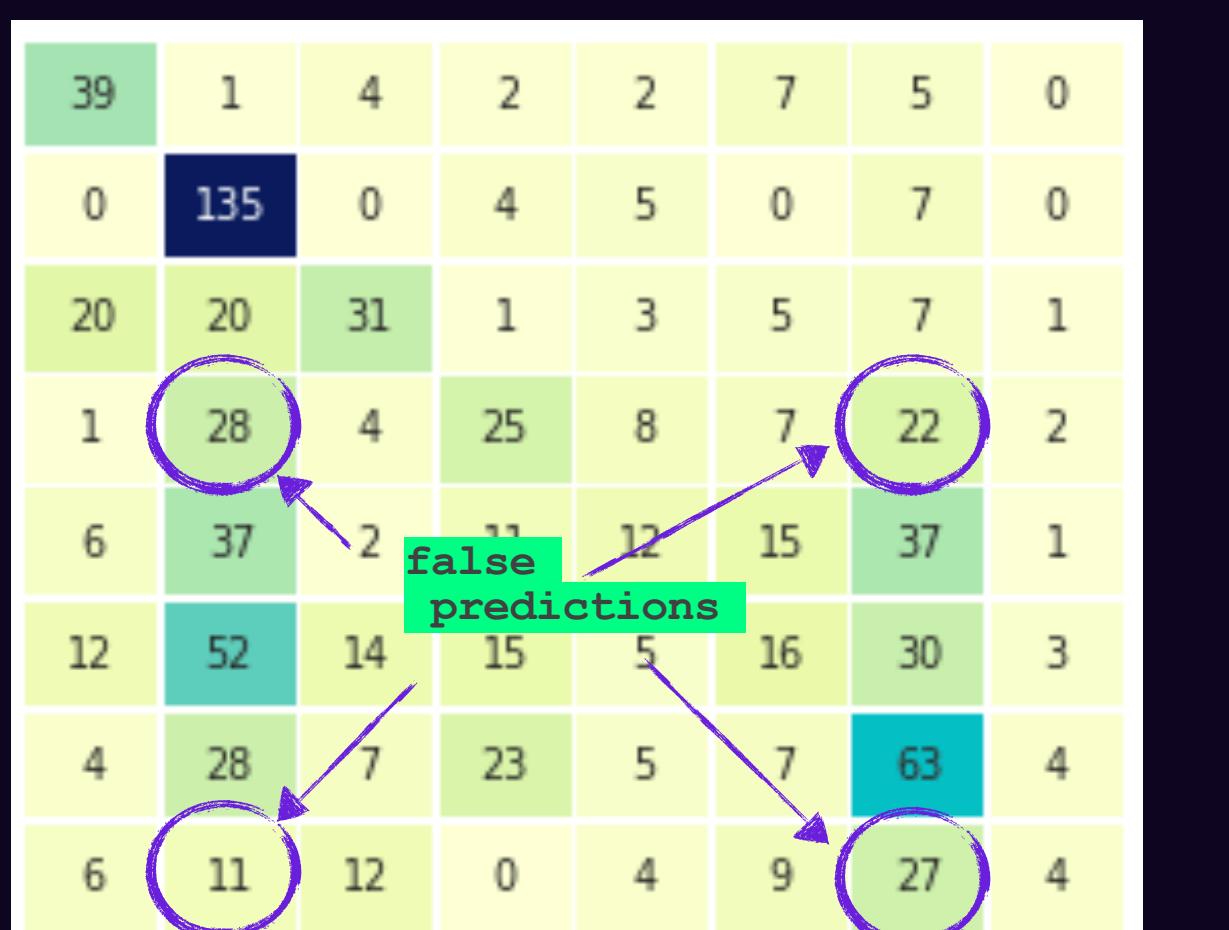
Random Forrest Classifier (`n_estimator = 10`) consistently outperformed other models (e.g. SVC, DTC, LogR, GNB)

Legend:

- Diagonal values = number of true predicted moods
- Other values = number of false predicted moods

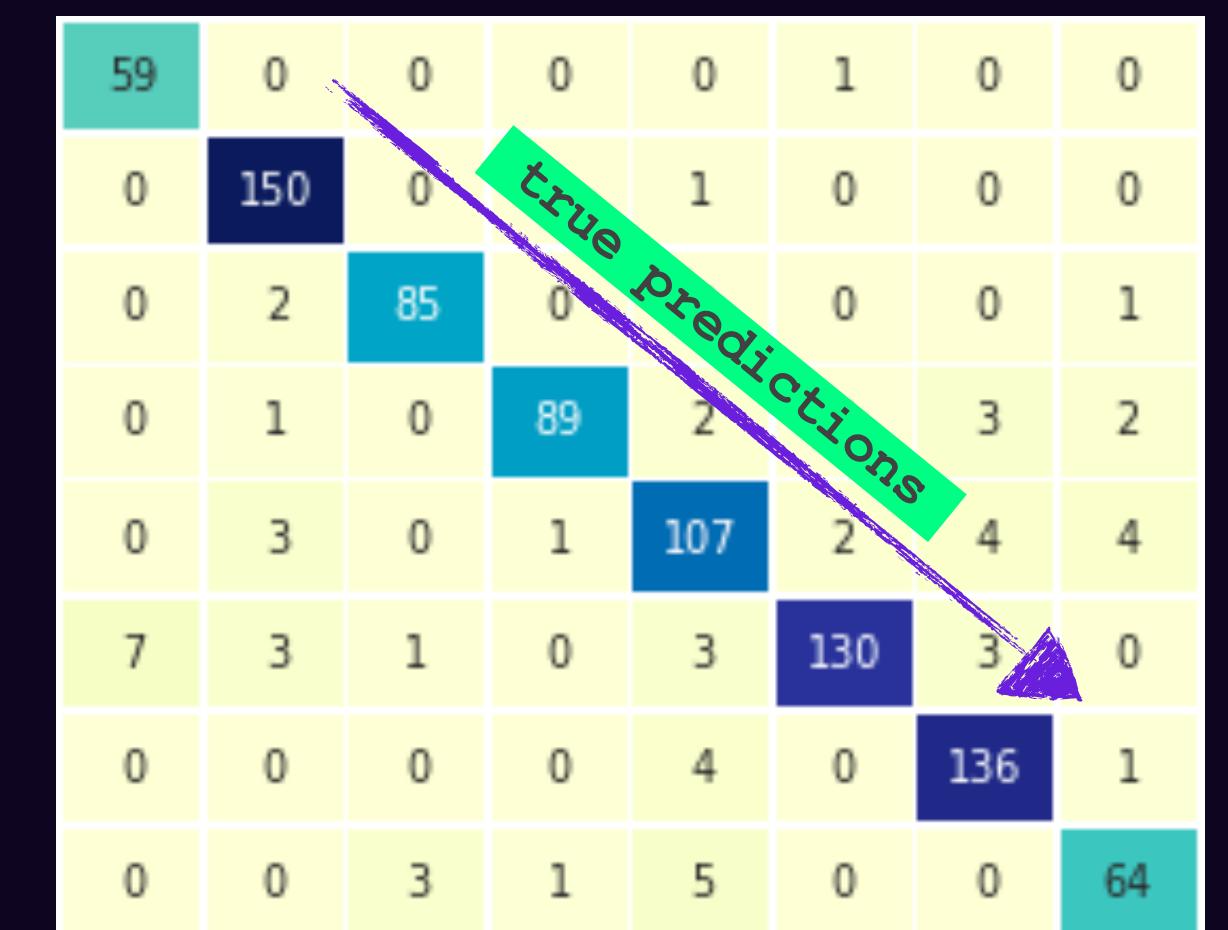
LOGISTIC REGRESSION

Accuracy score: 0.37



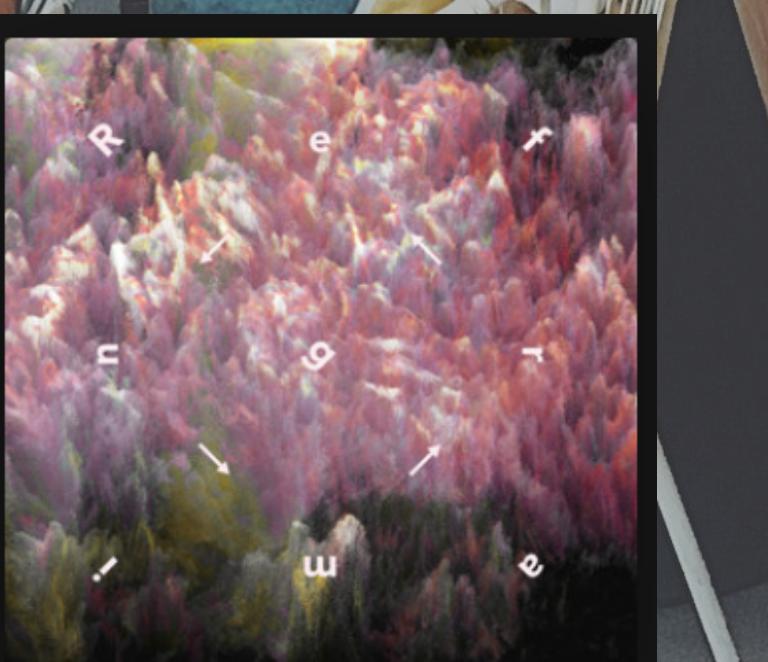
RANDOM FOREST CLASSIFICATION

Accuracy score: 0.91



Precision	Recall	F-1
0.33	0.37	0.32

Precision	Recall	F-1
0.91	0.90	0.91



IMPROVEMENTS & FUTURE WORK

Build Web App

- Build Web Application (e. g. with Flask)
- Include Interactive Dashboard
- Go live!

Improve ML Model

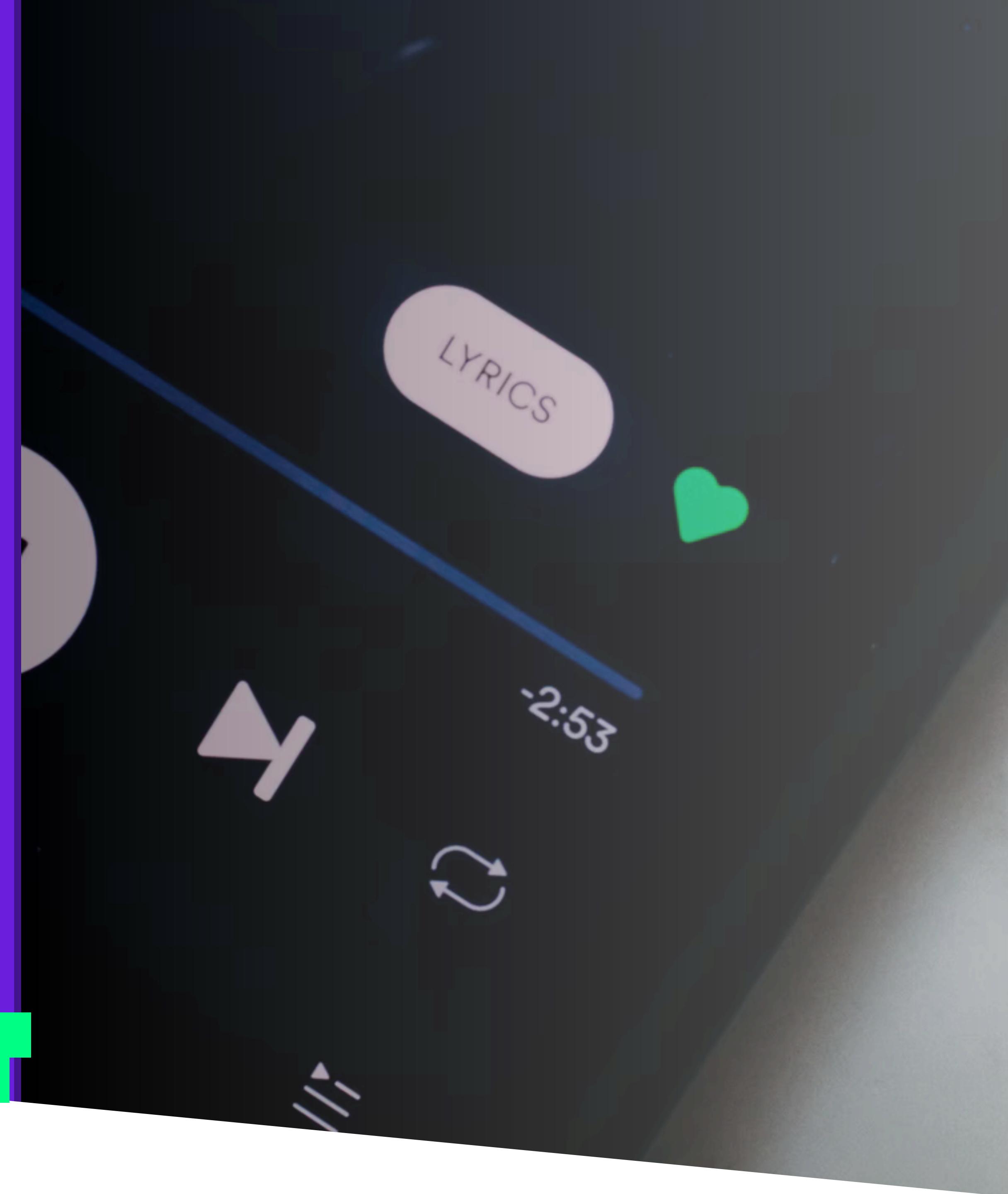
- Combine Strengths of Social Playlists & Technical Audio Analysis
- Include Lyrics & Sentiment Analysis to predict mood more accurately
- Apply Deep Learning techniques (e. g. Neural Networks)

Thanks!

Any Questions?

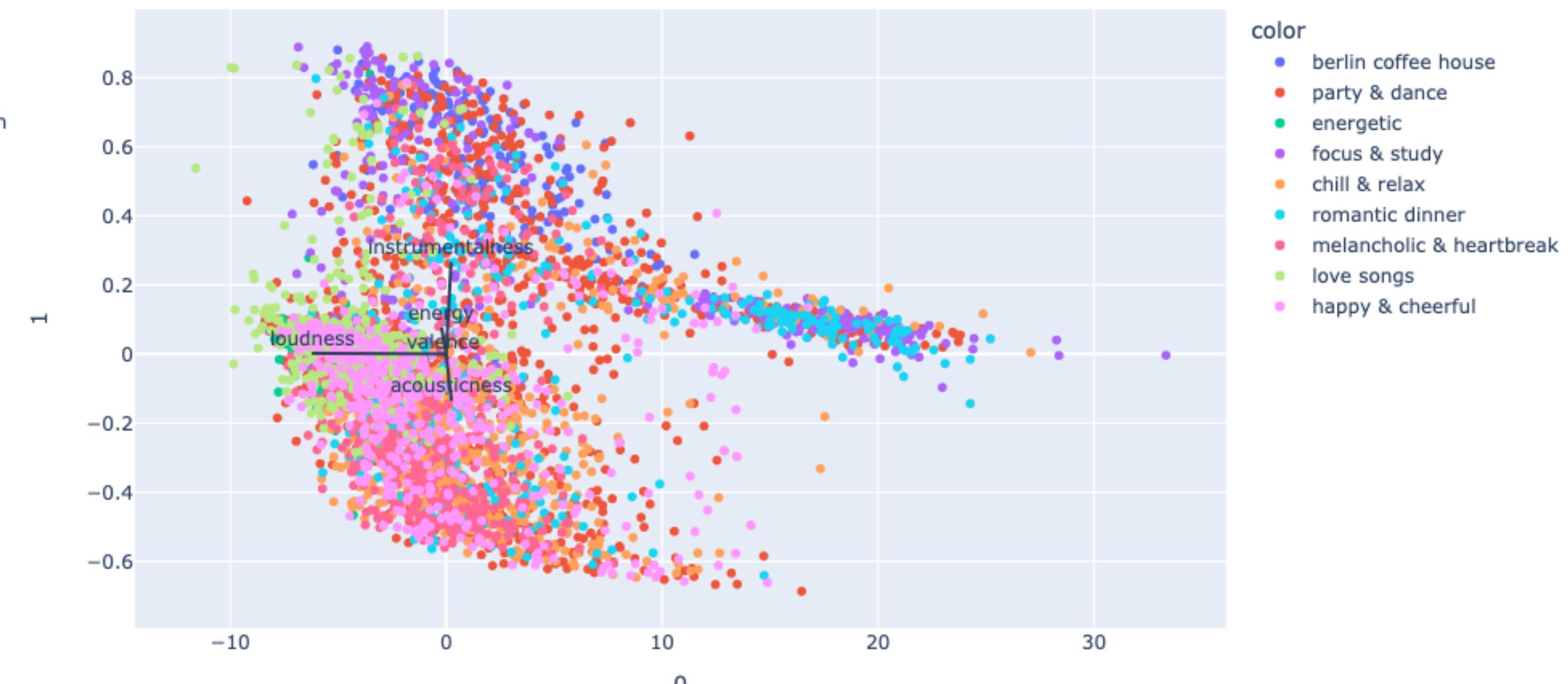
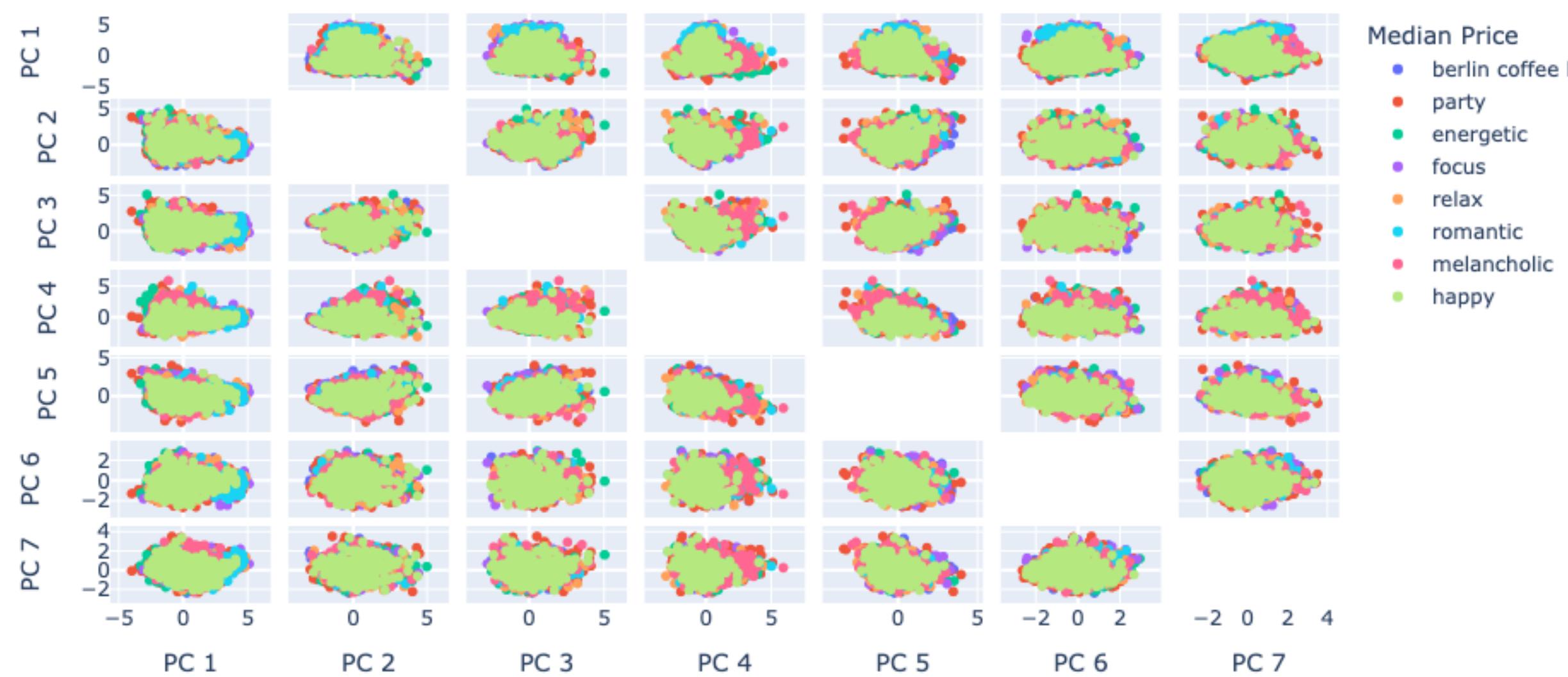
Contact me:

GitHub.com/MontyPy1212

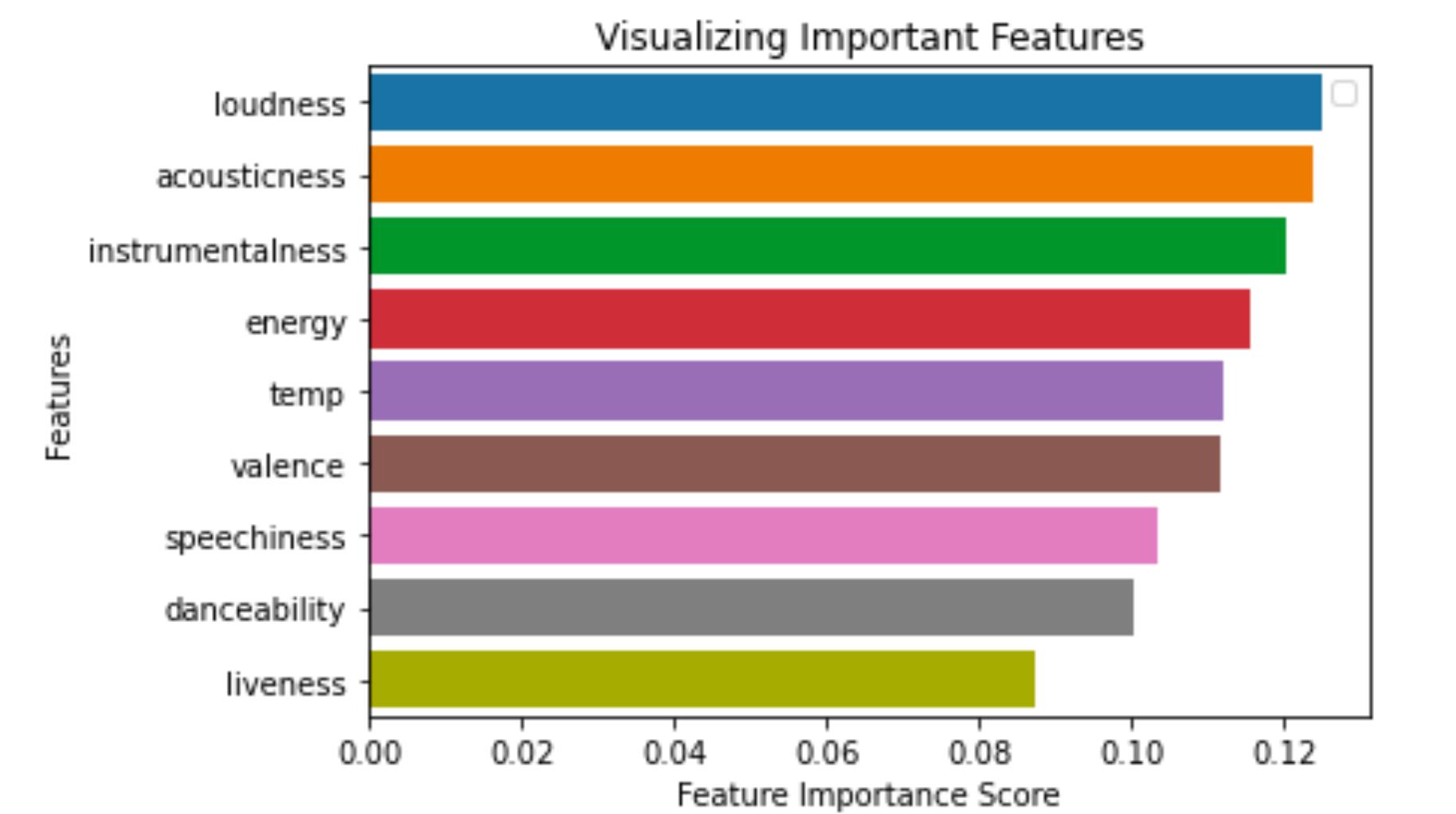
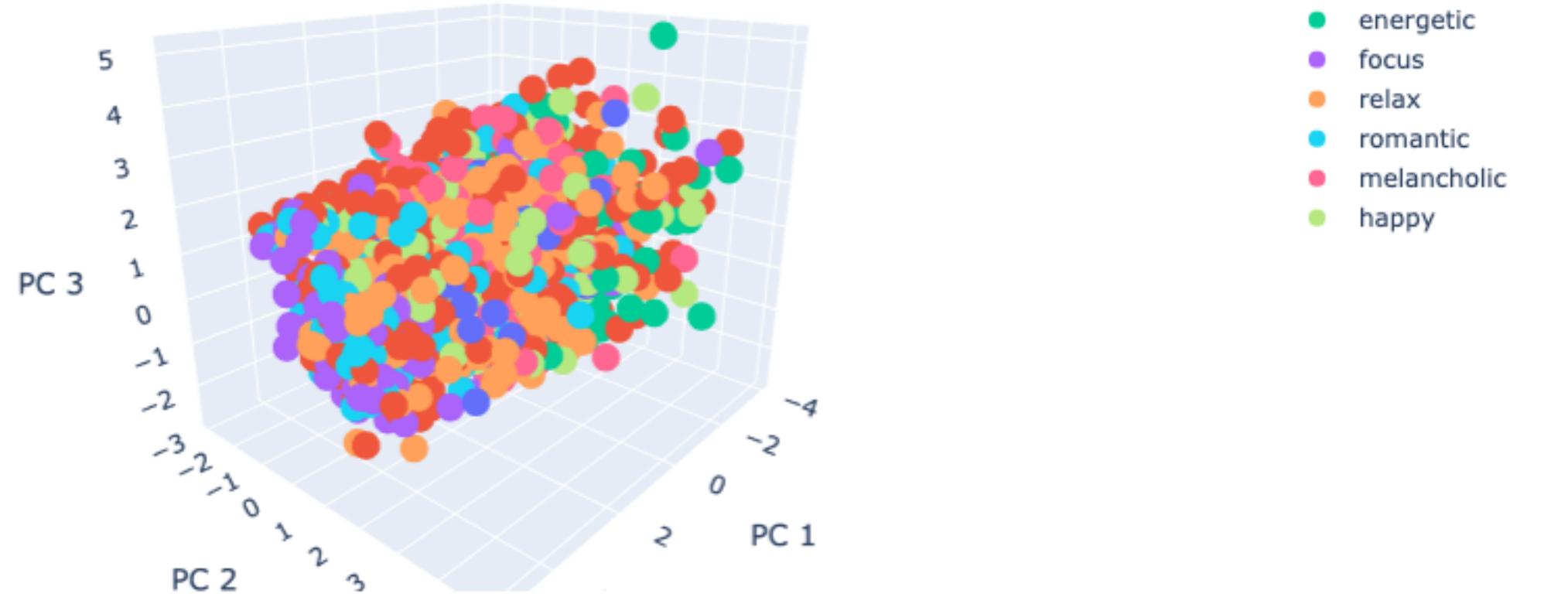


BACK-UP

Total Explained Variance: 91.16%



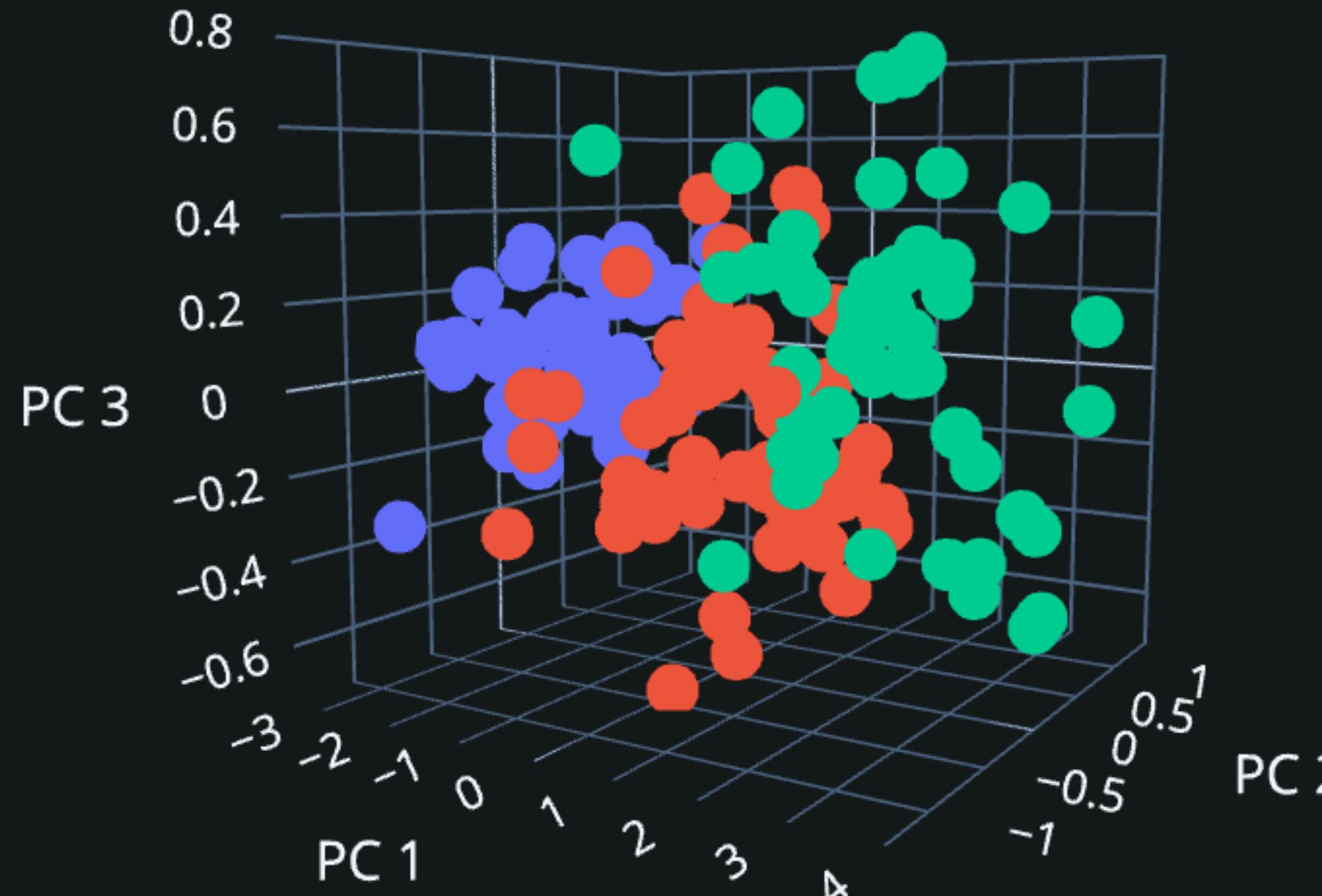
Total Explained Variance: 54.38%



#COMMON GROUND



15MIN
3-4 PPL



- Find as many **things** (e. g. sports, interests) **in common** as possible
- Be **specific** (e. g. basketball instead of sports)
- Publish list on Trello
- Winner: most (specific) things in common