Music Affect App

Allison Schultz, Danielle Puga,
Matthew Walker, Andrew Young

CS.66

Abstract

The goal of our Music Affect Data Collection application is to gather user emotional responses to music through self-reporting to aid in this research task. Our app will utilize Spotify's streaming services to access popular and relevant music while providing the added benefit of avoiding copyright infringement concerns. The data gathered from users will be conducive to machine learning research and will be validated in comparison to similar studies. Through this crowd-sourced solution, researchers will be able to create a comprehensive, quantitative dataset of user's subjective emotional responses to a variety of music.

Background

The automatic estimation of human affective responses to music is a research task of great interest to the field of music information retrieval. However, because of copyright concerns and the cost of formal lab studies, existing datasets are few in number and small in size. Our app will provide researchers a crowd-sourced solution.

Data

We explore existing databases of songs and paired with user affective responses to those songs.

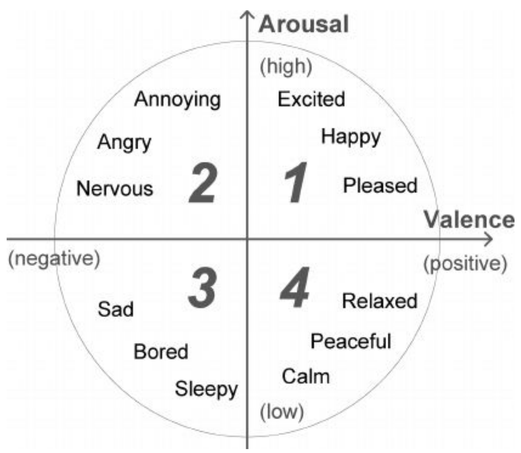

Figure 1: The valence-arousal circumplex model of affective response [1] used in our approach.

Methods

In order to quantify user emotional responses, we selected the valence-arousal representation of emotion. This provides an intuitive interface to annotate music with subjective ratings of valence and arousal. We also display familiar emotions as reference points to help inform their current emotional response. This data is then quantified, analyzed, and stored in our cloud database. Researchers can then access this information to build dynamic datasets for machine learning.

Results

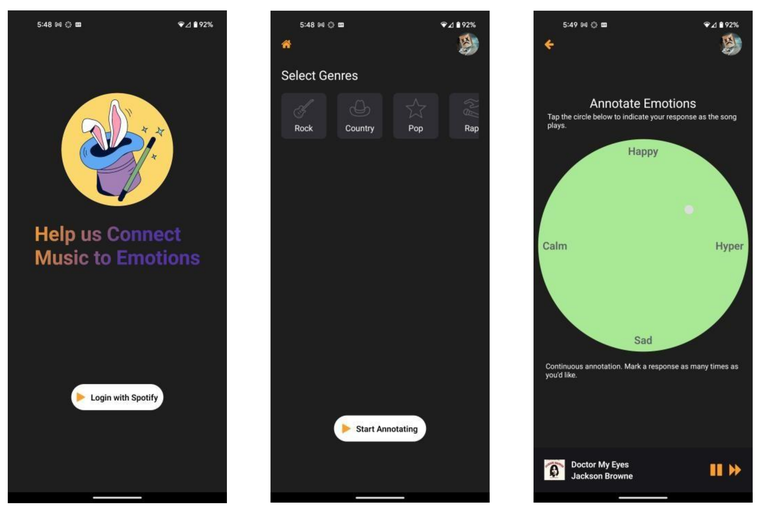

Figure 2: Our main three frontend screens, showing the login (left), home (middle), and annotation (right) pages.

This novel data repository will support researchers studying music emotion recognition. Our work enables a interactive system capable of gathering affective responses to music over time. With this system, researchers will be better able to track emotion reactions to musical trends and genres that have traditionally been less well studied.



Acknowledgements

Team members

Andrew Young	*full stack developer*
Danielle Puga	*full stack developer*
Allison Schultz	*frontend developer*
Matthew Walker	*backend developer*

Project Partner

Patrick Donnelly, Oregon State University

Conclusion

In this work we present an interactive approach that enables a large-scale and crowd-sourced collection of annotations of subjective human responses to music to enable future machine learning to learn to recognize music emotion.

References

[1] Russell, J. A. (1980). *A circumplex model of affect*. Journal of Personality and Social Psychology, 39(6), 1161–1178. DOI: 10.1037/h0077714

soundbendor lab