Billboard Hot 100 Music Analysis

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Abstract—**This project will investigate the commonalities between chart-topping songs. Specifically, we will only examine tracks that have debuted at #1 on the Billboard Hot 100 chart. Elements to take into consideration may include lyrics and musical structure. We hope to extend our findings into creating a classifier to predict if a track is likely to be popular on the Billboard Hot 100.**

I. INTRODUCTION

As of September 1, 2020, BTS debuted at #1 on the Billboard Hot 100 with their first all-English single, "Dynamite." In addition to being the first South Korean act to top the chart, the band retained their #1 ranking for two consecutive weeks. The single itself is a disco pop song, with cheerful and uplifting lyrics, accompanied by 70's style synths, layered vocals, and horns to create an upbeat sound. The previous top ranking for the previous 3 weeks was Harry Styles' Watermelon Sugar.

The Billboard Hot 100 serves as the music industry's standard for a track's popularity in the United States. The chart encompasses all genres and rank is determined by a combination of U.S.-based streaming, airplay, and digital or physical sales, where the weight of each of those elements decrease respectively.

There have been only 43 songs that have ever debuted at #1 in the history of Billboard Hot 100 since its launch in 1958 [3]. Some examples include

- You Are Not Alone by Michael Jackson (1995)
- Honey by Mariah Carey (1997)
- Candle in the Wind 1997/Something About The Way You Look Tonight by Elton John (1997)
- My Heart Will Go On by Celine Dion (1998)
- Hold It Against Me by Britney Spears (2011)
- Shake It Off by Taylor Swift (2014)
- What Do You Mean? by Justin Bieber (2015)
- 7 Rings by Ariana Grande (2019)

II. MUSIC GENOME PROJECT

Additionally, data may be available through Pandora's *Music Genome Project*, an ongoing effort to compile a database of songs, including new releases, with up to 450 matching key musical attributes for each individual track [2]. Each of these attributes are determined on location by a trained musical analyst, ensuring the track is represented accurately. This project directly feeds into Pandora's radio service, which is used by 70 million users across the U.S [1]. The goal of the service is to build a user-curated radio station by predicting the listener's taste. The Music Genome Project is part of improving the accuracy of Pandora's song recommendations, pairing with its internal algorithm and the user's personal feedback to each song, which can be either "thumbs-up" or "thumbs-down."

III. PROJECT TASKS AND SCHEDULE

Potential tasks to be completed include:

1) Gather data sets: determine dates for chart rankings.
2) Investigate Pandora's Music Genome project for song attributes.
3) Data exploration/Identify common factors among songs. This could include musical structure/composition, lyrics, origin, etc.
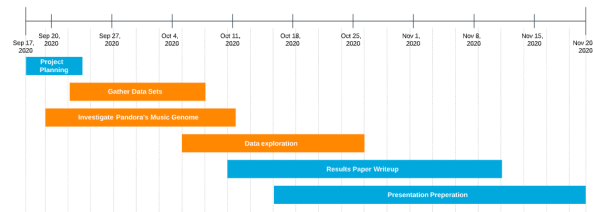4) Classifier

Fig. 1. Schedule of Tasks

IV. TEAM MEMBER RESPONSIBILITIES

MeiLi Charles: Senior Project Head

- Gathering Data Sets
- Investigate Pandora's Music Genome
- Data Exploration
- Results Paper
- Final Presentation

Regan Moreno: Vice Project Head

- Gathering Data Sets
- Investigate Pandora's Music Genome
- Data Cleaning
- Data Exploration
- Results Paper

Lydia San George: Project Team Member

- Investigate Pandora's Music Genome
- Data Exploration
- Results Paper
- Final Presentation

V. Conclusion

Our goal with this project is to uncover answers about the modern American's music taste. Although music is often considered subjective, there may be identifiable, core elements of a "hit" song. Similar chord progressions and lyrical content may be more easily accessible and relatable to the general public. Additionally, we may gain insight into whether identified trends are cyclical in nature or if each major hit marks a new musical trend. Is there a musical "sweet spot" of blending musical familiarity with newer, fresher ideas? Out project aims to provide answers and insights into this area of musical consumption

VI. Contact Information

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References

[1] About pandora.
[2] About the music genome project®.
[3] Callie Ahlgrim. Only 43 songs have debuted at no. 1 in the history of the billboard hot 100 - here they all are, Sep 2020.