

Project Name: Spotify PULSE**Project Coordinator:** Alisa Garcia**Team Members:** Rheaa Sharma, Noah Stern, Dane Shaffer, Alex Polivka, Jason Zheng**Spotify PULSE: Spotify Personalized User-Learned Social Experience****Problem Statement:**

Our goal is to revolutionize the Spotify user experience by creating an array of essential and exciting tools into a single, user-friendly platform. This is superior to similar products such as volt.fm, last.fm, statsforspotify.com and Spotify Wrapped because it is a singular hub for these products' features and more.

Background Information:

Spotify provides many of their own tools to view statistics and provides multiple song recommendation functionalities. However, there exists gaps in functionality that Spotify provides leading to the rise of similar products. Our product, PULSE, will aim to combine all of these different products into one cohesive package, allowing for a one-stop location to manage your Spotify account, discover new songs, view user statistics and more.

Audience

The main audience for this service are Spotify users who want to analyze their listening activity, discover new music based on personalized recommendations, and interact with their friends. In essence, they are seeking for advanced features unavailable through Spotify.

Similar Platforms

There are numerous other websites that provide the user with statistics regarding their listening history. These include "last.fm," "statsforspotify.com," "volt.fm," and Spotify Wrapped. Features for Spotify Wrapped include the user's favorite songs, artists, and genres for the year, while the external websites provide more information about the user's statistics over different time frames as well as their listening history,

Limitations

While all of the other platforms have a large variety of user statistics, they are missing some crucial data that the user may want to access. These include, but are not limited to, different and more transparent metrics for defining favorite songs, percentages of songs listened to, and which songs the user often listened to back-to-back which could be associated with a mood. Furthermore, we plan on adding new features that are unique to our website such as machine learned recommendations, enhanced playlist managers, and Spotify-based games. These features will enhance the user experience when using Spotify and will provide a larger array of statistics and features for the user than they could get anywhere else.

Functional Requirements:

1. Basic Infrastructure

- a. As a user, I would like to be able to register for a PULSE account using my email (if time allows)
- b. As a user, I would like to be able to register for a PULSE account using OAuth such as Google (if time allows)
- c. As a user, I would like to be able to register for a PULSE account using Spotify
- d. As a user, I would like to be able to login and manage my PULSE account
- e. As a user, I would like to be able to reset my password if I forget it
- f. As a user, I would like to sync my account across devices/platforms
- g. As a user, I would like to access all other pages from a home page

2. Settings

- a. As a user, I would like to have dark/light mode
- b. As a user, I would like to be able to change text size
- c. As a user, I would like to have custom backgrounds
- d. As a user, I would like to have preset themes to change up the interface's look
- e. As a user, I would like to be able to change my Spotify account details in PULSE
- f. As a user, I would like to be able to view my Spotify friends
- g. As a user, I would like to edit my username
- h. As a user, I would like to modify my profile information such as gender, profile picture and location.

3. Statistics Dump

- a. As a user, I would like for my top songs and artists for the last 4 weeks, 6 months and all time to be tracked
- b. As a user, I would like to be able to export spotify data and import it into PULSE to get the following statistics
- c. As a user, I would like for number of minutes listened to be tracked in my listening activity
- d. As a user, I would like for percentage of total music listened to be tracked in my listening activity
- e. As a user, I would like for times when music was listened to (morning, afternoon, night, etc.) in my listening activity
- f. As a user, I would like for times when songs were listened to fully or skipped or repeated in my listening activity
- g. As a user, I would like to see songs, artists, playlists, genres and favorite era of music sorted by the metrics above
- h. As a user, I would like to track my follower numbers

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- i. As a user, I would like to be able to specify what time period I want my stats to be from.
 - j. As a user, I would like to be able to view statistics in a user-friendly fashion
 - k. As a user, I would like to be able to download my and my friend's statistics in a CSV and text file
 - l. As a user, I would like to be able to download my and my friend's statistics in a pdf file
 - m. As a user, I would like to be able to create custom graphs with specified data and formats
 - n. As a user, I would like to be able to view my friends' statistics as per previously mentioned user tracked statistics
 - o. As a user, I would like to import my friends stats from a csv/txt file to compare
4. Playlist Page
- a. As a user, I would like for recommendations for songs to add on the playlist based on Genre
 - b. As a user, I would like for recommendations for songs to add on the playlist based on Artist
 - c. As a user, I would like for recommendations for songs to add on the playlist based on Song Writer
 - d. As a user, I would like for recommendations for songs to add on the playlist based on Location
 - e. As a user, I would like for recommendations for songs to add on the playlist based on Album
 - f. As a user, I would like for recommendations for songs to add on the playlist based on User emotion (informed by Spotify API)
 - g. As a user, I would an AI to DJ for me based on BPM matching
 - h. As a user, I would like a playlist activity monitor that displays the amount of times the playlist was played in an user-friendly manner on the playlist page
 - i. As a user, I would like to choose two playlists and have a new playlist made from the Spotify-recommended songs of both playlists
 - j. As a user, I would like to choose two playlists and have a new playlist to merge them and have them flow into each other based on BPM
5. Song Page
- a. As a user, I would like to be able to find similar songs (based on Spotify API parameters such as loudness) to the current song
 - b. As a user, I would like to be able to view lyrics to songs

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- c. As a user, I would like for songs to be automatically captioned based on lyrics (If time allows)
 - d. As a user, I would like for songs to be automatically removed from playlists after a certain threshold of skips set by the user
 - e. As a user, I would like for the song to have music videos automatically linked if available on Youtube or other such platforms
 - f. As a user, I would like for a song activity monitor that displays the amount of times the song was played in an user-friendly manner on the song page
- 6. Game Page
 - a. As a user, I would like to play games such as Guess the song/artist as a quiz format and heads-up format
 - b. As a user, I would like to play games such as Guess who listens to this song as a quiz format and heads-up format
 - c. As a user, I would like to play games such as Guess the next lyric as a quiz format and heads-up format
- 7. Search (if time allows)
 - a. As a user, I would like to be able to search for songs, albums, artists, playlists.
 - b. As a user, I would like to be able to filter my search with keywords such as year, genre, new songs and popularity.
- 8. Song Player (if time allows)
 - a. As a user, I would like to be able to listen to samples of songs when they are recommended to me
 - b. As a user, I would like to be able to listen to spotify through a music player on PULSE
- 9. Music Uploader (if time allows)
 - a. As a user, I would like to be able to upload local files and add them to new/existing playlists
 - b. As a user, I would like to be able to auto-fill metadata for these local files
- 10. TicketMaster API (if time allows)
 - a. As a user, I would like to be able to view music show recommendations when viewing relevant songs/artists/albums
- 11. PULSE Chat Bot (if time allows)
 - a. As a user, I would like to interact with a PULSE chatbot through a textbox
 - b. As a user, I would like to be able to get song recommendations per Genre, Artist, Song Writer, Location. Album and User emotion through PULSE chatbot
 - c. As a user, I would like to be able to automatically generate playlists per Genre, Artist, Song Writer, Location. Album and User emotion through PULSE chatbot

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- d. As a user, I would like to be able to get song information by inputting a short phrase from the song into PULSE chatbot
- e. As a user, I would like to get help with finding/doing a certain action on the website by asking PULSE chatbot
- f. As a user, I would like to be able to give feedback to developers about requested features, bugs or general messages through PULSE chatbot

Non-Functional Requirements:

- I. Quality of Life
 - A. As a user, I would like the website to be responsive with reasonable speed and at all times
 - 1. Reasonable speed: < 400ms for typical navigation inputs
 - 2. Be able to reasonably handle double-inputs
- II. Accessibility
 - A. As a user, I would like the website to be usable in multiple formats
 - 1. Support for landscape and portrait mode
 - 2. Support for desktop and mobile browser
 - 3. Support for scaled-up/down windows
- III. Maintainability
 - A. As a developer, I would like to be able to easily maintain features
 - B. As a developer, I would like to be able to easily add new features
- IV. Security
 - A. Personal information and passwords will be encrypted when transferred using an 18-bit encryption
 - B. Encrypt using a more-secure Caesar cipher (if time allows)
 - C. User information from Spotify should be stored in a secure manner to protect against common exploits such as cross-site-scripting, buffer overflow, and SQL injection using industry standard practices such as Microsoft's own SQL Server documentation on common security practices. This includes practices like input sanitization, privilege controls, and encryption
- V. Architecture and Performance
 - A. As a developer, I want to run the frontend using ReactJS and the backend using Python
 - B. As a developer, I want to use SQL for storing data
 - C. As a developer, I want to connect the frontend and backend using Django