



Problem Solving & Software Design Final Project Proposal

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*I pledge my honor that I have neither received nor given unauthorized assistance
during the completion of this work.*

I. Big Idea

My goal is to build a music Web App named “Musoullic”. This Web App allows users to explore the music they love and get musical analysis of the songs they search for.

Some of the major features include:

- Get basic info about the song
- Learn the musical features of the song
- Explore similar songs
- Understand the emotion of the song

II. Built Process

Musoullic is a Web App constructed with Python, Flask, HTML, and CSS.

The app fetches data from APIs, extracts relevant data, performs data visualization, transforms data into the understandable human language, and presents beautiful results to the user.

III. Website Design

1. Homepage

- a. Brief introduction about functions within the website
- b. Search input → page 2
- c. List of historical searches (top 10 most recent) → page 3

2. Search result

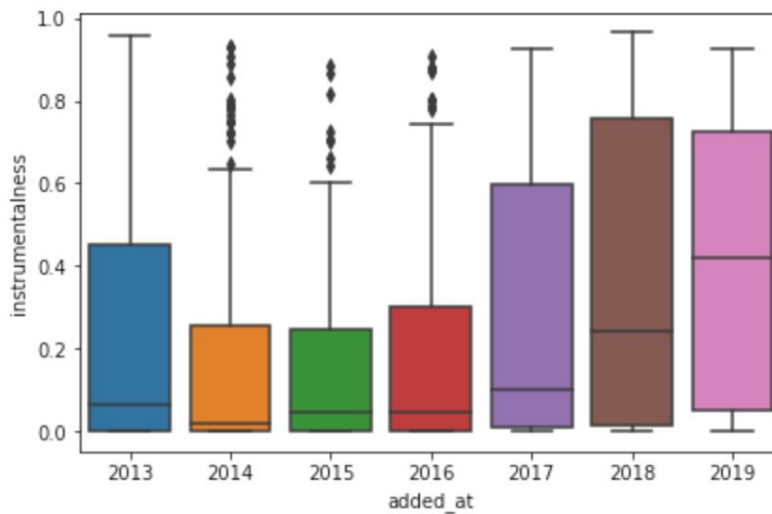
- a. Lyrics
- b. Audio file
- c. Attributes of songs (tempo, danceability, energy, loudness and etc) in visualized graphs

```
"danceability": 0.735,  
"energy": 0.578,  
"key": 5,  
"loudness": -11.84,  
"mode": 0,  
"speechiness": 0.0461,  
"acousticness": 0.514,  
"instrumentalness": 0.0902,  
"liveness": 0.159,  
"valence": 0.624,  
"tempo": 98.002,  
"type": "audio_features",  
"id": "06AKEBrKUckW0KREUWRnvT",  
"uri": "spotify:track:06AKEBrKUckW0KREUWRnvT",  
"track_href": "https://api.spotify.com/v1/track/06AKEBrKUckW0KREUWRnvT",  
"analysis_url": "https://api.spotify.com/v1/audio-analysis/06AKEBrKUckW0KREUWRnvT"
```

- d. Emotion tag
We will define four different emotions based on different combinations of attributes. Each type of emotion will have a corresponding emotion tag.
- e. An image that reflects the emotion of the song (keyword search using the emotion)
- f. Recommendation for similar songs

Possible extensions:

3. Summary of historical searched songs
 - a. List of historical searches
 - b. Visualization of attributes for all songs. Example:



API List:

- [SearchLy](#) (song recommendation)
- [Spotify](#) (basic info, song attributes)
- [Pexels](#) (images)
- [Chart Lyrics](#) (lyrics)

Libraries:

- pandas - for data visualization