Playlist Emotion Detector: Understanding Emotional Intelligence Through Music

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- **Executive Summary**

  The Playlist Emotion Detector project addresses the widespread challenge of limited emotional self-awareness by analyzing music preferences to provide insights into personal emotional patterns. This tool leverages music listening habits to enhance users' emotional intelligence through data-driven analysis.

- **Problem Statement**

  Many individuals struggle with emotional self-awareness, which impedes the development of emotional intelligence. This project aims to bridge this gap by analyzing musical preferences and lyrics to provide insights into users' emotional patterns.

- **Objectives**

➢ Detect and analyze primary emotions from users' music playlists
➢ Generate personalized emotional insights to enhance self-understanding
➢ Create an accessible platform for emotional pattern recognition through music

- **Data Sources and Architecture**

  Primary Data Sources
  - Spotify API: Access to user playlist data and music metadata
  - Musixmatch API: Retrieval of song lyrics for analysis

  Technical Implementation
  - Natural Language Processing: NLTK for lyrics processing
  - Machine Learning: Random Forest Classifier (RFC) for emotion classification
  - Data Processing Pipeline:
    1. Playlist data extraction via Spotify API
    2. Lyrics retrieval through Musixmatch API
    3. Text preprocessing and analysis
    4. Emotion classification using RFC

- **Methodology**

  1. Data Collection:
     - Retrieve user playlist data through Spotify API
     - Fetch corresponding lyrics via Musixmatch API

2. Data Processing:
   - Clean and preprocess lyrics data
   - Apply NLP techniques for text analysis
   - Prepare data for classification

3. Emotion Analysis:
   - Implement RFC for emotion classification
   - Process lyrics to identify primary emotions
   - Generate emotional patterns and insights

● Project Outcomes

➢ Deliverables:

1. Interactive Web Application:
   - User-friendly interface for playlist analysis
   - Real-time emotion detection and visualization

2. Visualization Components:
   - Emotional music profile visualizations
   - Temporal emotion pattern analysis

3. Personalized Insights:
   - Detailed emotional pattern reports
   - Customized recommendations based on analysis

● Challenges and Limitations

1. Technical Constraints:
   - API usage limitations and Terms of Service compliance
   - Integration complexity between multiple data sources

2. Analytical Challenges:
   - Contextual interpretation of lyrics
   - Accuracy of emotion classification in varied musical contexts

● Conclusion

The Playlist Emotion Detector represents an innovative approach to emotional intelligence development through music analysis. By leveraging modern APIs and machine learning techniques, the project provides users with valuable insights into their emotional patterns, contributing to enhanced self-awareness and emotional intelligence.