SOFTWARE REQUIREMENTS SPECIFICATIONS

FOR

FEELTIVITY - AN EMOTION BASED SONG RECOMMENDER

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Revision History

Name	Date	Reason For Change	Version
Feeltivity	01/09/2022	Initial Version	1.0

1. <u>Introduction</u>

1.1 Purpose

The purpose of this document is to outline the system requirements for "Feeltivity - An Emotion Based Song Recommender". Our chatbot will **analyze your emotions** based on your chats (with the chatbot) and **recommend songs** of the genre which correspond with your present mood. The primary aim is to make it **easier for users to listen to songs** while casually talking about his/her day with the chatbot.

1.2 Document Convention

Font Face	Arial
Heading font size	20px
Sub Heading font size	14px
Table / Sub sub-heading font size	13px
Content font size	12px

Apart from this, special highlighting of important keywords have been done to make it differentiable. Every requirement stated in this document has its own unique priority and every functionality is equally important.

1.3 Intended Audience and Reading Suggestions

This document is meant for the **users who will be using** this app. The initial requirements are thought by developers but depending on the users' feedback of the features, existing requirements can be modified swiftly.

This document shall also serve as the reference document for the Project Management and Development team who will **analyze, design and implement the system.**

The developers will coordinate every activity taking place in the Software Engineering process and will be guided by Prof. Rajesh Bhatia.

1.4 Definition and Acronym

Term	Full Description
Feeltivity	Song recommender system
Admin	Person responsible for the upkeep, configuration, and reliable operation of the system
Users	Anyone using the system
DFD	Data Flow Diagram
API	Application Programming Interface
IBM	International Business Machines Corporation, an American multinational technology corporation.
JS	Java Script (A programming language whose frameworks will be used to develop the application)
Python	A programming language which will be used for any machine learning aspect of application.
Firebase	Google backed application development software which provides services like real-time database and storage.
NPM	Package manager for NodeJs
NPX	Package executor for all packages installed using NPM.

1.5 Overview

The remaining part of document comprises of **4** sections as follows:

- **Section- 2:** It describes the product perspective, its functional requirements and stakeholders involved in the system, along with the non-functional requirements like scalability, performance etc.

- **Section- 3:** It describes all the interfaces comprising the user interface specifications, hardware interfaces and software interfaces.

- **Section- 4:** Index.

2. <u>Overall Description</u>

2.1 Product Perspective

The perspective of the system is understood to provide a blissful experience to the users while listening to any sort of song they like according to their current mood. The **MVP of our product** is the recommender system which, by using emotion analysis, can map a plethora of songs to the user's desired genre and also recommend based on the user's past experiences with the chatbot. This service makes **Feeltivity unique** from other songs applications.

2.2 Product Functions

The functions of our Feeltivity platform are as follows:-

- **AI-powered Chatbot** which has the capability to understand text, run **emotion analysis**, and generate song recommendations accordingly.
- The platform can also recommend songs based on the **past interactions and history** of the user with the chatbot.
- An entire **song inventory** for simple surfing of songs.
- **Graphical representation** of the emotions the user is feeling, genre of songs the user is regularly listening to, and other statistics for better understanding.

2.3 User Requirements

- **Minimum user age:-** The user should be of **minimum 10 years old**, and this is set keeping in mind that small children can't express their thoughts precisely through text.
- **Hardware:-**
    1. A computing device i.e. a laptop or a desktop, with a functional keyboard.
    2. A good internet connection.
    3. Earphones (preferred for a seamless experience).

2.4 Process Constraints

We would be setting up the **IBM** Tone Analyzer API so that we can analyze the tone of the conversation (emotions). We are using an API here as we don't have enough data, computational power and time to create our own model API.
Also, even if we create one the cost of the system required to keep it running 24 x 7 will be much more as the self-build model may not be computationally more efficient than the ones already made by developers of IBM.

3. Specific Requirements

3.1 Functional Requirements

| Functional Feature	Remarks
Authentication	Authenticate users using their Google account.
Send Message	Users can send messages to chatbot.
See received messages	Messages (including brief error messages) from chatbot are visible to users.
See error messages	Detailed error message will be visible to the admin only.
Check past emotion	Users can check what emotions were used to recommend songs to them in the past.
Check default song list	Users will be able to see some songs without even talking with the chatbot.
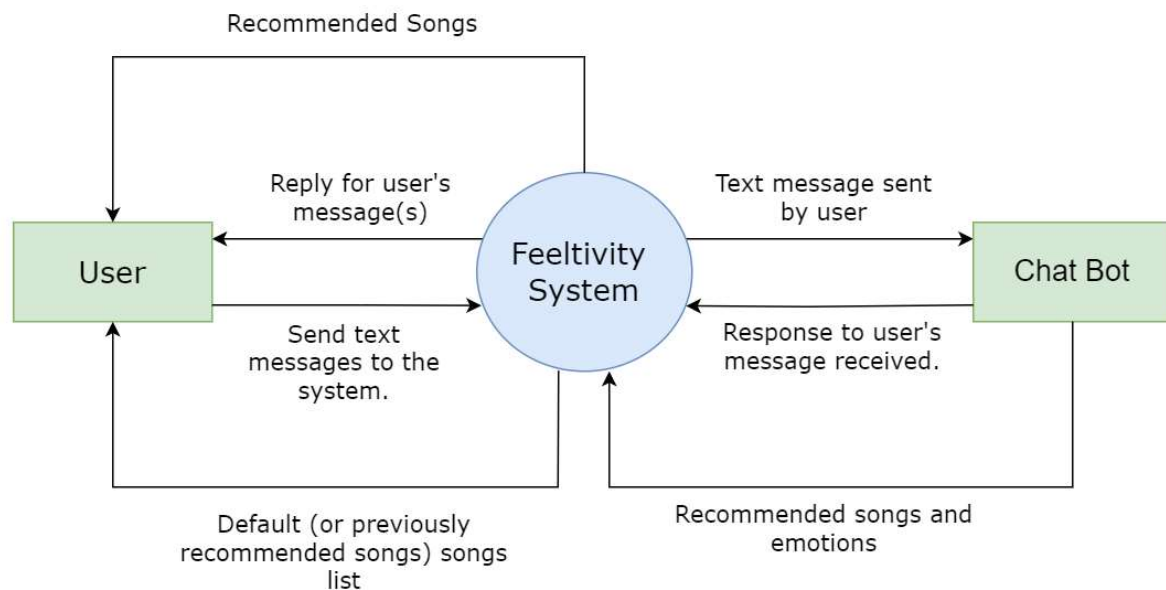
Fig.-1 Level-0 DFD

3.2 Non Functional Requirements

3.2.1 Performance Requirements

At the peak, the system should be able to **scale upto around 1000 users concurrently.** The response time from chatbot may vary from a few milliseconds to a few seconds depending on the length of message sent by the user.

3.2.2 Security Requirements

Since the API used is from a third party so users must agree to terms and conditions of it before using the system. To **prevent accidental leak of data**, a user's message can be checked to contain special characters and uneven cases of letters before sending for emotion analysis.

3.3 Constraints

Hardware Requirement

- 1 GB RAM
- 0.5 GB memory to store data

Software Requirement

- **Node.js** (A Javascript runtime environment)
- **NPM** (A package manager)
- **NPX** (A package executer)
- **Python** 3.x

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