iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 9 **Issue:** VI **Month of publication:** June 2021

DOI: https://doi.org/10.22214/ijraset.2021.35167

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 9 Issue VI Jun 2021- Available at www.ijraset.co

Gesture Controlled Music Player

Kanishka Singh Rathore, Sushant Kumar Bhartiya, Ashish Anand
Computer Science and Engineering, Galgotias University, Delhi, India

Abstract: A music player is a computer program for playing audio files or songs encoded in MP3 format. This application will reside in the user's computer, such as iTunes, Windows Media Player and RealPlayer that are used to organize a music collection and play audio files. Our player provides an easy-to-use graphical user interface with symbols provided on the buttons to enable varied types of users to use the player efficiently.
Along with the basic functionalities of a music player like playing, pausing, stopping and playing next or previous song, we have provided some interesting features which make our player intelligent. Hence, we have rightly named it 'Brain Waves Music Player'. It has the ability to judge our sentiments and play the suitable songs accordingly. Also, the player can be controlled using gestures.

I. INTRODUCTION

Hand gesture recognition is one of the developing fields of examination today which gives a characteristic method of human machine cooperation. Motions are a few types of activities which an individual communicates to communicate data to others without saying it. In our every day life, we can notice not many hand motions regularly utilized for correspondence reason like approval, disapproval, triumph, bearings and so forth Some normal models are in cricket where the umpire utilizes distinctive hand signals to show various occasions that happened right then and there on the match, hand motions utilized by the traffic police, and so on Early ways to deal with the hand signal acknowledgment issue in a MP3 control setting included the utilization of markers on the distinctive activity.

'Brain Wavez' music player is a computer software that has been developed keeping in mind the eternal and ever-growing love for music. Our project is an attempt to make a 'smart' music player. The software is coded in Python and supports the audio format of MP3 and WAV.

We have utilized Python (version 3.6) on the grounds that it is a universally useful unique programming language that centers around code intelligibility. The product improvement organizations lean toward Python language in view of its flexible highlights and less programming codes.

II. LITERATURE REVIEW

We have examined numerous past works done in this field by various scientists. There are numerous methodologies that were followed by various scientists like vision based, information glove based, Artificial Neural Network, Fuzzy Logic, Genetic Algorithm, Hidden Markov Model, Support Vector Machines and so on A portion of the past works are given underneath. Numerous analysts utilized Vision based methodologies for distinguishing hand signals. Kapuscinski [1] discovered the skin hued area from the info picture caught and afterward this picture with wanted hand locale was force standardized and histogram was discovered for the equivalent.

PCs and modernized gadgets have become a prominent component of our general public. They progressively impact numerous parts of our lives; for instance, the manner in which we convey, the manner in which we play out our activities, and the manner in which we collaborate with our current circumstance.

Computers and computerized devices have become an eminent element of our society. They increasingly influence many aspects of our lives; for example, the way we communicate, the way we perform our actions, and the way we interact with our environment. The development in natural interaction between humans and computers has had significant growth over the past few decades. Although hand gesture recognition has been one of the most attractive in the field in human-computer interaction (HCI), which can be found in virtual reality, games, robotics, and automated homes.

III. METHODOLOGY

The software was designed and implemented using sound software engineering methods. The model that we have used to develop this music player is iterative and incremental model. The reason behind choosing this model was in the sense that previous stages might be revisited in the light of new insights found during subsequent stages. In this model, halfway execution of an absolute framework is built so it will be in a deliverable state. Expanded usefulness is added. Imperfections, assuming any, from the earlier conveyance are fixed and the working item is conveyed. The interaction is rehashed until the whole item improvement is finished. The redundancies of these cycles are called emphasess. Toward the finish of each cycle, an item augmentation is conveyed.

The fundamental thought behind this strategy is to build up a framework through rehashed cycles (iterative) and in smaller portions at a time (incremental), allowing programming engineers to exploit what was realized during before parts of the framework.

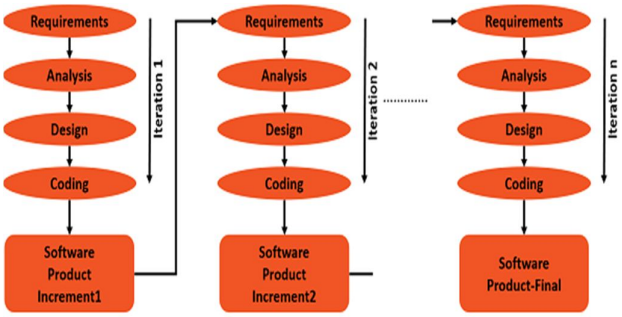


Fig 1: Iterative and Incremental Model

We have 3 modules in this project. These 3 modules interact with the user to obtain desired results. Here is the data flow diagram of this project.

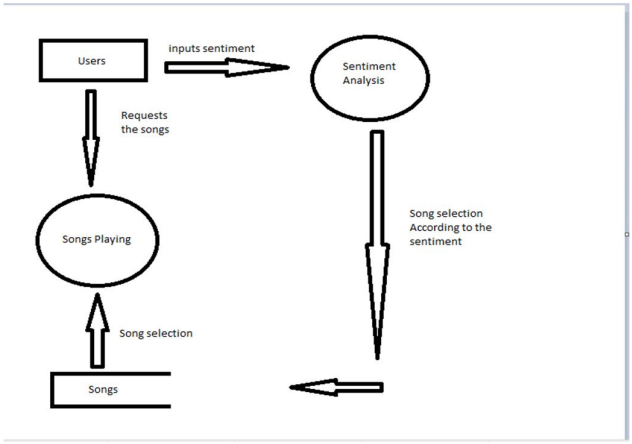
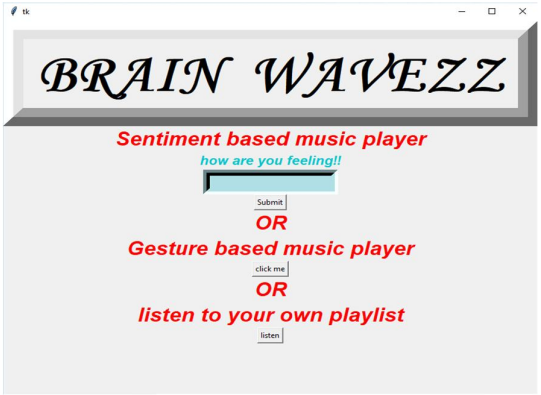


Fig 2 Data Flow diagram for Music Player

IV. SYSTEM ARCHITECTURE

The different components in our software were-

- A basic music player
- Sentiment analysis based music player
- Gesture controlled music player

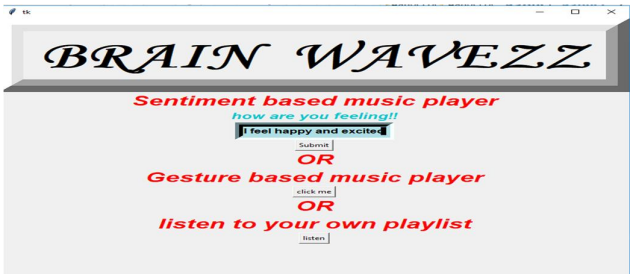


A. Basic Music Player

Main functionality of this module is to provide a user friendly interface so that users could listen to their playlist. We have provided the following functions in this module-
Choose the directory of your choice
Play pause rewind forward
Volume adjustments

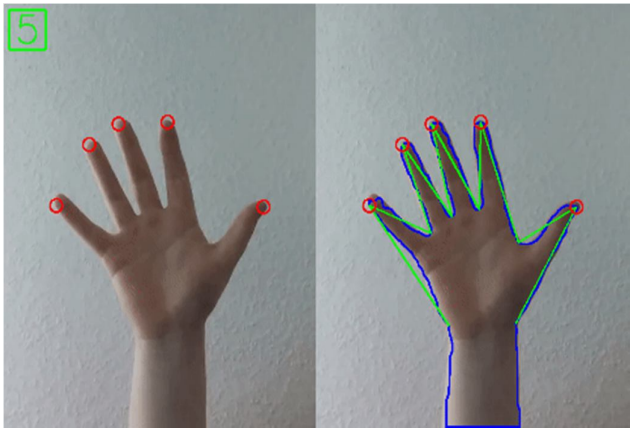
B. Sentiment Analysis

To make our Music player different from other music players in the market we provided a new option that enables users to play song according to their mood. The user needs to write his thoughts and after submitted his thoughts our software. We analyse the positivity of the statement and according to it suggests the songs to users.
We have used indicoio API which is meant for the sentiment analysis of text as well as images. To use this API we got the API key and then we were able to use all the functionalities of the API in our software.



C. Gesture Recognition

To make our music player more user-friendly and easy to use we decided to have a gesture controlled music player that will start the music by a fixed gesture of user. Here human movement is given as input. The webcam detects the movement of the user. When it detects a movement that corresponds with a command, it responds with the appropriate output.We have XML files that have specified the gestures of the user. The python file Gesture_Player.py then matches the gesture and accordingly it plays the song.



V. SOFTWARE AND HARDWARE REQUIREMENTS

A. Hardware Requirements

The most common set of requirements defined by any operating system or software application is the physical computer resources, also known as hardware. The hardware requirements required for this project are:

- Intel i3
- 4GB RAM
- Webcam
- Speaker

B. Software Requirements

Programming Requirements manage characterizing programming asset necessities and pre-imperatives that should be introduced on a PC to give ideal working of an application. These prerequisites or pre-essentials are by and large excluded from the product establishment bundle and should be introduced independently before the product is introduced.
The software requirements that are required for this project are:

- Python 2.7
- Open CV 3.1

VI. IMPLEMENTATION

A. Basic Music Player

Main functionality of this module is to provide a user friendly interface so that users could listen to their playlist. We have provided the following functions in this module-

- Choose the directory of your choice
- Play pause rewind forward
- Volume adjustments

Music.py is the file designed to serve all these purpose. Major functions are-

- Directorychooser(): enables users to choose directory for his choice and imports all the songs of that directory to the Brain Wavez environment.
- Playsong(event): Plays the song as soon as users request is generated to do so.
- Pausesong(event): Pause the song as soon as user request is generated.

B. Sentiment Analysis

To make our Music player different from other music players in the market we provided a new option that enables users to play song according to their mood. The user needs to write his thoughts and after submitted his thoughts our software analyses the positivity of the statement and according to it suggests the songs to users. We have used indicoio API which is meant for the sentiment analysis of text as well as images. To use this API we got the API key and then we were able to use all the functionalities of the API in our software.
Callback() in home.py is function that is analysing the sentiment and according to the results obtained calls the respective classes. We have classified the results obtained after analysis into 3 major categories:
Happy: happy.py will be called.
Neutral: If the statement is neither on a happy side nor on a sad side then neutral.py will be called.
Sad: Sad.py will be called.
All the 3 classes mentioned above have the same functionality as Music.py.

C. Gesture Recognition

It is the ability to recognize and interpret the movements of the human body in order to interact with and control a computer program without direct physical contact. Various mathematical algorithms are used are used to interpret the human gestures, particularly hand movements.

VII. LIMITATIONS

A. .MP3 format that is primarily supported by this player is a lossy audio format.
B. Multiple audio formats are not supported by the player
C. Gesture recognition should be carried out on a plain background, otherwise it would read wrong coordinates.
D. Sentiment analysis is not accurate for complex sentences
E. It requires the user to manually select the songs.
F. Randomly played songs may not match to the mood of the user.
G. User has to classify the songs into various emotions and then for playing the songs user has to manually select a particular emotion.

VIII. CONCLUSION

Music influences you from multiple points of view; be that as it may, it basically influences your mind, through which the remainder of your body can be influenced. Music is a magnificent restorative instrument for the mind, since it initiates such

countless pieces of it. Music's pitch, musicality, meter and tone are prepared in both the left and right halves of the globe of the mind. Tuning in to music triggers the zones of the mind that have to do with spatial thinking. Music can even modify the cerebrum on the off chance that it is concentrated since early on. Exploration shows that melodic preparing in youngsters can improve the action of significant neural frameworks. Indeed, on the off chance that somebody gets a ton of music preparing before they turn 15 (or experience pubescence), quite possibly they will create wonderful pitch. Certain researchers believe that artists who have had early preparing think carefully uniquely in contrast to non-artists.

The Gesture Based Music Player is utilized to evade manual work and give a superior music player experience for the end client. The item settles the essential necessities of music devotees without alarming them as existing applications do: it utilizes innovation to expand the connection of the framework with the client from multiple points of view. It facilitates crafted by the end-client by catching the picture utilizing a camera, deciding their feeling, and recommending a redid play-list through a further developed and intelligent framework.

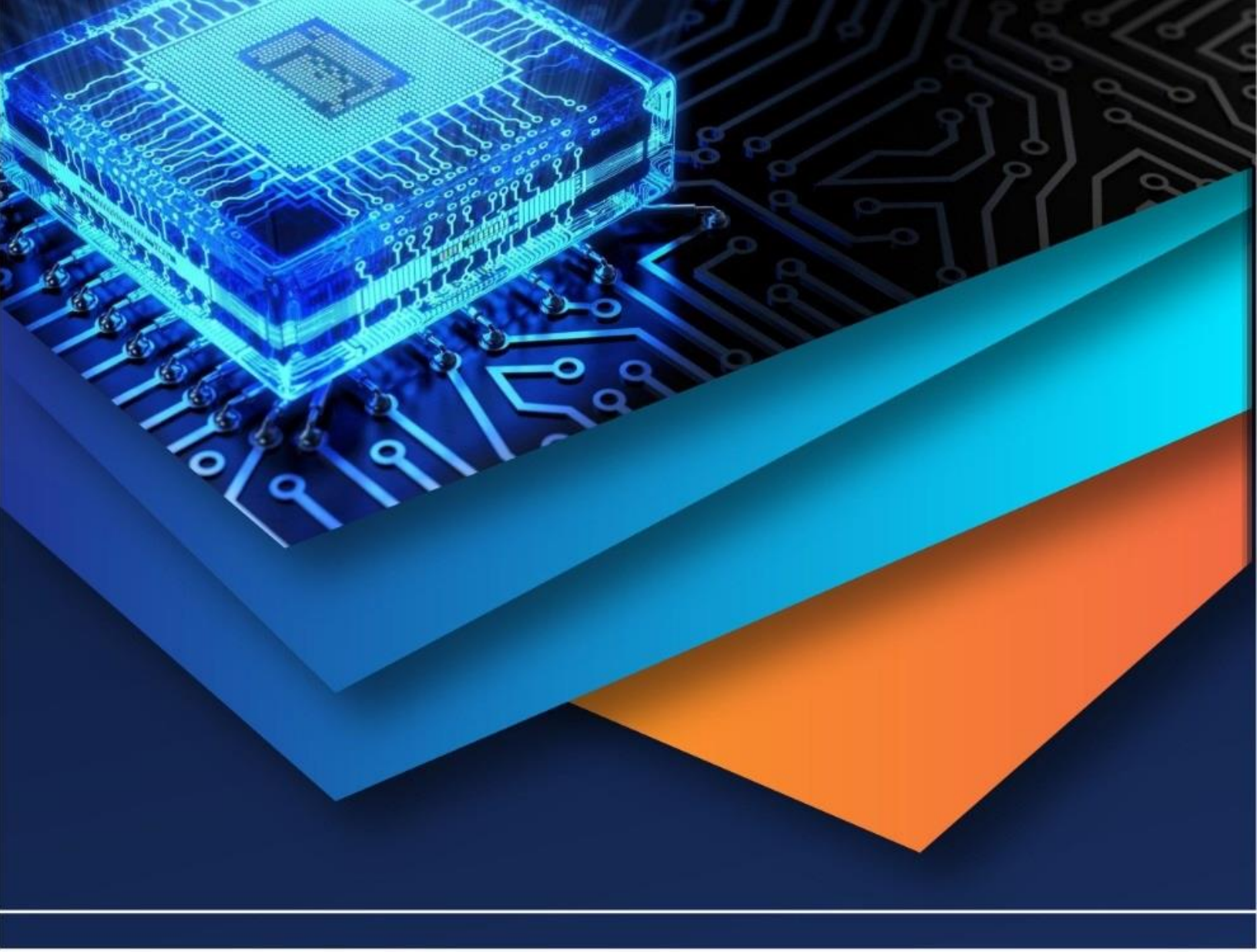
REFERENCES

[1] K. BANNISTER, "Understanding Sentiment Analysis: What It Is & Why It's Used," brandwatch, 26 January 2015. [Online]. Available: https://www.brandwatch.com/blog/understanding-sentiment-analysis/. [Accessed 20 March 2018].

[2] O. E. Gabry, "Software Engineering—Software Process and Software Process Models," Medium, 18 March 2017. [Online]. Available: https://medium.com/omarelgabrys-blog/software-engineering-software-process-and-software-process-models-part-2-4a9d06213fdc. [Accessed 10 March 2018].

[3] R. a. M. S.Kavitha, "Hand Gesture Recognition – Analysis of Various Techniques, Methods and Their Algorithms," International Journal of Innovative Research in Science, Engineering and Technology, vol. 3, no. 3, p. 8, 2014.

[4] Vipul, "Gesture Recognition using OpenCV + Python," 22 March 20015. [Online]. Available: http://vipul.xyz/2015/03/gesture-recognition-using-opencv-python.html. [Accessed 1 April 2018].



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)