



VANI (AI Powered Voice Assistant Radio App)

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Abstract

The proposed paper presents artificial intelligence's impact on building a voice-controlled interface. In the development of traditional radio applications human interaction is needed to change the channels, Tuning the frequency-based channels, and genre-based music radio channels restrict the visually impaired from using the application as well as creates difficulties for nave users. To overcome this interaction, the aim of the paper is to develop a new approach based on an Artificial Intelligence- based method that incorporates the controlling mechanism for playing music and using voice commands. It benefits users to search radio channels, and tune frequency, and genre-based music channels without human interaction. It uses flutter and Alan API(Application Programming Interface) The idea is to minimize the touch interactivity between the user and the mobile so that it could provide ease to use for the radio. The application is built to run on both Android and iOS platforms.

Index Terms: Artificial Intelligence, Speech Recognition, Alan Studio, Radio, Flutter.

I INTRODUCTION

For an easier life many advancements are being made in incoming and even existing technology and the popular one we come across is voice control and voice assistant which are gradually being implemented on more and more devices. Voice control skill has become more demanding skill. Many applications and services provide voice accessibility to the application. Voice control capabilities allows users to get a hands-free experience and can easily access the application just by their voice.

The modern lifestyles create more stress on individuals and many of us prefer listening to music's based on our current mood and get relaxed and relieve our stress. The modern generation is too busy to even sit down and search or type down the song which they are in need, only fewer technology understands one's regional language and even users struggle to type down their song name or the lyrics in regional language. Music has been the choice of relief to many of us. Music is generally defined as the art of arranging sound to create some combination of form, harmony, melody, rhythm or otherwise expressive content. The exact definition of music may vary around the world[7], talking about radio, radio is the technology of signaling and communication using radio waves. Radio waves are the electromagnetic waves of frequency ranging between 30 hertz(Hz) and 300 gigahertz (GHz). These radio waves are generated by an electronic device called "transmitter" which are connected to an "antenna" which radiates the waves and received by another antenna connected to radio receiver.

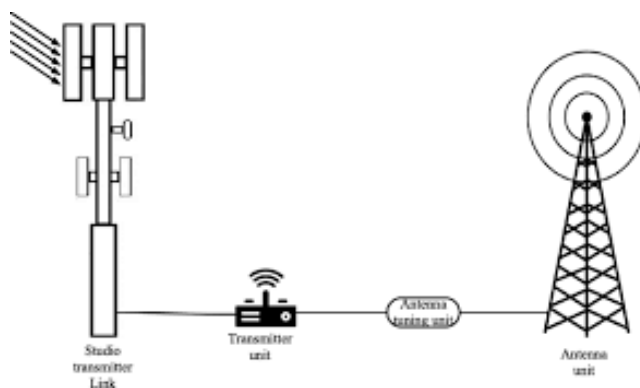


Fig. 1. Generating of radio signals

Music is the art of arranging sound to create a combination of form, harmony, melody, rhythm or other expressive content. Although there are many different definitions around the world, radio is uniquely personal because it allows listeners to imagine what's happening in their own lives through dialogue and background music. This ability has been present throughout human history; before any other medium could do so as well as radio.

The traditional application fails to satisfy all types of users. Thus it is important to build systems and applications with enhanced usability for all the users. So the proposed project can touch the visually impaired people also. The one main advantage of voice-based application is not only limited to mobile phones, laptops or computers but can also be installed in smart televisions, smart watches and vehicles.

Voice control technology is getting better and better every day, and the system can help users with one other problem they face on a daily basis. Most people have trouble typing in a regional language because keyboards are not compatible or comfortable. Using the system gives users the freedom to use whichever language they prefer, which speeds up their search results and enhances their user experience. According to various research groups and studies, in 2019, around 111.8 million people in the US used the voice assistant at least once in a month. This number is projected to grow to 132 million by 2021. This technology gives us an advantage, as well as a need, because so many people are using it. Voice-enabled web apps can be more flexible and usable for the general users, and they can also increase the interaction options for those who can't use traditional methods.

The platform is user-friendly and was developed with Flutter and Alan Studio, which allows users to interact with the app via voice. It provides the components required for users to be able to use voice as a means of searching for and finding music about their choice, as well as having the option to explore the content in more detail.

II LITERATURE SURVEY

This paper by Aditya Chaprana, Ranjeet Kumar, Ajay Saini, Akash Kumar[1] presents a voice-controlled news web application that helps users stay informed quickly and easily. It enables people with limited time to get up to date quickly, and is especially useful for those with mobility limitations. The system also enables users to listen to articles of interest, or those deemed important by the user. This paper illustrates how one of the most popular features of modern devices - voice control - can be used to improve our lives. From this paper we have used Alan studio which allows to build AI concept projects.

ERAA, a Google Dialog Flow-based application by Dr. Jaydeep Patil, Atharwa Shewale, Ekta Bhushan, Alister Frenandes.[2] was developed to provide a user-friendly interface for accessing various applications installed on a device. Flutter was used to provide an attractive user interface and ease of use. Speech recognition was used to perform basic tasks, and the application was also capable of handling small talk with the user. Machine learning was used to develop artificial intelligence models. From this paper we have used Flutter as our main platform to code. It gives us convenience to code like for android application or iOS application, Windows application.

This paper by Ms. Preethi G, Mr. Thiruppugal S, Mr. Abishek K, Mr. Vishwaa D A[3] provides an overview of Static Voice technology and how it can be used to create a personal assistant for the PC. This assistant is designed to be more helpful and time-saving than previous versions, and is capable of performing a variety of tasks based on voice commands. Additionally, this paper discusses the use of various technologies, including natural language processing (NLP) and internet of things (IOT) in order to make the assistant more efficient. NLP is extracted from this paper for converting speech-text-speech conversion.

The application by Mr Prathmesh Godse, Mr. Ronak kothari, Mr. Mahendra Sutar, Ms Gayatri Hegde[4] has a range of features that can make life easier for people who are blind or have difficulty reading. However, the technique is not always reliable enough to be used in every application. The application was written with a static type script, and is designed for use by people who are visually impaired. Some of the main features include calling, messaging, web searching, and reading out text from images. Google Speech API, Java, and Kotlin were used in this paper. Google Speech API is being used for, this paper as to use the application handsfree.

A systematic literature review has been proposed to identify various critical areas of research involving intelligent personal assistants. Six years ago, they conducted a systematic analysis of the articles concerned. The review and taxonomy resulted in general answers and questions on current events being specified.[9] they've created a voice assistant that can do any task you ask it to, without any errors. We've also added more features so it only listens to your voice and won't be activated by other noise.[10]

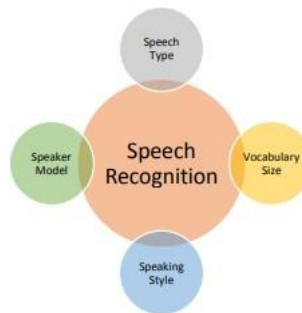
Artificial intelligence (AI) is a field of study that helps us make things like computers and smartphones more intelligent. It's going to become even more important in the future, and will have a big impact on our society.[11]

The success of a mobile-driven loyalty program depends on attracting new customers, retaining existing ones, and motivating increased purchase among current consumers. Loyalty programs also help retailers and small to medium shop owners to build brand loyalty and become more visible.[14]

The paper discusses a voice-controlled personal assistant system that will use natural language processing and machine learning techniques to create a smart assistant that can perform various tasks on various applications. The system will have three phases: data collection, voice analysis and conversion to text, and data storage and processing. The paper also presents a prototype for an advanced application.[15]

III METHODOLOGY

The figure below shows how the various components of the system work together to provide a voice-to-text service.



If the keywords are not matched, an error message is sent to the web app and to the user. After the task is completed, the results are shared between the web app and the user. If the keywords you enter don't match any of the tasks in the list, an error message will be sent to the web app and to the user. After the task is completed, the results will be shared between the web app and the user.

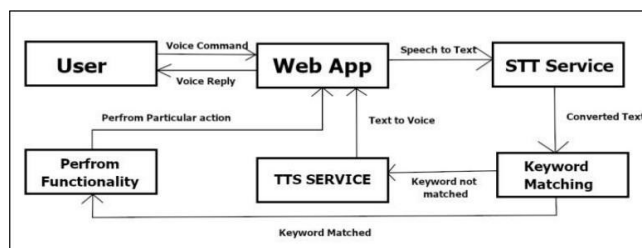


Fig. 2. Architecture Of Web Application

A. Alan studio

Alan has created a server less platform that allows developers to build complex voice assistants and chat bots

B. Flutter vs Dart

Alan allows users to interact with apps in ways that are not possible through touch and typing, through interfaces that can speak and script complex tasks.[6]

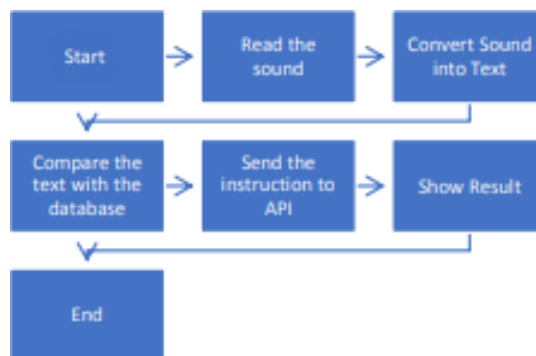


Fig. 3. Working of Alan Studio

SRS's(speech recognition system) are more accurate and versatile when it comes to speaker recognition, as the vocabulary they support is large. Alan Studio's STT and TTS capabilities are particularly impressive, as they can generate accurate results regardless of the voice or pronunciation of the words. However, this type of recognition is more difficult than voice recognition, as the internal representation of the speech must be global in order to cover all voices and pronunciations.

Flutter is a software development framework that lets you create high-quality, maintainable mobile applications using a single codebase. It makes it easy to create mobile apps using the same programming language for both iOS and Android. Flutter apps are built using objects and are easy to understand.[13]

Dart is a programming language that can be used to create UIs for apps and websites. Dart is under development and is compiled into machine code so that it can be used to create mobile apps. Dart is typed, which means that you can't run your code directly - the compiler instead turns it into machine code.[12]

Flutter is a software development framework and Dart is a programming language. Both were created by Google. Dart was designed to be used on web pages, while Flutter was specifically designed for creating mobile apps.[5]

C. Radio API

APIs enable two software components to communicate with each other by using a set of definitions and protocols. This means that the two components can exchange information without needing to worry about the specifics of how they work.

We built our own radio APIs, which will allow our application to fetch the radio stations that user have chosen and play them immediately.[8]

IV DESIGN IMPLEMENTATION

The technologies mentioned above work together to create a system that provides the user with his/her choice of music genre. This system works very precisely, providing the user with the music he desires.

Alan can help you type and deliver voice instructions, and then analyze the data to identify the keywords and task you're asking for. The Radio API will then search for the relevant genre or channel and return the json file. The Material UI will help extract the data from the json file and pass it to the Alan studio, which will read and analyze it and convert it into spoken words and play it back to you.

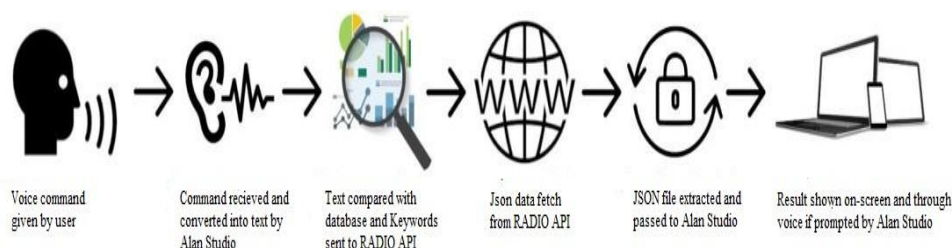


Fig. 5. Working.

V EXPERIMENTAL RESULTS

The proposed project offers a new way to listen to music, with a fast, reliable, easy-to-use interface that will help you to listen to music based on your current mood or simply want to have a feel for the music. The system can identify keywords being spoken by the user and return music in accordance with the query provided. The system also distinguishes between different genres, frequencies, and moods, so you can always find the music that is perfect for you.

The data shown above provides evidence that the system is effective when various lengths of searches are conducted. The system identifies keywords and displays the results according to the keyword identified.

As the number of words in a search query increase, the number of keywords also increases, and the system will then fetch music related to those keywords. This can include music from different channels or genres, which may not be related to the overall search query. But, by retrieving a greater number of related channels or genres than unrelated channels or genres, the system still manages to provide a more comprehensive music experience. The application has a lot of options to choose channel by swiping or choosing through menu. You can activate the play button by tapping on it once and go on by speech.

VI SCOPE

The voice command system is designed to meet the needs of any organization or individual, with increasing

numbers of users using it daily. Its features include support for a wide range of devices, rapid response, and a user-friendly



Fig. 6. UI results

environment. As demand increases, the voice command system will continue to provide the features and benefits that users demand.

This system is versatile and can be used in a variety of ways in different devices, depending on the user's needs. It is easy to install and use, and can be customized to meet the needs of each individual.

VII FUTURE WORK

Back in the early 2010s, people started using voice recognition technology to do things like answer questions on their phones or control devices. However, no one predicted that this technology would become so important in the future. It's now estimated that one sixth of all people in the United States own a smart speaker, which just shows how popular this technology has become. There's still a lot of room for growth, so we can only expect things to get even better in the future!

Intelligent voice recognition is expected to be faster and more accurate in 2020 than it is today. This is because people are now using voice assistants more often, and they want a more user-friendly experience. The system will provide both visual and verbal interactions with the user, so the user will be able to see and listen to the information they ask for. This will make them more engaged with the technology and the information they are looking at.



The technology is growing more and more popular all over the world, and voice recognition is expected to become even more powerful in the coming years. This system is already working most of the things that people need it to, so it will be added to a growing number of features and capabilities.

The system will allow for more languages to be used, which will make it easier for our users.

VIII CONCLUSION AND DISCUSSION

With the proposed system, you can easily access mood-based music in a shorter time than usual. This means you can feel good and relaxed in no time, without having to spend a lot of time using the application. People who are short on time can now easily get the relief they need with just a few vocal commands.

This app allows people with disabilities to use the latest technology to listen to music and get relaxed.

The voice recognition and voice command system will continue to get better and better over time as more features are added. The number of people working on improving it will never stop, because there is always a demand for it from users. It's flexible, user-friendly, and compatible with most devices.

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