

Voice Assistance Based News Web Application by using AI Tools

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Abstract: This project is based on the “voice assistance based News web application” development and provides a personal assistant using voice recognition or text mode operation. In this fast-moving the present study proposes the newer concept of voice controlled devices that recognizes one's voice; process the request and assigns the time and date of the appointment based on the request with details as name of the person; date; time and other related information like crime report, latest news update and many more related news updated available here. The hands-free approach provided by the system goes to a great length and makes the user interact more often as the user usually prefers to use voice command rather than giving commands by typing. The system will reduce the amount of human effort required by the user to perform previously and will offer a more exciting way of getting informed. The system provides a very user-friendly, easy to use, dynamic, and informative user experience. Voice-enabled web messaging applications offer a simplistic approach, are easy to use, and easy for users to understand. This web application supports multiple languages and everyone can understand or speak their own language. We can observe that new ways of reading the news are replacing old ones. Messages are hand-tailored to grab the reader's attention and are also available in a short, to-the-point format. It will also be read as the default language you set. You can also follow the command to read all headings. You can provide voice as a way to improve the user experience and control the functionality of your e-commerce website, as well as easily access other e-commerce websites. It also allows him to compare two products based on search results. We need to develop devices with built-in speech recognition that can recognize speech even in crowded environments where voice is the only form of interaction between devices and humans. The device captures audio through the device's microphone, processes requests made by humans, and responds to humans with appropriate results. Very useful for health and time management news, set new categories of your choice, plan news timings and start on schedule. One of the biggest advantages of the proposed system is that speech recognition is not only limited to mobile phones, laptops, or computers, but can be delivered to all types of devices with which users interact, such as smart TVs, smart watches, etc. Recognition is to be installed.

Keywords: Web Application, Voice Assistant, AI (Artificial Intelligence) Tools

I. INTRODUCTION

This project is based on the development of "Voice Support Based News Web Application", which provides a personal assistant with voice recognition or text mode operation. Its purpose is to promote people's work and provide new updates just by speaking. It can also remember your added daily work timings, send you news notifications based on the news categories you subscribe to, and store them. You can access the EC site from here and see products and related videos just by speaking.

Voice control is one of the key technologies that is gradually being implemented in more and more devices. In this project, we propose a voice assistant message update system that detects human activity through deep learning algorithms. Voice is basically a communication mode that allows users to communicate with each other. Speech Recognition, also known as Automatic Speech Recognition. Our modern lifestyle does not allow us to sit away from our busy schedules and read newspapers, magazines, etc. to keep up with the latest happenings around the world. With each generation, society struggles more to survive.

Traditional working methods and techniques, as well as natural language processing, can help analyse audio and return the desired response in electronic voice. Our software sends the source audio to Alan AI Cloud servers, where the audio is analysed and the answer returned. Our web app-based application makes news gathering fun and interactive, and our voice assistant makes listening to news and headlines easy. News presents facts about society, sports, and the world, and knowing what is going on now requires searching for news that comes in many forms, including newspapers, e-news, e-commerce websites, media, and games. But none of these are comfortable. Voice Support provides the convenience of retrieving your voice-directed messages.

II. ADVANTAGES OF VOICE ASSISTANCE BASED NEWS WEB APPLICATION

A. Speed

Just as some of us regularly do typing, speaking (or sending command messages) is a much faster way of communicating.

B. Hands-Free

Another big advantage of using a voice assistant is that it keeps your hands free. This opens up even more multitasking possibilities, especially for employees who want to hear the news but have other jobs. But voice assistants not only make us more productive inside and outside the workplace, they also make us safer. In many situations, such as driving or cooking, it is more convenient and safer to listen to a message rather than type it.

C. Easy-Of-Use

Even in the 21st century, speaking is more natural than typing. This is especially important when technology is consumer-centric. They are designed to understand the user's verbal commands and provide assistance. People with disabilities can use this app just by speaking.

D. Intonation

Speaking is natural, more so than typing even in the 21st century. This becomes especially important when the technology is consumer-facing. They are designed to both understand the user's verbal commands and provide assistance also physically disable people can use this application easily only through speaking.

E. Shared Devices

Finally, with wearable tech with displays like smartwatches and IoTs like smart speakers, voice is the only way of interacting effectively.

III. LITRATURE SURVEY

In this article entitled "Study of Voice Assistant-based News Web Applications", the authors describe a well-known iPhone application that helps end-users to communicate with end-user mobiles by voice and also responds to user's voice commands. I proposed SIRI. Respond. The same type of application is also developed by his Google. That is, "Google Voice Search" used in Android phones. However, this application works primarily with an internet connection. However, this proposed system works with or without an internet connection. It is called a personal assistant with speech recognition intelligence that takes user input in the form of speech or text, processes it, and returns output in various formats such as: B. Telling the end user what action to take or search result. This article, titled AI-based voice assistant using Python, builds on the concepts of IoT, speech recognition, natural language processing, and artificial intelligence to create an economically effective home automation solution using Raspberry Pi. We have developed a power efficient virtual assistant. Users can voice input, and the device itself responds with voice commands to get the date, time, weather, play your favourite music, retrieve search results from the Internet, and control home appliances. I can do it. A NodeMCU chip is used to control the device that receives commands from the Raspberry Pi. In this article, titled "Virtual Personal Assistants for the Blind," the author suggests that blind people face different communication barriers and face different challenges. In this paper, we have described the implementation of a personal virtual assistant that can use human voice commands to perform tasks that require others to rely on them. Using a text-to-speech engine, text-to-speech engine, and OCR (optical character recognition) using a microphone, you can send and receive emails, view weather forecasts, create diaries and online blogs, and perform image recognition. . Speakers for input and output In this paper entitled "AI-Smart Assistant", the author introduced the user's problem when developing a computer program. Developing a computer program is not an easy task and requires hardware his resources that the user has to deal with. Entering codes continuously can injure the user's fingers. To avoid such problems, we design a system that allows computer programs to be developed by voice. The speech is recognized by the system, the recognized word or words are compared with the keywords stored in the database, if there is a match, it is printed on a notepad, after which the program is compiled and again by recognizing the specific keyword. It will be executed. The system is easy to use and reduces the use of personnel and hardware resources. Certainly convenient for the visually impaired.

A. Problem Definition

Users have to manually run a large set of applications to perform a single comprehensive task. There are already some voice assistants out there, but they're having trouble rearranging their voices. I need a language assistant who understands and can work with Indian accented English. A language assistant should be able to

model complex tasks. If a task has multiple subtasks and each subtask can have its own subtasks, then we need to test to find the best path.

B. Inspiration

Voice assistants make our lives easier and save time, and One Voice Assistant provides users with features that are the backbone of our time. Someone you can talk to when you are alone or lonely. A person who manages daily life and manages physical and mental health. The main motivation is for voice assistants to help adults and people with disabilities complete their daily tasks.

C. Examples in Real World

- The use of voice assistants has been a hot topic in recent AI research. Collect a series of papers to explore voice assistants and analyse the data.
- Primarily computer-based methods of commanding subdivisions of elements via a voice user interface. The item contains written content that will be converted to audio output.
- This project is primarily focused on facilitating access to social media and other internet-based services for the visually impaired. This is because understanding digital content is a very important and difficult problem for this user group. • The system allows users to deploy fractures from different applications on a single platform. The application enables and provides automated profile management. The system works statically without human intervention.
- The phone's most popular application is 'SIRI'. It prompts end-users with customizable end-user notifications via voice and also responds to the customer's voice billing territory Old Government, Life Her Sciences, and affiliates.
- This paper presents speakers who use exposed information as a basis for teaching. It is emphasized by changing the accuracy according to the user's claim and obtaining unregistered statistics by user management.

D. Recent Development in AI

As an area from which nearly every field of work known to man can benefit, AI has proven its importance in many ways. Some of the recent achievements in AI are:

- Ability to write essays, blogs, and even computer programs.
- Detect diseases in medical images that even experienced doctors tend to miss.
- Ability to understand one's environment and respond when necessary.
- Exceed expectations with your game.
- Understand and improve multimedia quality.
- The birth of self-driving cars. This allows the vehicle to commute safely while saving fuel.
- Recent developments in artificial intelligence have made it possible to prioritize and predict social his media posts based on the user's interests.
- 24/7 service has become a common feature of various healthcare, business, banking, marketing, and e-commerce services with the advent of chatbots.
- Advances in neural networks have created various other networks, such as Generative Adversarial Networks (GANs). This amazing network was used to create the website thispersondoesntexist.com [7], which provides her AI-generated images of people who don't actually exist.
- Artificial neural networks are also useful for predicting market stocks and many other activities in which humans cannot predict or calculate with near accuracy.

Table 1 Top global apps downloaded in 2022

	Overall Downloads	App Store Downloads	Google Play Downloads
1	Instagram	TikTok	Telegram
2	TikTok	Shopee	Spotify
3	Facebook	Zoom	TikTok
4	WhatsApp	Telegram	Messenger
5	Snapchat	Facebook	Facebook
6	Telegram	Instagram	WhatsApp
7	Shopee	WhatsApp	Instagram
8	Messenger	Messenger	Shopee
9	Spotify	Snapchat	Snapchat

10	Zoom	Spotify	Zoom
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The above table for Sensor Tower shows the most downloaded apps in the two most popular app markets. This data clearly shows that no news app is in the top 10, indicating that users do not like installing news apps and rely on web searches. This helps the system as the user is not asked to install anything to use the system.

In today's world, many artificial intelligence applications are developed using programming languages such as Python and R. Each language has its own programming constructs and syntax forms. Programmers can be broadly divided into three categories: novice, illiterate, and expert. Although the user has theoretical knowledge of the programming language, its structure and syntax, and program logic, it is always a challenge for inexperienced users to write typo-free code. Therefore, in this paper, we will look at the field of programming, specifically the use of speech recognition technology to create programs using his Python programming language. This document offers a new way to assess your understanding of coding paradigms and engage newcomers to explore one of the areas in the user experience field for better integrated development environment (IDE) programming. In this article titled Assistive system for blind people using Raspberry Pi, the author proposed another combination of reading engine (OCR) and Raspberry Pi's virtual assistant. This is a great combination of systems. This is a useful aid for the visually impaired and people with disabilities. OCR stands for Optical Character Recognition, which recognizes the text at hand and converts it to speech audio through pre-processing and post-processing by GTTS (Google Text to Speech). Google is used as a platform for virtual assistants that can be used in everyday activities such as checking emails, weather forecasts, and news. I also use Google Assistant and his Python language. I am implementing voice based home automation. The aim of this project is to use technology from various fields to help the visually impaired. Tasks such as reading documents, home automation, and personal assistants can all be accomplished with simple voice commands. In this article, titled "Next Generation Virtual Personal Assistants (Microsoft Cortana, Apple Siri, Amazon Alexa, Google Home)," the authors state that one of the goals of artificial intelligence (AI) is to enable natural human interaction. I suggested that it is. and machine. Dialogue systems, also known as interactive conversation systems, have been the fastest growing area of AI in recent years. Many companies use Microsoft's Cortana, Apple's Siri, Amazon Alexa, Google Assistant, Facebook's M. However, in this proposal, to design a model for the next generation of VPA, we combine and process two or more user input modes such as voice, image, video, touch, manual gestures, gaze, head and body movements. We used a multimodal dialogue system. The new model of VPAs will be used to increase the interaction between humans and the machines by using different technologies, such as gesture recognition, image/video recognition, speech recognition, the vast dialogue and conversational knowledge base, and the general knowledge base. Moreover, the new VPAs system can be used in other different areas of applications, including education assistance, medical assistance, robotics and vehicles, disabilities systems, home automation, and security access control. In this proposal, we have tested the new VPAs model by using IBM Watson cloud server with Python, Node Red. In this paper entitled "Voice Assistant Application for a college website" author presented in the Modern Era of fast-moving technology we can do things which we never thought we could do before but, to achieve and accomplish these thoughts there is a need for a platform which can automate all our tasks with ease and comfort. Thus, we humans developed applications like Personal Voice Assistant having the ability to interact with the surroundings just by one of the materialistic forms of human interaction i.e., Human Voice. Here we have developed a web application that allows a specific website to utilize a voice assistant. In this proposed system, I took her university website as an example. You can change the way your end users interact with your website. The application is designed to allow end users to access all services provided by the website through voice commands. Entitled "His AI-based voice assistant using Python," the article describes the gradual and positive use of artificial intelligence technology in human life with the advent and spread of the Internet of Things (IOT). I introduced New capabilities create different systems for integrating smart things into the social network of the Internet of Things. One trend associated with artificial intelligence is the ability to recognize natural human language. New insights into this topic may lead to new possibilities for natural human-machine interaction, where machines learn to understand, adapt and interact with human language. This whitepaper describes the principles of how voice assistants work and lists their main drawbacks and limitations. Learn how to create a local voice assistant without using cloud services. This will greatly expand the future applicability of such devices. In this paper, titled Research on Voice-Controlled Personal Assistant Devices, the authors bring these ideas to life in an era of rapidly evolving technology that has enabled us to do things we never thought possible before. We have announced that it is a platform that allows you to easily automate all your tasks. and comfortably.

Therefore, we need to develop personal assistants with good reasoning skills and the ability to interact with the environment through only one materialistic form of human interaction. H. Interacting Human Voices. A hardware device captures voice requests through a microphone, processes the requests, and enables the device to

respond to the person using its built-in speaker module. In this article titled "Accurate and Compact Large Vocabulary Speech Recognition on Mobile His Devices", the author describes a compact large vocabulary speech recognition system that can run efficiently, accurately, and with low latency on mobile his devices. proposed the design. It uses his CTC-based LSTM acoustic model, which predicts context-independent sounds and is compressed to a tenth of its original size using a combination of SVD-based compression and quantization. It is realized by Quantized deep neural network (DNN) and on-the-fly language model re-evaluation for real-time performance on modern smartphones. In an article titled "Smart Assistance for Students and People Living on Campus," the author designed a conversation assistant that can answer common questions and combined it with a content search engine. Heterogeneous sources. In a paper titled "Artificial Intelligent Voice Assistant", the author introduced that many voice assistant companies are trying to take interaction and more functions to the next level, and many young people are using voice assistants in their daily life. I started using it. Many sources gave very good feedback on the results In the paper titled "POWER EFFICIENT SMART HOME WITH VOICE ASSISTANT", the authors argue that smart assistants are useful in many fields such as education, consumer electronics, etc. , voice assistants are helpful even for blind people. They can get all the information by talking to their assistant. This is made possible by her voice-based intelligent her assistant. For SSH and various module connections he uses a Raspberry Pi. The Raspberry Pi is a cheap, small computer that connects to a computer or monitor using connectors and a standard keyboard and mouse. A Raspberry Pi with 40 GPIO pins on a hardware module. In an article titled "Overview of Speech Recognition Technologies," the authors propose voice-based systems as research targets to enable machines to automatically identify and understand human speech through speech signal processing and pattern recognition.

E. Proposed Method

The overall proposed system design consists of following phases:

- Data collection in the form of speech.
- Voice analysis and conversion to text
- Data storage and processing
- Generating speech from the processed text output.

In the first phase, data is collected in the form of audio and saved as input for processing in the next phase. In the second stage, input speech is continuously processed and converted to text using STT. In the next stage, the converted text is analyzed and processed by a Python script to identify responses to respond to commands. Once the answer is finally identified, the output is generated from a simple text-to-speech conversion using TTS.

IV. METHODOLOGY

The following figure depicts how the system works. It shows how the system interacts with the user and how and which processes take place in various cases.

The user provides a voice input to the web app. The app sends the signal to the Speech to text service. The STT service coverts the voice signal and converts it into text which is then sent for the keyword matching. If the keywords are matched then the functionality that the keyword is related to is performed but if the keyword is not matched then an error message is sent to the web app and then to the user. After the task is performed, the results are then shared to the web app which then replies to the user with a voice reply.

The diagram below shows how the system works. It shows how the system interacts with users and what processes are happening in different cases. The user provides voice input to the web app. The app sends a signal to a speech-to-text service. The STT service masks audio signals, converts them to text, and sends them for keyword matching. If the keyword matches, the function the keyword refers to will be executed, but if the keyword doesn't match, an error message will be sent to his web app and then to the user. After executing the task, the results are passed to her web app, which responds to the user with an audio response.

A. Branches of AI

- Machine Learning: Machine learning algorithms are trained on large amounts of data without being explicitly trained to complete a task. Complex problems are economically solved by machine learning algorithms.
- Neural Network: An artificial neural network has a node layer, where each neuron is connected to each other, and many hidden layers, including an output layer. Each node has a specific threshold and an associated weight. When the data in the node exceeds the threshold, the data is transferred to another node.

- Expert System: An expert system is a way to emulate decision making similar to that of a human expert. An expert system is code that solves a complex problem through a body of if-then-else rules through traditional problems.
- Natural Language Processing: Natural language processing is a branch of artificial intelligence that helps process language and respond vocally to user requests.

B. Tools and Technology used

- Alan AI: You can collect Alan Ai information from your users using voice commands from your application. Unlike some other voice assistants, Alan allows businesses to create unique voice experiences within their applications.
- ReactJS: A library for front-end development. It's open source, based on JavaScript, and maintained by Facebook. It is used to develop the front end of web applications. React helps you create single-page and component-based applications that help deconstruct entire websites into usable components.
- News API: The News API is an easy-to-use REST API that returns JSON search results for recent news.
- Material UI: Material UI is an open source frontend framework for React components with over 60,500 stars on GitHub. Built for less. Less (short for Leaner Style Sheets) is a backward-compatible language extension to CSS. Material UI is based on Google's Material Design and provides a high quality digital experience when developing front-end graphics. Material Design focuses on providing bold and clean designs. Build textures by focusing on how components cast shadows and reflect light.
- HTML/CSS: HTML is used to create and structure the main content of web pages. Start writing words and apply tags or elements to those words. Web browsers then read these and understand page titles, paragraphs, and where pages begin and end to fill the website with content. CSS stands for Cascade Styling Sheets. In short, it's a leaf style language, a kind of language that can be used to describe expressions in markup languages. In this case, it can be used to describe HTML behavior. It effectively determines how building blocks created by HTML are decorated and presented to the user.
- VS Code: Visual Studio Code, also commonly known as VS Code, is Microsoft's source code editor for Windows, Linux, and macOS. Features include debugging, syntax highlighting, smart code completion, snippets, code refactoring, and embedded Git support. You can install it.

C. Implementation

We combine the above technologies to provide our users with a fully functional system that allows them to search and browse the latest updates, news and articles from various sources, locations and topics. The system works very accurately and provides user news from the most trusted sources.

Project implementation can be divided into three parts:

- Frontend development
- API connection with frontend
- ALAN AI backend programming

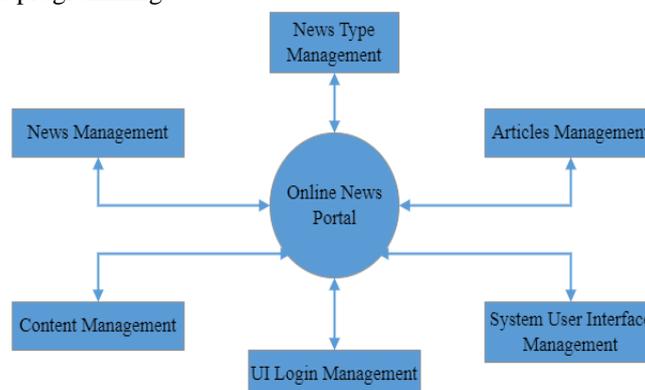


Figure. 1 Zero Level DFD – Online News Portal

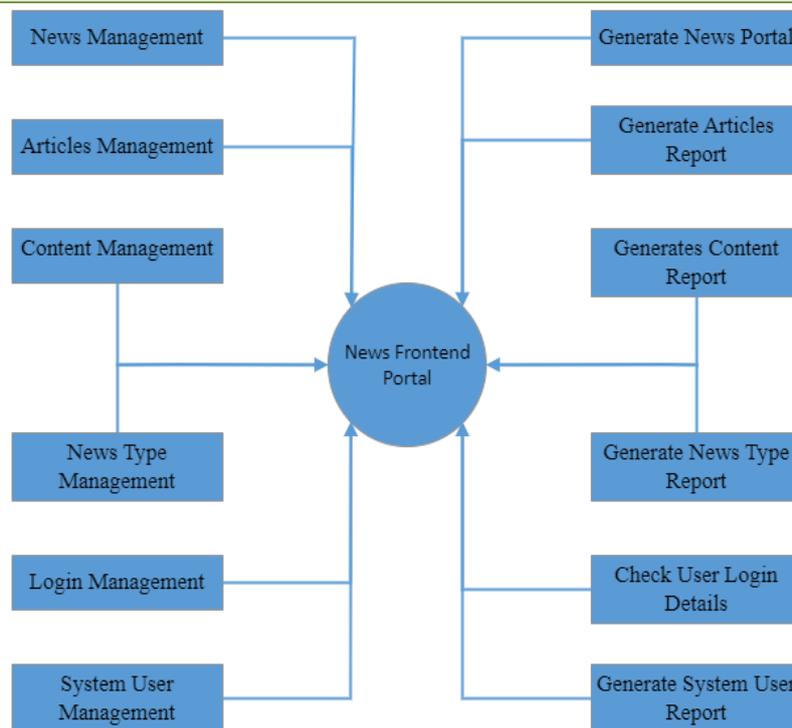


Figure. 2 First Level DFD – Online News Portal

Frontend development

Frontend development is the part we do with react.JS and Material UI. React.JS is used because the dataset is large, and changing the dataset doesn't require a page reload. Material UI, on the other hand, is a well-known React UI framework. Providing a variety of components allows developers to develop quickly.

API connection with frontend

An application programming interface (API) is a messenger that receives requests, communicates user requests to the system, and returns responses. This connection is used to send requests and return responses to the user.

Two APIs are used in this project. Each web app has its own API that connects to another application. Two APIs are derived from the Messages API and the ALAN AI API. News API allows you to search and find news from around the world. Many searches are available to get news by country, accident, pandemic, or developer-selected game.

ALAN AI backend programming

Alan Studio strongly supports developers by providing a free voice assistant. Alan offers his SDKs for various platforms to embed voice assistants in your apps. Language scripts are written in JAVASCRIPT, allowing for a high degree of customization and flexibility.

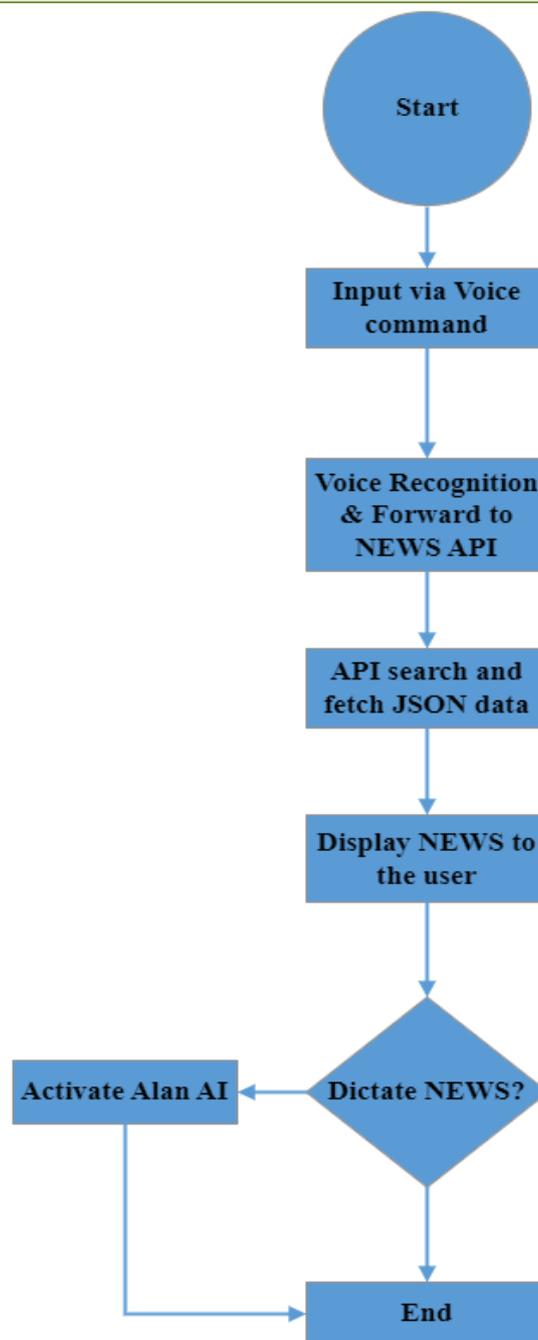


Figure 3 Flow Chart – Online News Portal

D. Applications

- It can convert voice to text
- Users can navigate the entire web app using only voice commands.
- Users can have a small talk.

E. Experimental Results

The proposed project offers a new, fast, reliable, easy-to-use and user-friendly experience that helps users stay connected and up to date with events around the world. The system can distinguish between different keywords uttered by users, so it can return messages according to the queries provided by users.

As the number of words increases, the number of keywords also increases, and the system searches news articles according to the keywords.

Table 2 Experiment Results

Number of words searched	Number of keywords identified	Related articles fetched	Unrelated articles fetched
1	1	20	0
2	1	20	0
3	1	20	0
4	1	19	1
5	2	18	2
6	2	18	2
7	3	16	4
8	3	16	4
9	3	14	6
10	4	14	6

F. Screenshots

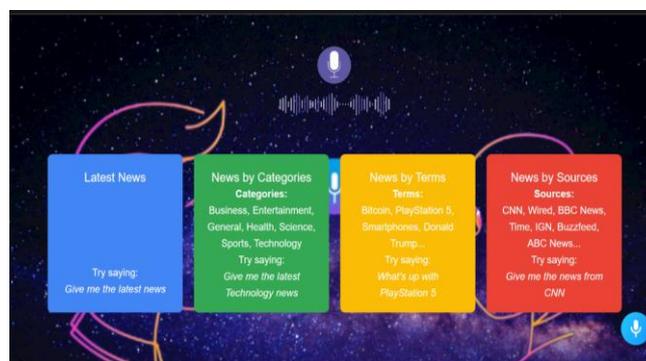


Figure 4 Wep page on portal

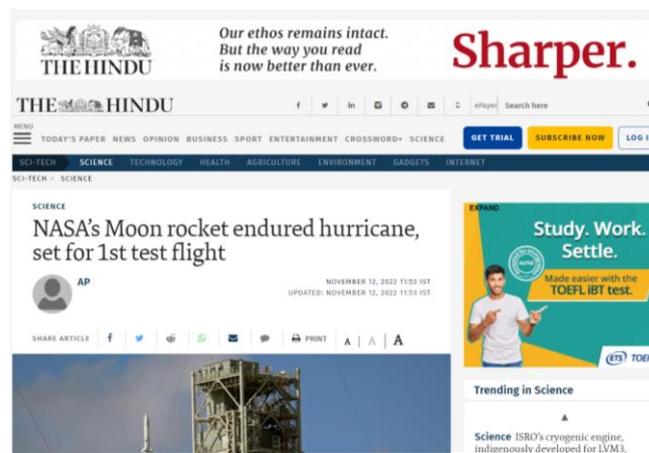


Figure 5 Wep page by using voice assistant

V. CONCLUSIONS

The proposed system will allow a wide range of users to stay connected and receive updates in the shortest possible time. It makes educating yourself and getting information easy and very interesting. Even people with limited time can now easily update with a few voice commands. We also help people with disabilities access the latest technological advances, keeping them up-to-date without hindering their well-being. The system also allows users to listen to articles that appeal to our interests or that we believe are important to them. The proposed system shows how one of the most desirable features of modern devices can make our lives much easier and help save both time and manual labor to keep up to date. A good example to show. We also help people with disabilities access the latest technological advances, keeping them up-to-date without hindering their well-being. This application offers a user-friendly experience that is new to the existing, much faster, more

reliable, user-friendly and very pleasant. This allows users to stay connected and stay up to date with events around the world.

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