

Conversational Voice Controlled React News Application Using Alan AI

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Abstract: Papers have provided us with a reliable source of knowledge and data for almost 400 years. Newer techniques for delivering news and information on a number of issues have emerged as a result of several technology developments. Since the advent of technological advancements like Artificial Intelligence, researchers and developers have tried to apply it to a variety of businesses. This research effort aims to make reading news more enjoyable and interactive by employing the ALAN voice collaborator, allowing users to browse news by genre, networks, keywords, and other criteria. The web programme is entirely interactive, allowing the user to talk their way to knowledge on any subject they are interested in. You may browse news by genre, well-known news networks, key words, and other criteria. The web application is completely adaptable and works with any gadget, including tablets and smart phones.

Keywords: Artificial Intelligence, Voice Assistants, React, News API, Alan Studio.



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INTRODUCTION

Traditional news gathering methods such as newspapers, radios, televisions have been and succeeded for a long time. In modern-day, we are familiar with the use of smart phones and other types of computer for the same through the use of the internet. Although these methods work well, news gathering has never been fun and much interactive. Recently, voice control has become one of the most leading demand skills. As we know, future generation are not getting enough time because of their busy schedules to sit down and read newspapers, magazines, etc. To get them informed of latest events happening all around the world. The proposed idea of the Speech-driven Web Application provides a simplistic approach and ease to the user. The system provides a very user-friendly, easy to use, dynamic, and informative user experience. A voice-controlled system embedded in a web application can enhance user experience and can provide voice as a means to control the functionality of e-commerce websites. The system also offers the ability to search news on the basis of preferred location, source, theme, and interest. The system will reduce the amount of human effort required by user to perform previously and will offer a more exciting way of getting informed. In this paper, a very fascinating proposition is presented, a new web-based service that is a fusion of the revolutionary new Alan Studio, News API and React. The system the enables the user to have the ability to not only stay informed and updated but that too by using one of the most sought-after technologies in the world right now. The service provides all the components required for a user to be able to use voice and speech as a medium to find and look for news about his/her choice and the option to go through the news in a very concise or in very detailed manner.

With rapid advancements in computing technology, we've achieved steps closer to developing AI (AI) sometimes also called Machine Intelligence could also be a revolutionary branch of computing, tasks that were thought to be impossible for a machine. The term "Artificial Intelligence" was coined at the Dartmouth college in 1956 and has seen a huge demand because it seems to be the long run of computing.

BRANCHES OF AI AND THEIR RECENT ADVANCEMENTS

AI is the study of planning frameworks that display comparable attributes related with the insight found in human way of behaving. A huge part of software engineering manages framework acknowledgment like reasoning, understanding, figuring out language, and making moves to tackle issues[5].

Expert Systems: Expert Systems is an AI-based framework that learns and mimics an individual's thinking skill. It doesn't utilize ordinary programming to tackle complex issues yet rather utilizes sensible documentations to accomplish such a point. It is fundamentally utilized in the clinical field to distinguish infection contaminations. It is additionally utilized in the financial area for credit and speculation investigation.

Robotics: This is an exceptionally fascinating part of Artificial Intelligence that spotlights on the plan and improvement of robots. Advanced mechanics manages the planning, building, and working of robots by integrating both science and designing methods. The point of sending robots is to assist people with drawn-out and cumbersome assignments. These errands include the control of PC frameworks, data change and assembling of cars. It is utilized by NASA to move weighty articles in space. Robots likewise go about as man-made reasoning specialists that perform assignments in a certifiable climate determined to complete outcomes. This part of AI is so astounding.

Machine Learning: ML is an important part of Artificial Intelligence. The science empowers machines and PC frameworks to process, dissect and decipher information fully intent on giving answers for genuine difficulties. Computers can learn and make moves all alone because of the degree of adequate information gave through Machine Learning. The calculation is set up so that machines can anticipate results considering previous events. Machine Learning strategies help in preparing a model with information introduced which will then, at that point, anticipate and acclimate to future results. It is the study of permitting computers to learn and interpret information for task execution without programming. Innovation revelations.

Neural Networks: It is a part of Artificial Intelligence related with the utilization of Neurology to integrate mental science in aiding PC frameworks and machines to execute undertakings. It is also called as "Deep Learning" since it includes utilizing artificial neurons to solve complex issues. It assists machines with handling how the human mind works. Face recognition is a consequence of the execution of Neural Network. This great part of AI is likewise answerable for menial helper applications, for example, "Alexa and Siri".

Fuzzy Logic: This part of AI is the strategy of changing and addressing questionable data by investigating how much the theory is valid. This assists with offering a specific degree of thinking adaptability when confronted with vulnerabilities. This could sound a piece complex however it is basically an instance of utilizing standard logic to decide whether an idea shows a level of truth. Similarly, as people face situations in their everyday exercises, a PC framework can be made to experience such fully intent on tracking down an answer. Fuzzy Logic is utilized in programmed gearboxes and medication for independent direction.

Natural Language Processing: Speaking with somebody who doesn't comprehend your language can be exceptionally difficult and the equivalent can be said to describe people attempting to speak with a PC framework. A PC will find it hard to decipher words since it just figures out the language of parallel digits. This challenge has prompted the advancement of Natural Language Processing in software engineering. This is basically the method involved with making PC frameworks and machines to grasp important human collaborations. This cycle includes a machine getting human sound from connection and changing it over

completely to message design, so it tends to be handily perused and perceived. These texts are then switched over completely to parts by the PC framework that will cause it to grasp the aim of the human. The part of Natural Language Processing plays a vital role in this project. The commands of the user should be perceived by the system to finish a request.

LITERATURE SURVEY

Technically speaking, speech recognition goes way back to 1877 when Thomas Edison invented the phonograph, the first device to record and reproduce sound. Voice Recognition is used by everyone using a smart phone or a smart device. It has limitless scope and can be used in different ways.

R. Dale et al. (2019) [10] worked on reviewing different areas that have contributed to ongoing advancements in the growth of voice-based technologies especially in the business sector. He explained about growth in the field of voice assistance, Conversational ability, Tools required, privacy, synthesis of speech and universality of voice.

A. Karthik, V. K. Raja, and S. Prabakaran et al. (2018) [11] worked on constructing a device which helps visually impaired people for programmed acknowledgment of the environmental messages using OCR sensor and Raspberry pi. They worked on integrating Text To Speech which converts the text available in the environment to audio/speech which makes them to understand and interact easier with the surroundings.

J. Gnanamanickam, Y. Natarajan, and K.R.Sri Preethau et al. (2021) [7] worked on a special algorithm which is named as Hybrid Speech Enhancement Algorithm. This algorithm is used in voice assistant applications which mainly focuses on reducing errors in the words. The algorithm proposed by them resulted in maximum accuracy of 90.5% with just 9.5% word error rate for speech data and an accuracy of 92.4% with 7.6% word error rate for audio data.

G. Terzopoulos and M. Satratzemi et al. (2019) [6] made a study on how important the use of voice assistants and smart speakers are in the field of education and everyday lives.

They took one of the major challenges that the present voice based technology is lacking which is the ability of an assistant to speak languages other than English. This research gave a huge support on integrating voice assistants into education which is quite similar to my idea.

Ian W. Freed, William Folwell Barton and Rohit Prasad et al. (2014) [11] worked on prevention of false wake words which are often detected whenever a voice assistant or voice controlled device is active. The research paper is all about the drawings illustrating the actual working of voice-controlled device with in- depth word modules which classify actual words used for interaction preventing false wake words.

Ranking	App Downloads	Store	Google Downloads	Play
1	Toutiao		Public	
2	Tencent News		Cricbuzz	
3	FlashScore		News Break	
4	News Break		Google News	
5	SmartNews		Aaj Tak	
6	CNN		Opera News	
7	BBC News		SmartNews	
8	NetEase News		Onefootball	
9	Qutoutiao		Dailyhunt	
10	For News		Briefing	

Table 1: Top News App Worldwide for January 2020 By Downloads

Toutiao was the most downloaded news application overall for January 2020 with 6.3 million downloads. China represented in excess of the vast majority of these downloads. Public was the second most downloaded news application with 2.6 million downloads. The country with the highest number of Public downloads was India at 99.2 percent of its total downloads.

Ranking	Application	Publisher
1	Dailyhunt	Eterno Infotech
2	Hindi News	Dainik Bhaskar Group
3	Google News	Google LLC
4	Briefing	Flipboard
5	Inshorts	Inshorts
6	Gujarati News	Dainik Bhaskar Group
7	Opera News	Opera
8	NewsPoint	Times Internet Limited
9	Quora	Quora, Inc.
10	Times of India	Times Internet Limited

Table 2: Top News Apps India For May 2022 by Downloads

Above table show the ability and future of voice recognition and control Voice recognition is used in another field and it stretches its scope into a new dimension in the proposed system. The proposed system enables user to set up a combination that provides a useful creative and user-friendly experience.

The top 10 most downloaded apps worldwide in Q1 2022 according to Search Engine Journal were:

- 1) TikTok
- 2) Instagram
- 3) Facebook
- 4) WhatsApp
- 5) Telegram
- 6) Shopee
- 7) Snapchat
- 8) Messenger
- 9) Capcut
- 10) Spotify

So, this data clearly indicates that no news app managed to get in top 10 thus showing that users do not like to install news app and rely on web searches. This proposed system helps the user, as it does not ask the user to install anything in order to use the system.

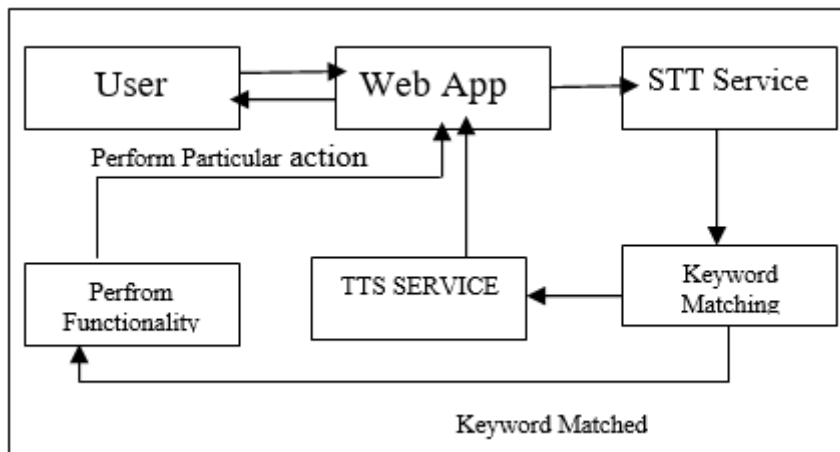


Figure 1 Architecture of web

The above figure shows how the system is working. The user first provides a voice input to the web application. The application then sends the signal to the speech to text service. The speech to text service then converts the voice signal and then converts it into text. This text is then sent for 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 done, the results are then shared to the web app which then replies to the user with a voice reply.

TOOLS AND TECHNOLOGIES USED

Alan AI: Alan Conversational Platform [4] permits designers to make several assistants, similar to Google (Assistant), Amazon (Alexa), Apple (Siri), but confined to a particular application. Alan makes web application more adaptive with improved user interface and updates. With huge number of engineers on the Alan Community and proceeding to develop more, in-application assistants are turning into an absolute requirement for any application. Alan is an exceptionally progressed framework that incorporates BDA, ML, voice and speech recognition, NLP, and other trend setting innovations.

React: React [1] is one of the JavaScript library used for creating UIs. It uses component-based architecture where each component is independent of each other which can be reused throughout the project. It is mainly used to build web pages and mobile applications.

News API: News API gives top headlines including both historic and current news stories in JSON format. It is simpler, user-friendly, easy-to-coordinate REST API

a. **Overall Scale** - News API [2] allows developers to fetch news from huge number of resources 55 nations in 14 different languages.

b. **Simple Co-ordination** - News API returns results in JSON format which are obtained with the help of SDK or HTTP GET requests.

c. **No cost Upgradation** - Without using any payment developers can directly hop on to a trial version of News APL

Visual Studio Code: Visual Studio Code [12] also known as VS Code is a most widely used editor which can run on Linux, Windows, MacOS. It supports wide number of languages namely C, C++, C#, Java, Python, Ruby, JavaScript, Perl, Dart, PHP etc. It became so popular, as developers find it simpler among the other editors available in market. Its properties are as follows:

a. Intelligent Code Completion b. Streamlined Debugging

c. Fast, Powerful Editing

d. Code Navigation and Refactoring e. In-Product Source Control

f. Top Extensions

g. Embedded Git & Terminal

Material-UI is a library that allows us to import and to use different components to create a user interface in our interface in our React applications.

HTML (HyperText Markup Language) is the basic building block of the Web. It defines the structure and meaning of web content.

Cascading Style Sheets is a language describing the presentation of a document written in a markup language such as HTML.

JavaScript is a high-level programming language. It offers several features like.

1. Dynamic typing,
2. First-class functions,
3. Prototype-based object-orientation,
4. Curly-bracket syntax,

5. Just-in-time compilation.

Alan Studio Alan adds an entire server less environment to construct complex and trustworthy in-app voice assistants and chat bots. Alan studio is a great tool that helps in seamless voice recognition. There is no need to make spoken language models, train the speech recognition software, launch and host voice parts-the Alan AI backend does the most of the work. The voice experience for any app can be constructed and made by a single developer, rather than a team of Machine Learning and Dev Ops experts.

With Alan, you can go beyond the abilities of touch and type interfaces and voice enable any complex workflow or function in any app. Voice scripts are constructed in JavaScript, which makes them heavily modifiable and flexible. The following flowchart depicts how Alan Studio works.

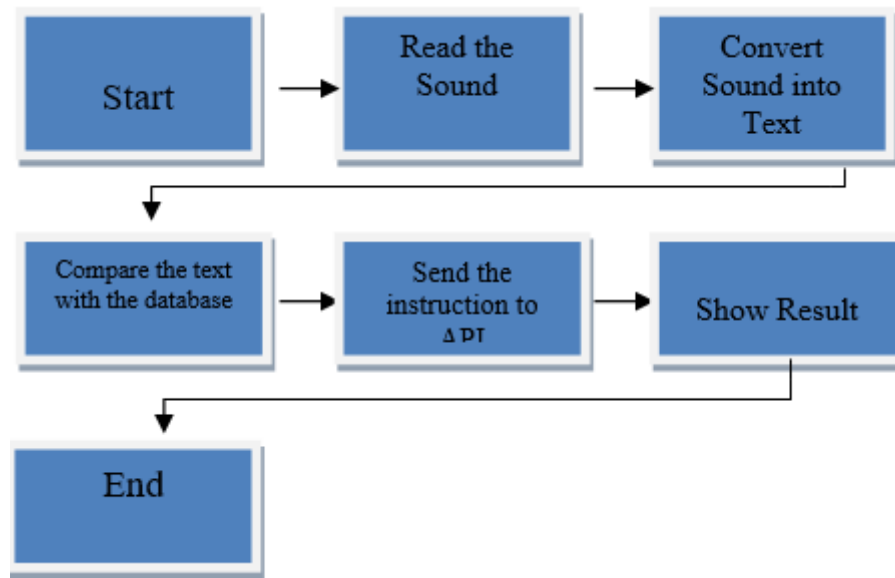


Figure 2 Working of Alan Studio

The performance of a SRS depends on the size of the vocabulary it supports for a certain level of accuracy, complexity, and information processing rate. Alan Studio has a very large sized vocabulary and thus STT and TTS generate great results. The other important aspect of a great SRS is that it is speaker independent that is the application can support voices and the pronunciation of words on a global level thus making it useful for a greater range of audiences. The speaker independent recognition is more difficult because the internal representation of the speech must be global so that it can cover all types of voices and all possible ways of voice pronunciation and yet specific enough to find the differences between various words.

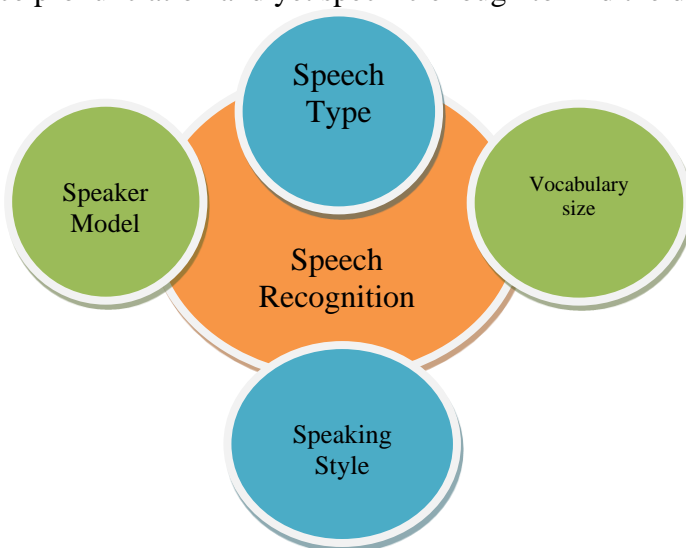


Figure 3 Taxonomy SRS

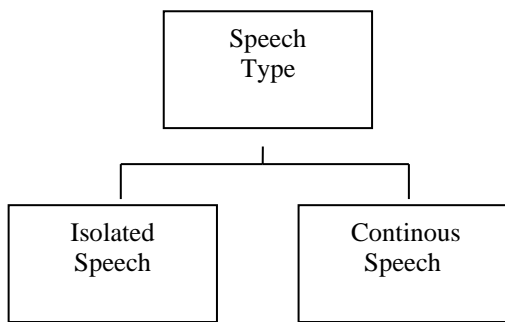


Figure 4 On the Basis of Speech Type

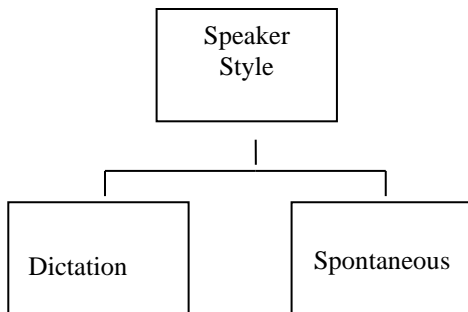


Figure 5 On the Basis of Speaking Style

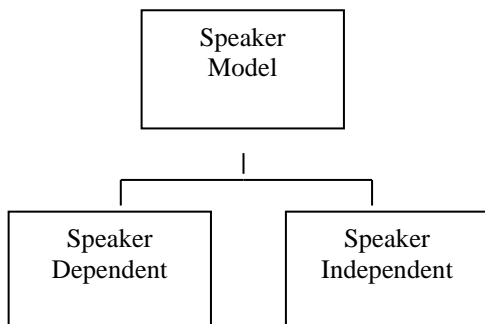


Figure 6 On the Basis of Speaker Model

ABOUT THIS PROJECT

With great advancements in AI, we have offered an approach for development in the field of news technology. In this project, we have used Alan AI to help get the user some news that they desire to know about. When a user asks Alan a few topic, the AI synthesizes their speech into commands which will then be went to gather information from various applications. We have used ReactJS to develop the front-end of this application and JavaScript for behind-the-scenes operations. Visual Studio Code was our editor of preference. Adding all these technologies together, we progressed to building a hands-on project.

DESIGN IMPLEMENTATION

The above-mentioned technologies combine together and offer the user a perfectly working system that enables him to search and browse through the latest updates, news and articles from various sources, locations and topics. The system works very precisely, offering the user news from the most reliable and trusted sources.

Alan studio offers the voice recognition and delivery capabilities and analyses the vocal instructions provided by the user and identifies the keywords and the task that the user has asked. The selected keywords are passed

through to the NEWS API that searches for the news articles about the selected keyword and returns the json file containing all the textual data that the articles contain.

The Material UI helps to extract the data from the json file and it passes the extracted data to the Alan studio which once again reads and analyses the data and converts into voice or reads the articles to the user.

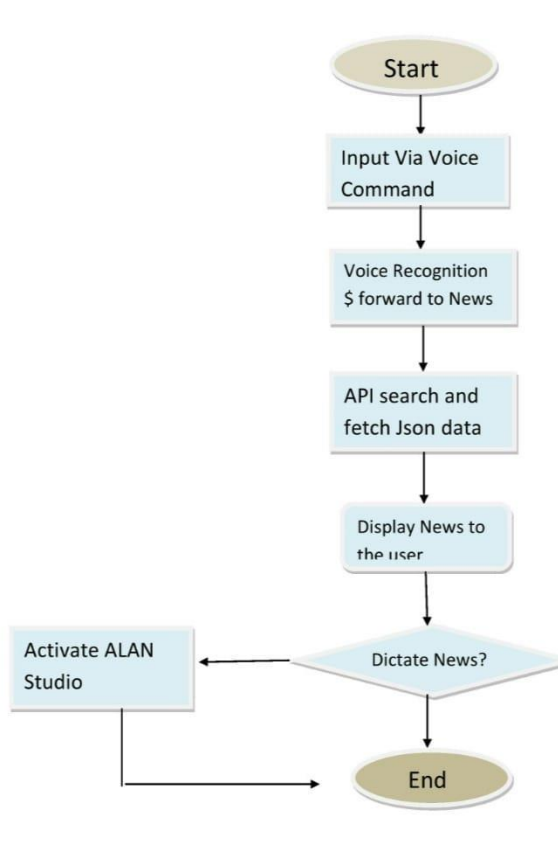


Figure 7 Working Flowchart of the System

IMPLEMENTATION

The project implementation is often divided into three parts which are Frontend development, API connections with frontend, and ALAN AI Studio Backend programming.

The front-end part of the project was implemented using React [1] and Material UI [2]. As mentioned above, ReactJS is an Open Source JavaScript Library maintained and developed by Facebook, it is used for the development purpose of user Interface Components.

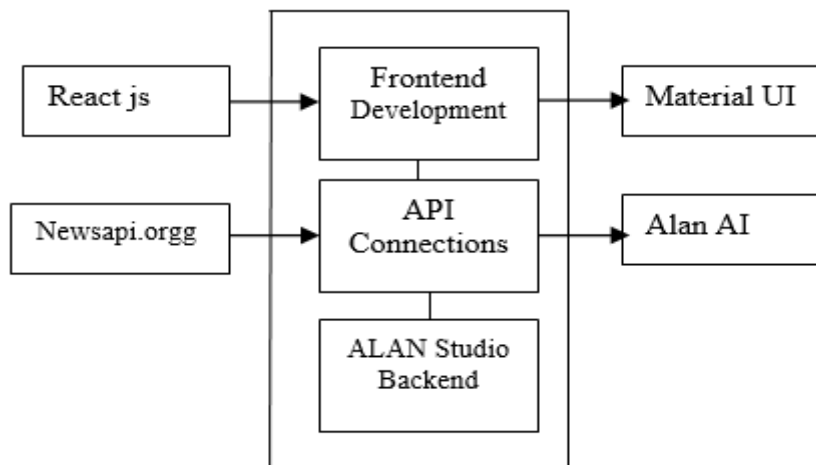


Figure 8 Overall Structure

The components can be reused as many times as a developer desire. React can be used with various frameworks on the server-side and as well as the cline wide. The main reason for choosing act for fund was that it allows us to create web application with large dat and also the changing of data doesn't require us to reload the page The rendering process of React is done by using the Virtual DOM which is fast. This fast rendering was required in a project like this where the user is acting with the web app ining the actual voice. Material on the other hand is a popular React UI framework. It allows the developer for quick develops by providing various components. Some of the components (3) mod for this project wem Card, Card Actions, CanActionAro CardContent, CardMedia, Button, and Typography

The Application Programming Iterface, APt is a messenger that takes requests and tells a system what the mer wants and then return the response Henna aware that provides a foundation for connection between re application. This ection is then used to send requests from one application to another and get a respram is tus. As API is the real backend activity engine between various other application.

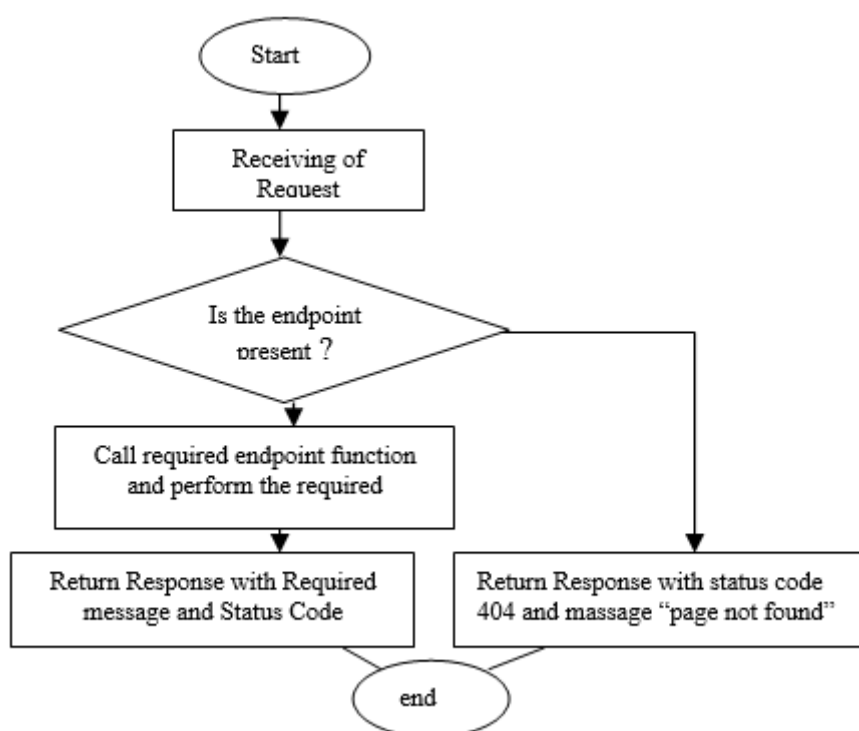


Figure 9 Working of Rest API

IMPLIMENTATION

1 Latest News

Try saying: Give me the latest news

2 News by Categories

Categories: Business, Entertainment, General, Health, Science, Sports, Technology

Try saying: Give me the latest Technology news

3 News by Terms

Terms: Donald Trump, BitCoin, PlayStation 5, Smartphones.....

Try saying:

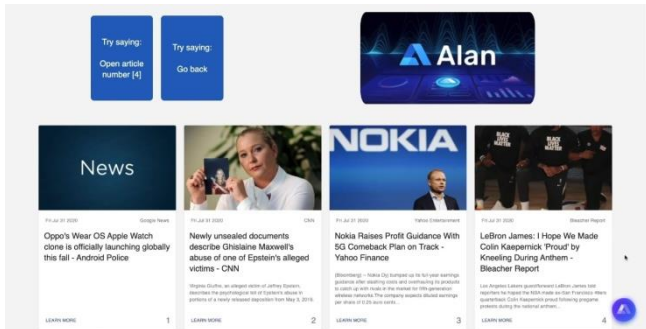
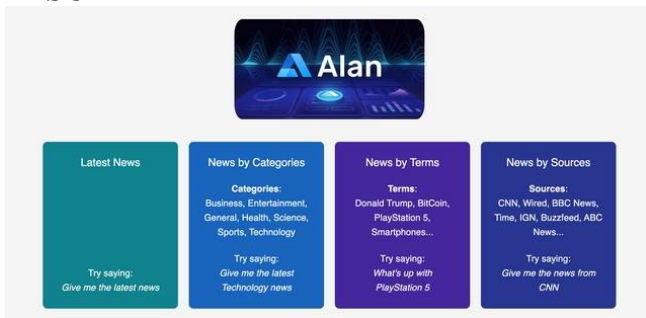
What`s up with PlayStation 5

4 News by Sources

Sources: CNN, Wired, BBC News, Time, IGN, Buzzfeed, ABC NEWS.....

Try saying: Give me the news from CNN

RESULT



APPLICATION

- 1 It can convert Voice to Text
- 2 User can navigate the entire web-app using only
- 3 User can have a small talk.

FUTURE WORK

To move ahead further we can add more functionality in our application. As soon as ALAN AI will update their software with more language like Hindi, Japanese and other languages. Then our app can also take command in many different language and can be used globally.

CONCLUSION

Reading newspapers takes up tons of your time and therefore the reader usually spends reading about articles during which they're not interested. By using this project, the user can get to listen to about all the important headlines of their chosen topic on the go, in only 5 minutes. The project is capable of reading all the headlines of the news articles and may open the source article for more in-depth reading if required by the user. This project helps many people to stay updated and refreshes while utilizing as less time as could be expected. Users get educated and be well proficient with the events that are occurring round the globe in a very simple

and intriguing manner. Individuals with restricted time currently can undoubtedly get up to date just with the help of voice assistance.

This project helps people suffering with visual impairment and locomotor disabilities by empowering them to be up to date with the events happening in the world irrespective of their medical condition. We thus conclude our research with successful completion of the project.

It also helps physically challenged people to make use of the latest advancements in the technical fields and enables them to stay updated and informed without their health condition hampering them. The system also enables user to listen to the articles that grab our interests and those that it thinks that are important for the user to know. The proposed system is a fine example of how one of the most sought-after features of the modern device can make our lives much easier and help us save both time and the physical work to stay informed.

The system will continue to develop and more and more functionalities can be added to it. The number of efforts going into the development of voice recognition and voice command adding with the continuously increasing demand of the users, the system will never get outdated. The system is flexible, user interactive and compatible to almost every device that has the ability of voice command

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