

Voice Assistant News Application using Artificial Intelligence

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Abstract - Newspapers have been a constant source of news and information for us for about 400 years now. Many technological advancements led to newer ways of delivering news and information about various aspects. Since the advent of technological developments such as Artificial Intelligence, researchers and developers have tried to make use of Artificial Intelligence in various fields. This research project is an effort to make news reading more fun and interactive using the ALAN voice assistant. The web app is completely interactive and the user is able to get news from any topic of interest just by speaking. The user can access news by category, popular news channels, by terms, etc. The web app is completely responsive and works well with any device such as a laptop, tablet, or mobile phone. The project is developed using technologies such as ReactJS, JavaScript, Visual Studio Code, and Alan AI.

Index Terms: Artificial Intelligence, Voice Assistants, React, NewsAPI, Alan AI.

1. 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 smartphones and other types of computers for the same through the use of the internet. Although these methods work well, news gathering has never been fun and much interactive.

With rapid advancements in computing technology, we have achieved steps closer to developing Artificial Intelligence (AI). AI sometimes also called Machine Intelligence is a revolutionary branch of computer science, capable of performing 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 as it seems to be the future of computing.

1.1 Recent Developments in AI:

Being a field that can benefit almost every branch of work known to humans, AI has proved its significance in a lot of ways. Some of the recent achievements of AI are:

1. Its ability to write Essays, Blogs and even Computer Programs,

2. Detection of diseases from medical images that even experienced doctors might miss sometimes,
3. Ability to understand its surrounding and to act upon in requirement,
4. Beating experts at their own games
5. Understanding and enhancing the quality of multimedia.
6. Gave birth to self-driving vehicles. This allows vehicle commuting to be safe and fuel-efficient at the same time.
7. Recent developments in Artificial Intelligence has led to priority-based prediction of social media posts based on the user's interest.
8. 24x7 service is now a common feature among various services in the field of healthcare, business, banking, marketing, and e-commerce due to the advent of Chatbots.
9. Advancement in Neural Networks has led to the creation of various other networks such as Generative Adversarial Networks (GAN). This amazing Network was used to build a website "thispersondoesntexist.com" [7] which gives you AI-generated images of people who actually do not exist.
10. Artificial Neural Networks also help in the prediction of Market Stocks, various other activities in which humans are incapable of near to accurate predictions and calculations.

1.2 Branches of AI:

Although AI is a vast field and can be categorized based on several parameters, some of the well-known criterions of AI are: [6]

1. Machine Learning [ML]: Machine Learning is one of the most demanded branches of AI. It enables machines to solve real-world problems. Complex mathematical skills help create ML algorithms that in turn create ML systems.
2. Neural Networks: Neurology being the base of a branch of AI, makes neural networks. It incorporates cognitive science and machines for performing tasks. When combined with ML, these can solve complex tasks very easily.
3. Robotics: Being a sizzling field of AI, robotics is mainly focused on construction of robots. Designing, producing, operating, and usage of

robots being mainly determined, it is an interdisciplinary field of science and engineering. Robots are capable of performing tasks that might be laborious to perform steadily for humans.

4. Expert Systems: With their start of design in 1970s, they were the first successful model of AI. These systems mimic a human’s ability of decision-making. They mainly solve complex problems through reasoning and are known for expressing bodies of proficiency. They are more focused on “if-then” rules rather than the traditional agenda of code.
5. Fuzzy Logic: Sometimes it is very difficult to know whether a condition is true or false. Fuzzy Logic has the ability to represent and modify uncertain information from their degree to which the information is correct. If the logic is true for sure, the standard logic is 1.0, if perfectly false, then 0.0, and between these two values for any uncertainties.
6. Natural Language Processing [NLP]: Human languages can be depicted by developing methods for the assistance of communication via NLP. These systems can understand the context of a line of text and take necessary actions. It mainly is focused on sentiment analysis, text translation, and speech recognition. It is used by several modern-day applications to eliminate junk and violent texts as well as to enhance user experiences on their platform.

The branch of Natural Language Processing is a key component of this project. The speech of the user is supposed to be understood by the program in order to complete a request.

1.3 Tools used:

According to Alan AI. Inc, [8]

“Alan is the most advanced Conversational Voice AI Platform, giving the ability to add a voice assistant to any existing application.” [5]

Using Alan, information can be gathered from applications by users with the use of voice commands. Unlike several other voice assistants, Alan allows companies to build their own voice experiences in their applications.

ReactJS is a library for front-end development. It is open-source and based on JavaScript, being managed by Facebook. It has been around since 2013 and has been a base for several great web-applications.

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.

Visual Studio Code by Microsoft is a source-code editor, freely available for macOS, Windows, and Linux. It provides some great features like:

1. Intelligent code completion,
2. Code refactoring,
3. Support for debugging,
4. Syntax highlighting,
5. Embedded Git,
6. Snippets.

1.4 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 about a topic, the AI synthesizes their speech into commands that can then be used 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.

2. IMPLEMENTATION

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

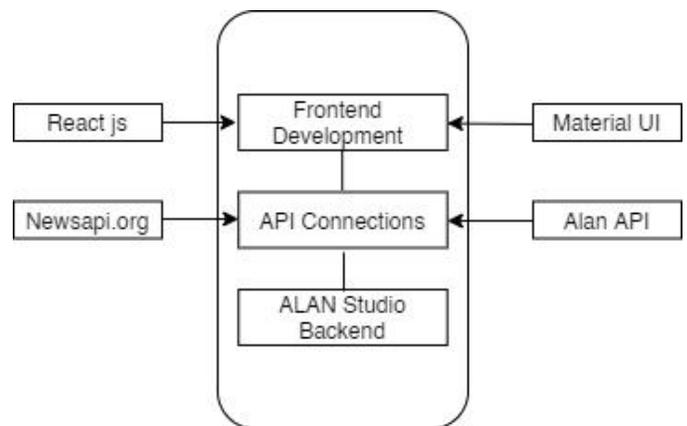


Fig -1: Overall Structure

The front-end part of the project was implemented using ReactJS [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. 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 client-side. The main reason for choosing React for frontend was that it allows us to create a web application with large data 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 interacting with the web app using the actual voice. Material UI on the other hand is a popular React UI framework. It allows the developer for quick development by providing various components. Some of the components [3] used for this project were Card, CardActions, CardActionArea, CardContent, CardMedia, Button, and Typography.

The Application Programming Interface, API is a messenger that takes requests and tells a system what the user wants and then returns the response. Hence it is a software that provides a foundation for connection between two applications. This connection is then used to send requests from one application to another and get a response in return. An API is the real backend connectivity engine between various other applications.

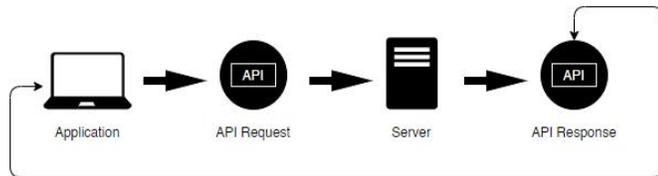


Fig -2: API architecture

In this project, we have used two APIs. Every application has its API key to connect with your application. The two keys were from NewsAPI and Alan AI. Using the NewsAPI [4], one can search and retrieve accurate and current on-going news across the globe. A lot of query sets are available, one can search and retrieve news by terms, category, or by any news sources. The developer can customize the query for the particular regions for the news. This HTTP REST API allows the developer to access quick news as per the request. The frontend was developed according to the features of this API as there are cards according to the news by terms, category, or by any news sources. Some query set available in the project are:

1. News by terms

```
`https://newsapi.org/v2/everything?apiKey=${API_KEY}`
```

2. News by sources

```
`https://newsapi.org/v2/top-headlines?apiKey=${API_KEY}`
```

3. News by category

```
`https://newsapi.org/v2/top-headlines?country=in&apiKey=${API_KEY}&category=${YOUR-VALUE}`
```

Alan Conversational Platform lends strong support for your app by providing it's easy to integrate SDK, JavaScript scripting Alan Studio to customize Alan according to our application. The Alan Studio provides a testing tool where the developer can debug the JavaScript commands. The Alan button doesn't interfere with the User Interface of the application and can be placed anywhere dynamically just by swiping or moving it using the mouse. The cloud handling makes it even more powerful as it is managed by Alan Studio itself. The developer doesn't need to work on the data security and isolation as the cloud handles it with ease. The simple integration of Alan SDK lets the developer use it with various technologies such as Web, iOS, Android, Ionic, Flutter, Electron, Angular, React, Vue, Ember, and Vanilla JS. The scripting for this project was based on the news requirement. Commands like "Give me the latest news from BBC", "What's up with COVID 19", and more were scripted. The voice assistant is completely scripted to read out all the headlines of the news that the user searched for. While reading the article headlines, the frontend of the project highlights the article by a blue bar below it. The user can ask to open any article to read in depth about that article. The project redirects to the news article when the user asks to open an article of their choice. The project gives Alan some more added functionalities like small talk and mathematical calculations.

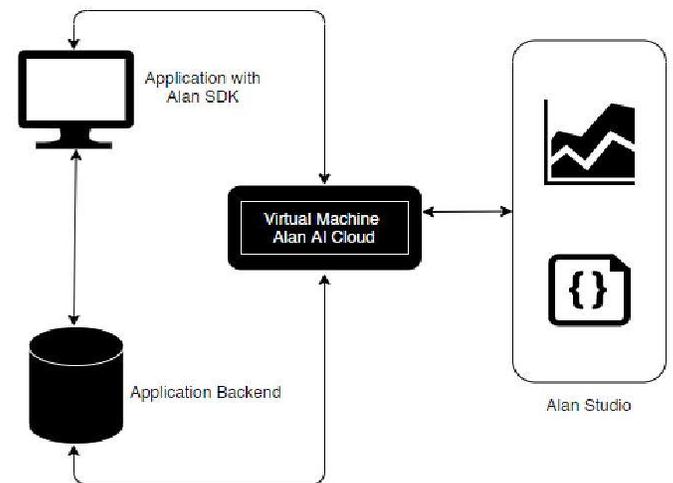
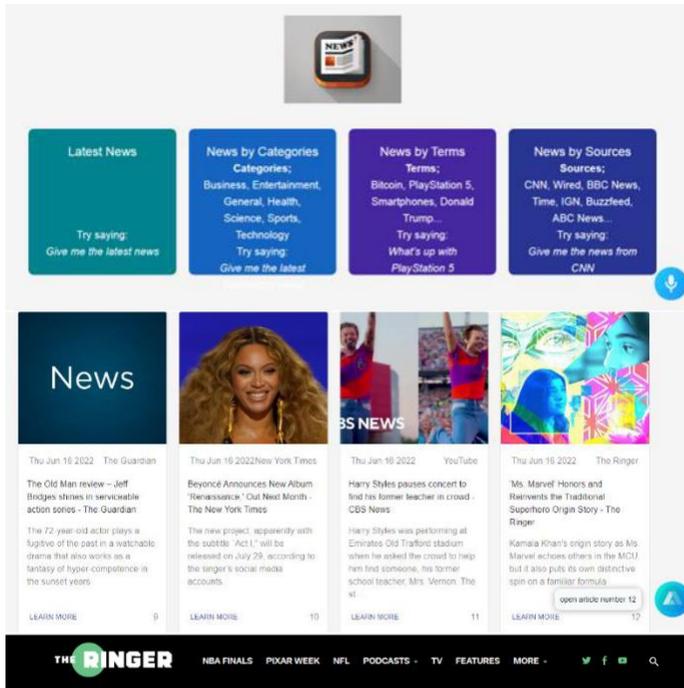


Fig -3: Application Interaction with Alan

3. SCREENSHOTS



4. CONCLUSION

Reading newspapers takes up a lot of time and the reader usually spends reading about articles in which they are not interested. By using this project, the user can get to hear about all the important headlines of their chosen topic on the go, in just 5 minutes. The project is capable of reading all the headlines of the news articles and can open the source article for more in-depth reading if required by the user. Alan voice assistant can be integrated into many more applications in the field of health-care, business, banking, and e-commerce applications. As far as news applications are concerned, we suggest that the integration of voice assistants in news applications will not only enhance the user experience but also make news more engaging in the near future. We hereby have successfully completed our project and conclude our research.