Voice Controlled News Web Based Application With Speech Recognition Using Alan A.I.

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Abstract - *To move into the future we have to keep updating ourselves and keep adapting to the latest technologies. If we observe the updating in news industry we would notice that we still read news through paper which is bad for environment but we have many digital tools like Artificial Intelligence, Natural Language Processing, Speech Recognition System The proposed idea of speech recognition system which provides news only with the help of user command through voice with very detailed or concise manner according to user's choice. The user can access news by category, popular news channel, by terms etc. The web app is completely responsive in mobile phone, tablet, and laptop and desktop. The project is developing using reactJS, JAVASCRIPT, Visual Studio Code, and Alan AI.*

Key Words - React.js, Node.js, Mongo-DB, Visual Studio Code, ALAN AI.

1. INTRODUCTION

A decade ago, we used to consume news via newspaper, media and by communicating with each other but with recent advancement in artificial intelligence, natural language processing and computing power we can access news only via voice command which will make our news gathering experience too much fun and interactive. With rapid development in computer technology, we have reached much closer to advancement in artificial intelligence and natural language processing. Natural language processing helps to analyse the audio and return the needed response in electronic voice. Our software sends the source audio to Alan AI cloud server where voices are analysed so that response can be returned. Our web app based application makes news gathering fun and interactive and voice assistant makes it so easy to listen to the news. News presents facts of society and world and to know about the current situation, one must look for news that comes in many forms like newspaper, electronic news, media, but none of them provide comfort to the listener, but our ALAN AI provides comfort by retrieving the news which is commanded by the customer through voice.

2. PROJECT OBJECTIVES

Traditional news gathering methods were quite complex and were time taking and also very costly. That's why we have built a project which provides news in more interactive and fun way. User just has to invoke the assistant by specific key words after wards our web app will provide news through voice assistant. So, anyone who cannot get news by reading the news articles or any traditional method, our project is very useful and advanced method for getting news.

3. RECENT DEVELOPMENT OF AI

Recently, humanity has witnessed technological advancement in the artificial intelligence field. Previously we used news and media channels to interact with news but now with advancement in computing power in mobile phones we can interact with news all across the globe through mobile phones. But the whole level of experience of interacting with news can be upgraded by utilising the artificial intelligence and subfields of artificial intelligence like natural language processing, robotics, machine learning, expert system, neural network.

4. BRANCHES OF AI:

4.1. MACHINE LEARNING

In [1] Machine Learning we study computer algorithms. The algorithm improves itself by experience and data. Machine learning algorithms are trained by large amounts of data to do a task without being explicitly trained to do. Complex problems are solved economically using machine learning algorithms.
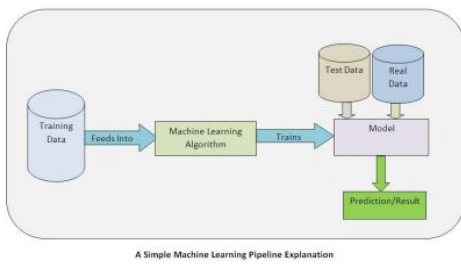
Fig. 1- Simple ML Pipeline

4.2. NEURAL NETWORK

[2]Neural network is a way to mimic the function of the human brain. In the human brain there are connections of billions of neurons which are connected with each other by synapses and neurotransmitters which help to store memory and help to retrieve the information at the moment of need.

In artificial neural networks there are node layers in which each neuron is connected by each other and there are many hidden layers and also contain one output layer. Each node has some threshold value and associated weight. If data in node exceeds threshold value then data is transferred to another node.
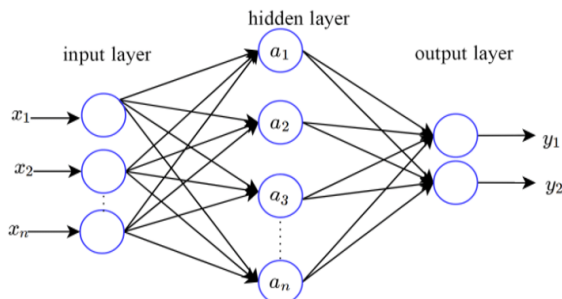

Fig. 2 – Neural Network

4.3. ROBOTICS

Robotics[3] learning is the intersection of machine learning and robotics, robots are built to do a specific task which is very complex for humans like lifting towers or manufacturing cars and with the help of machine learning algorithms robots can improve their efficiency and precision to do a task. Robotics is an emerging field and many developments happening in robotics which improve precision, are also very economical to use. Today every industry is using robotics to manufacture their products.
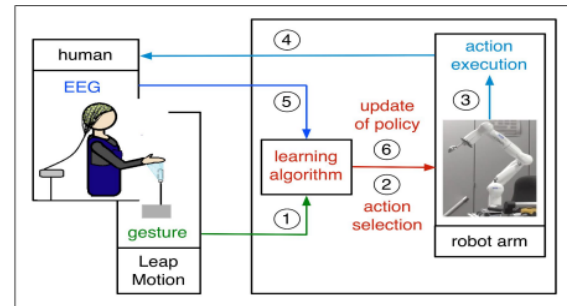

Fig. 3 - Robotics

4.4. EXPERT SYSTEM

Expert [4] system is the way to emulate decision making similar to the human expert. Expert system is code to solve complex problems through the body of if-then-else rule through conventional problems. Expert system was first artificial intelligence software which worked successfully. The expert system has two parts. The inference engine and knowledge base. The knowledge base represents facts and rules. The inference engine completed its task by gathering the facts to deduce upgraded facts. Inference engine includes debugging abilities and explanation.
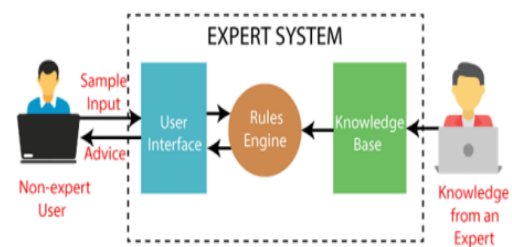

Fig. 4 – Expert System

4.5. NATURAL LANGUAGE PROCESSING

Natural Language Processing [5] is a branch of artificial intelligence which helps to process the language and respond to the query of the user in voice. NPL summarises the large volume of texts rapidly, even in real time. You have also interacted with NLP through Alexa, Google assistant, speech to text dictation and customer service chat bots.

Fig. 5 - NLP

5.   TOOLS USED

5.1. ALAN AI

Alan A.I. [6] is the advanced A.I based voice platform that allows you to add voice assistance to your web app without overhead.
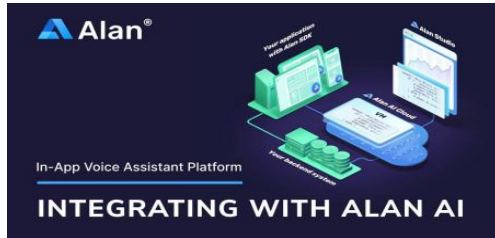

Fig. 6 – ALAN AI

5.2.   REACT.JS

React (also known as **React.js** or **ReactJS**)[7] is a free and open-source front end library for building user interfaces based on UI components.

5.3.   NODE.JS

Node.js is an open-source JavaScript runtime environment and library to run web applications outside the client's browser. Node.js uses asynchronous, event driven model and is perfectly used for data-interactive app. Node.js is used in making real time web application network application, also in distributed system.

5.4.   JAVA SCRIPT

JavaScript is a high-level, compiled language that conforms to the ECMA Script standard which confirms the interoperability in web pages. It has dynamic typing, prototype-based object orientation, and first class function. It is multi-paradigm, supporting event driven, functional, and imperative programming style. JavaScript possesses application programming interfaces (APIs) for working with text, dates, regular expression, standard data structure, and the Document Object Model (DOM).

5.5. VISUAL CODE STUDIO

Visual Studio Code is a source-code editor that can be used with a variety of programming languages, including Java, JavaScript, Go, Node.js, Python and C++. It is based on the Electron framework, which is used to develop Node.JS applications that run on the Blink Layout Engine.

Some features are:

● Intelligent code completion

● Code refactoring

● Support for debugging

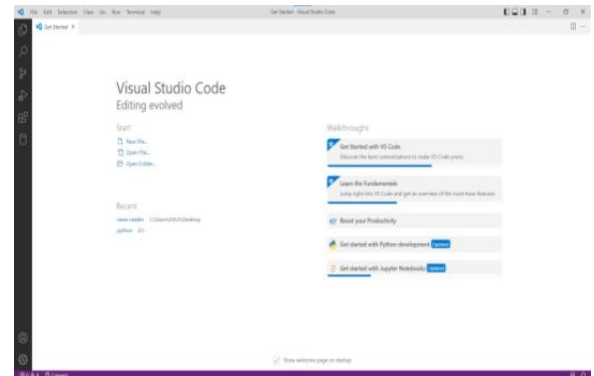● Syntax Highlighting

● Embedded Git

● Snippet

Fig. 7 – Visual Studio Code

6.   IMPLEMENTATION

Project implementation can be divided into three parts:

● Frontend development

● API connection with frontend

● ALAN AI backend programming

6.1.   FRONT END DEVELOPMENT

Frontend Development is a part which is done by using react.JS and material UI.React.JS is used because of large data set and change in data set does not require reloading the page. The rendering process is done by Virtual Dom which is very fast. The purpose of render () function is to display the specified HTML code inside the specified HTML element. A render function read props and state and return our JSX code to the root component of our app. The virtual DOM is programming concept where an ideal or virtual representation of UI is kept in memory and synced with real DOM by a library such as react DOM. The fast rendering required in the project like this where the user is interacting with web app using actual voice. Material UI on other hand is a popular react ui frame work. It allows developers for quick development by providing various components.

Fig. 8 – User Interface

6.2.   API CONNECTION WITH FRONTEND

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

Two APIs are used in this project. Each web app has its API which connects with another application. The two APIs were from news API and ALAN AI's API. One can search and find news across the globe using news APIs. A lot of query search are available, you can retrieve news by country, accident, and pandemic or on games according to developer choice.

6.3.   ALAN AI BACKEND PROGRAMMING

Alan Studio provides great support to developers by offering free voice assistants. Alan offers SDKs for different platforms to embed a voice assistant to your app. Voice Scripts are written in JAVASCRIPT which make them highly customizable and flexible.

Alan AI provides a voice assistant to any type of application only with the help of APIs. ALAN AI does all the backend work of voice assistant developers only have to connect the api with its web app to import the features of ALAN AI.

6.3.1. ALAN STUDIO

Alan AI is a powerful web-app based   integrated development environment where you can debug, write and test dialog scenarios for your voice Chabot or assistance.

Fig. 9 – ALAN Voice Assistant

6.3.2. ALAN CLIENT SDKs

Alan's SDK provides an efficient way to embed a feature in any existing application.

6.3.3. ALAN CLOUD

The ALAN AI backend framework consists of Speech Synthesis; Natural Language Processing and Automatic Speech Recognition. The Alan cloud contains all sufficient data to perform the voice assistant task in a very flexible manner.

7. CONCLUSION

Traditionally reading newspaper used to take a lot of time and it was not interactive and fun to read newspaper with the help of our project.

Gathering news will become more fun and interactive. The project is capable of retrieving news of all genres across the globe, and it will retrieve news according to user command if the user wants to listen to news in concise form or in depth.

8. FUTURE DEVELOPMENT

To move ahead further we can add more functionality in our application. As soon as ALAN AI will update their software with more languages like Hindi and Japanese, then our web can also take command in many different languages and can be used globally. We also planned to implement recommendation system using machine learning which will recommend news according to user's interest and we will also classify the news according to category of news, like if user will give command for positive news, then our web app provide news which will lie in positive category and vice-versa.

9. REFERENCE

[1] Machine learning | Wikipedia

https://en.wikipedia.org/wiki/Machine_learning

[2] Neural Network | Ibm.com|

https://www.ibm.com/cloud/learn/neural-networks

[3] Robotics | Wikipedia | en.wikipedia.org

[4] Expert System | Ibm.com |

https://www.ibm.com/cloud/learn/IBM

[5] Natural Language Processing | IBM | www.ibm.com

[6] ALAN AI | https://alan.app

[7] React | JavaScript library | https://reactjs.org

[8] Node.js | https://nodejs.org

10. BIOGRAPHIES

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