



# REVIEW ON ARA- A VOICE ASSISTANT FOR DISABLED PERSONALITIES

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**Abstract:** This paper illustrates the implementation of our proposed voice assistant that provides assistance to disabled personalities over the website. ARA-the voice assistant is a software agent that can interpret human speech and respond via synthesized voices. The most popular voice assistants which can all be found on smart phones and dedicated speakers. As voice assistants become more widely used, but have complex functionality and only open when we click the mic option, this will start on voice command, easier for the people who are blind or have cognitive disabilities. ARA will read out the content of the website and then using speech to text and text to speech modules along with selenium, our software can automate any website. The designed voice assistance connects with the intended applications to provide results that the user has demanded. The objective of this paper is to illustrate how voice assistants are used in everyday life with minimal efforts and to explore whether there is potential for making them accessible for people with disabilities.

**Keywords:** artificial intelligence, machine learning, voice assistants, speech recognition, cognitive disabilities

## I. INTRODUCTION

Voice assistants have a very long history that dates back over 100 years, which is surprising since Siri, the first one that we are aware of, was only released ten years ago and now we can see AI at work every day in the form of virtual personal assistants, which are embedded in almost every smartphone today. It is no wonder that voice assistants are gaining popularity at an incredible rate, becoming more relevant to providing great, yet effortless customer service. The basic idea of taking an artificial voice assistant into the picture is that it is a voice robot, which is somewhat different from the natural human voice and reacts according to the command. It is no longer a human who learns to communicate with a machine, but a machine learns to communicate with a human, prospecting his actions, habits, behavior, and trying to become his personalized assistant. Worldwide, 15% of the population has some form of disability, of which 2-4% have significant difficulties with their functioning. The task of using a website can seem trivial to most people, but it can be extremely difficult for people with disabilities. As a result, we wanted to develop a way that would allow different types of people to access the internet in a unique way.

## II. LITERATURE REVIEW

S. No	Name	Year	Author	Review
1.	Jarvis, Digital Life Assistant <sup>7</sup>	2013	Khobragade S.	This paper explains how the author's project uses voice as a communication format, which is basically the Speech recognition application. There are two main basic concepts in speech technology: Synthesizer & recognizer. A speech synthesizer takes input and produces an audio stream as output, while speech recognition takes an audio stream as input and turns it into text transcription.



2.	'Virtual assistant for the visually impaired'	2020	Iyer V.,Shah T.K.,Sheth S.,Kailas D.	In this paper, the author explains how he built a software that provides a new dimension to access and provide commands to any website.
3.	AI Based Voice Assistant Using Python'	2019	Shende D.,Umahiya R.,Raghorde M.,Bhisikar A.,Bhange A.	In this paper, the design and implementation of Digital Assistance is discussed. The project is built using open source software modules with PyCharm community backing which can accommodate any updates in the near future. The modular nature of this project makes it more flexible and easy to add additional features without disturbing current system functionalities.
4.	Research Paper on Desktop Voice Assistant	2022	Dhanraj K.V.,Kriplani L. and Mahajan S.	A key objective of AI in this paper is to establish natural dialogue between humans and machines. Voice assistants are great innovations in artificial intelligence that can revolutionize how people live in a very positive way. Since voice assistants were introduced to smartphones, they have been widely accepted. Desktop voice assistants are programs that recognize human voices and
5.	Virtual Assistant Using Python	2021	Damarla K.	In this paper,the project works on voice input and gives output through voice and displays the text on the screen.The voice assistance takes the voice input via microphone and converts the voice into computer understandable language and gives the required solutions along with answers which are asked by the user. This assistance connects with the world wide web to provide results that the user has questioned.
6.	Empowering people with disabilities through AI	2018	Smith B. , Shum H.	In this paper,the benefits of empowering people with disabilities via employment goes well beyond offering opportunities for social participation and to live dignified and productive lives without seeking any help or guidance.In the workplace, people with disabilities are reported to be highly motivated and loyal, translating into extremely low turnover rates. With this observation we emerged



				with a solution to propose a model which can boost the confidence of these people.
7.	Desktop Voice Assistant for Visually Impaired	2020	Yadav A., Singh A., Sharma A., Sindhu A., Rastogi U.	This paper features a personal voice assistant which takes commands as per the individual, this is implemented via a synchronous process involving recognition of speech patterns and responding via synthetic speech, there is a need of a voice assistant which can not only take command through voice but also execute the desired instructions and give output either in the form of voice or any other means.
8.	Artificial intelligence and disability: too much promise, yet too little substance	2020	Peter S., Smith L.	The idea mainly focused on designing and implementing an assistive system for visually impaired persons to access the Android smartphones easily and the proposed system is used to help the visually impaired to have access to the most important features of the phone. The aim is to design a low-cost and high performance assistive device for daily activities of visually impaired persons.
9.	AI Based Voice Assistant Using Python	2019	Shende D., Umahiya R., Raghorte M., Bhisikar A., Bhange A.	Using artificial intelligence, robotic arms and prosthetic limbs are being developed, clinicians and disabled individuals are being provided with decision support tools, and route planning software is being developed for visually impaired individuals. Through the use of such tools, many individuals become more accessible and experience a change in their lives.
10.	Working Together: People with Disabilities and Computer Technology	2012	Burgstahler S.	This resource describes the barriers faced by people with disabilities and also describes tools used by them.
11.	How People with Disabilities Use the Web	2017	Zahra A.S. (editor, W3C Web Accessibility Initiative (WAI))	The following resource describes how people with age-related impairments use the Web and also discusses some tools and approaches that people with different kinds of disabilities use to browse the Web and the barriers they encounter due to poor design.
12.	Voice based email system for blinds	2015	Shabana T., Anam A., Rafiya A., Aisha K.	Main aim of this paper is to develop an email system that allows even a visually impaired person to communicate with



				ease. With this system, the user will not be able to use the keyboard, but only the mouse and speech conversion. Furthermore, it can be used by anyone, including those who are unable to read, since it is entirely based on interactive voice responses.
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### III. CONCLUSIONS

Voice Assistant helps the users with hand free voice control of their system. Speech recognition is the technology which provides a new way of human interaction with machines. It is very much helpful to the physically challenged people.

ARA helps the visually impaired to have access to the most important features of the system enhancing the quality of the system by making use of the different custom layouts and using text to speech. It not only works on human commands but also gives responses to the user on the foundation of a query being asked or the words spoken by the user such as opening tasks and operations. It is addressing the user the way the user feels more enjoyable and feels free to interact with the voice assistant. The entire system works on verbal input rather than text.

### IV. FUTURE ENHANCEMENT

As of now, the application supports only the English language. We plan to expand that in the near future and make it available in more languages so that people from all over the world can access it easily. It is important to develop a stable software with as few keystrokes as possible and to provide an end-to-end experience using only voice commands. The software's dependence on the local environment and operating system is a crucial parameter for ensuring widespread use.

The read-aloud feature will be added to our virtual assistant in the near future so that people with disabilities can listen and retrieve required output they want from different web resources. Currently, this model can be used with a PC. In the future, it can be implemented in all devices, also it would be curated to be easy to handle and user friendly as per the differently abled people so that they do not require supervision at all times.

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