A SURVEY ON VOICE ASSISTANT

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Abstract: A voice assistant is a digital assistant. A voice assistant make use of voice recognition, natural language processing and speech synthesis. The users can use smart phones or other voice recognizing applications to access the facilities provided by voice assistant. The users can interact with their devices using voice commands in an intuitive manner. The users can give voice commands and the acknowledgement for that command is recognized by the voice assistant interface and the desired output is given. Visually impaired people can make use of this application which will help them to travel from one place to another without anyone. Visually handicapped people can use this application to make their communication easy. Context awareness used in many mobile applications is helpful for those people, but there exist some other dependencies for visually impaired people to communicate with this application. So voice assistant or virtual assistant take it as a challenge to help those people and provide easy communication. The best voice assistants are Amazon Alexa, Google Assistant, Apple Siri, Microsoft Cortana, Samsung Bixby etc. Amazon Alexa is used to monitor the movement and breathing of infants. In this paper we discuss about various applications of voice assistant.

Index Terms – **Personal assistant, White noise system, Amazon alexa**

I. INTRODUCTION

Now a days, we all need an assistant who always listens to our call, give priority to our needs, and takes action when necessary. voice assistant is a feature of artificial intelligence, which satisfies almost every needs. Voice assistants can perform a variety of actions after hearing a command. Voice assistants perform operations such as turn on lights, play music, place online orders, answer questions etc. voice assistants are technology based and can handle some of the tasks that we mentioned. In our daily life we use devices that uses voice assistant. They are on our smart phones and smart speakers in our homes. Many mobile apps and operating system use them. Other technologies that uses voice assistant are the technologies in cars, as well as in retail, education, health care, and telecommunication environments, can be operated by voices.

Artificial intelligence (AI), machine learning and voice recognition technology are the building blocks used to develop voice assistants. The users can directly interact with the digital assistant, sophisticated AI algorithms are used. This will help the digital assistant to learn from data input and also can predict the needs of users. Digital assistants can understand and can do multi-step tasks with number of interactions and perform more complex tasks, such as reserving seats at a movie theater. Voice assistant performs these tasks because advanced cognitive computing technologies are used to build this type of digital assistant.

II. VOICE ASSISTANT FOR VISUALLY IMPAIRED PEOPLE

Visually handicapped people most probably use sticks to find whether there is any obstacles make their way close. Visually impaired people may have a pet dog, that will be well trained. Some other people will have their collogues or family members for all their needs. However, these techniques and tools had drawbacks. Financially backward people cannot make use of trained dogs and also feeding them is cost effective. Now a days, smart phones are applicable for middle class family and the use of these technologies are increasing. Without a smartphone our life is impossible. This is because technologies are improving. Voice assistant can perform operations which are given by the users, it can make calls, text messages, tell the current time etc. They have to face many problems in their daily life. By using this application they can avoid many of the problems. This will make their life easy to communicate, provide positive energy and also they will be strong enough to stand alone.

Braille type papers are used by the visually impaired people. But this will only help to read the content. As voice assistant can perform the task of messaging as well as reading the messages, the visually impaired people can use this application.

A system is introduced for those people, in which all the tasks like calling, messaging, notes making, OCR, web browsing, navigation, etc. are performed automatically when user requests for it. These all are the main features that a visually impaired one need in their daily life. When they use this application these tasks are performed easily.

III. USING ALEXA TO MONITOR BREATHING IN SLEEPING INFANTS

Sleep is very important for our child's health and wellbeing. This is the major challenge among all parents. Parents have to make sure that their babies get enough sleep. For this purpose, a research team from the University of Washington makes use of smart speakers. These smart speakers have some applications in which they can use white noise to soothe infants while they sleep. Also they can monitor their movement and breathing. This program, Breath Junior, has the smart speaker play white noise and records how this

noise is reflected in a manner that detects the infant's breathing motions. When tested in five infants, Breath Junior was found to characterize respiratory rates with accuracy on par with standard breathing monitors.

3.1 WHY WE CHOOSE ALEXA TO MONITOR
The major importance of Alexa is that it is best for device compatibility. Voice assistants respond to both male and female voices. Voice assistant can act as a hub between us and all our connected devices. We can use amazon Alexa as a central hub of our smart home. This is the way how we choose Alexa to monitor breathing in sleeping infants. Presently, most fabulous voice assistants used are Amazon Alexa, Google assistant and Siri. Each of them have different characteristics to differ each other. Amazon Alexa as we discussed earlier is best for device compatibility. Google assistant is best at responding and Siri is the most popular mobile assistant. Now we can discuss some characteristics of Amazon Alexa.

3.1.1 Compatibility
Alexa can control number of things. In our smart phones, Alexa is used to access all apps and accomplish small tasks. At home we can use Alexa to complete household commands. Alexa is a digital assistant that has best device compatibility and is comfort and secure to use in our home.

3.1.2 Provide correct information
Alexa is capable of answering general questions and completing tasks. This capability is one of the leading use of voice assistant. Users need to ask question only one time to get relevant and high quality answers. the study of SEO and digital marketing says that the smartness of digital assistant is measured by comparing the accuracy and completeness to responses. In this study Amazon Alexa is in first place.

3.1.3 Intelligent
Amazon Alexa is an intelligent digital assistant, because it give answers to general questions and performs more other tasks like calendar remainder. When we give multiple commands to Alexa, it performs the task in follow-up order. Also Alexa have increasing ability to handle natural language requests.

3.1.4 Smart home support
As we have already said that Alexa have the best device compatibility. When we compare Alexa with other digital assistants, it has the greatest compatibility with smart home devices. Alexa is compatible with 7400 brands.

3.2 HOW BREATH JUNIOR WORKS
Breath junior is a system that combines the ability to measure an infant's breathing with soothing white noise. Smart speakers already have the ability to play white noise, so that smart speakers can be used to design this system. Researchers aimed to design this system by making white noise feature as a contactless way to monitor infant's breathing and movement. So that smart speakers can do all by it and this feature will be an exciting feature.

White noise has a soothing sound that can block other noises. Other sounds will be in different frequencies which will disturb our babies. To avoid this we use white noise in this system. Smart speakers use white noise that reflects off the baby to measure breathing and sleeping patterns. One of the biggest challenges that researchers face is the body and breathing movements of the baby are so small. Speakers are to be set in a way that they can understand the precise location of the respiratory qualities. When we look for breathing signal it is so weak, so we cannot understand the changes in overall signal. We have to scan the room. To identify the movement of infant's chest, smart speakers have an array of microphones which can be used to focus in the direction of infant's chest. Smart speakers look for signals in different directions and concentrate on the direction in which clearest signal is detected. Not only the chest movement, infant' movement and crying is also detected by breath junior.

fig. 3.2
fig 3.2 shows the monitoring of movement and breathing of the baby.

3.3 WHAT IS THE USE OF WHITE NOISE SYSTEM
Babies, when they are in our womb, there is no hushed tones and measured steps to disturb them. Once born, our little one hears the noises which will make them angry to cry. White noise system gives a womb like environment. This will help to calm anxious infants, encourages them to stop crying and fall asleep easily. White noise system also helps to filter other noises which are in different frequencies. White noise system also helps babies to stay asleep longer.

White noise system is used to sooth crying babies. White noise provides the soothing sound to avoid other noises with different frequencies. Babies need calm and quite environment to make their sleep well. White noise system produces a gentle consistent sound

which will make baby to sleep well. This sounds makes babies to focus on it. One study found that white noise helped 80% of babies to fall asleep in five minutes.

IV. CONCLUSION

The use of smart speakers is increasing day by day. The main advantage of using voice assistant is that it supports disabled people, decreases dependency and ensures independent life. Voice assistant have different forms of care. It can understand human relationships, emotions and values. In this paper we discuss about the use of voice assistant for visually impaired people. Many other countries use this feature for improving the lives of visually handicapped people. Most recently used feature of voice assistant is the use of white noise system for monitoring breathing and movement of infants. It also help infants to sleep well. As sleeping is the important feature of babies growth, voice assistants are use white noise system to avoid other noise with different frequencies. For this we concentrate on Amazon Alexa, which is best for device compatibility. The other advantages like smart home support, intelligent, accuracy etc. are discussed in this paper.

We can conclude that voice assistant is a personal assistant which understands the emotions and feelings in human beings. Since voice assistants can be used as a guide that give general and personal information and also provide good user interface. It is easy to use.

V. ACKNOWLEDGMENT

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