ANALYSIS AND REVIEW OF VIRTUAL ASSISTANTS IN INDIA

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Abstract : We spend most of the time in our day on smartphones. From official work to home chores we are somewhat dependent on smart devices nowadays. What is getting interesting is that nowadays we don't even need to touch or make contact with the device to perform a particular task, we can almost automate most of the stuff. That is where virtual assistants come in picture. Virtual assistant is a specific software made to accomplish tasks for an individual. Most of the virtual assistants available use artificial intelligence for their functioning. Looking at the tremendous amount of growth in smartphones in India, these virtual assistants are being used by Indians in daily life. In this paper, we will discuss analysis and usage of virtual assistants in India.

Index Terms – **Artificial Intelligence, Virtual Assistant, Automation, Natural Language Interaction.**

I. INTRODUCTION

With the introduction of affordable internet and smartphones most of the Indian population is hooked on to their smart devices now be it smartphones, tablets or laptops. According to the website economic times: Indians spend approximately 3 hours in a day. In these three hours we can imagine that the interaction between the individual and the device would be of good amount. But nowadays rather than the conventional inputs people are trying out the smarter way of input i.e. "Virtual Assistants". The growth of virtual assistants is unstoppable if it keeps growing at the same pace.

Virtual assistant is a software program that automates some tasks based on the input from the user. This input can be in any form from sources like text, image, voice and many others. Decent natural language understanding and prompt reply are the key factors for efficiency of virtual assistant. With a large population and different languages and cultures, India is a country where the main challenge of virtual assistants lie. So if a huge amount and of input along with its variety is to be handled by virtual assistants not only should it be handled efficiently but quickly also.

To accomplish the task of helping the users the virtual assistants must understand the human language. Artificial intelligence can make it possible. Various applications of artificial intelligence like machine learning, deep learning and natural language processing are able to do the task of understanding human language easily. Virtual assistants can automate most of the daily tasks of and individual like: setting alarms, home and office automations etc. In this paper we are going to discuss about functionality and utility of virtual assistants in India.

II. WORKING OF VIRTUAL ASSISTANTS

There are many virtual assistant apps available in the market nowadays. Most of them work on the same technique as discussed in a stepwise manner below:

1. First and foremost step while using assistant is that it needs to be activated. It can be activated by compatible input methods like voice, text etc.

2. After the assistant is activated by the input method the request made in the form of input goes to the server of the company which developed that particular virtual assistant.

3. When the input reaches the server it tries to examine the input with the help of an algorithm to match it with the available commands.

4. The virtual assistant may or may not recognise the user's command fully based on what percent of the information input by the user is understood by the virtual assistant. This is the reason for not getting the accurate response all the time. When the virtual assistant is unable to comprehend the user's input it may give a warning about not actually understanding the input.

5. Some offline commands like "turn on the light" and "pause the music" do not require communication of virtual assistant with the server.

6. Next step is the response from the server to virtual assistant.

7. The user may then get the response from virtual assistant. The response can be in any form from text to audio.

The above steps may be depicted with the help of a diagram as shown below:
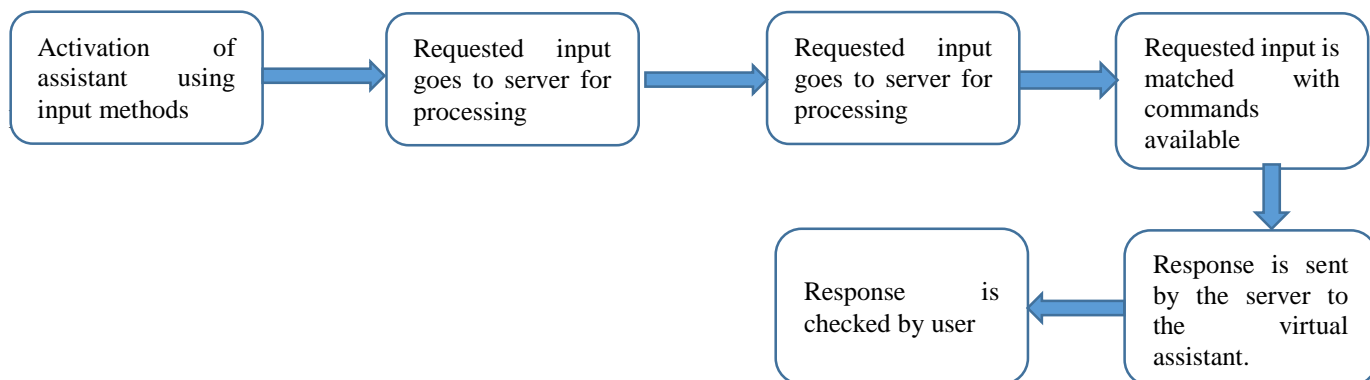
Fig.1 Block diagram of working of virtual assistant

III. SOME COMMON VIRTUAL ASSISTANTS AVAILABLE IN INDIA

A. Google Assistant

Google Assistant is a virtual assistant developed by Google. This is one of the most popular virtual assistants available in India It is available on a wide array of devices from smartphones to smart speakers. Initially it was available only on Pixel smartphones made by Google but now it is available on all Android and iOS devices. In addition to smartphones and tablets this assistant is now available in cars and smart home equipment.

It accepts input in the form of text and voice. Google assistant is able to perform both online and offline tasks. From setting an alarm to searching up something on Internet, all of this can be done by Google assistant.
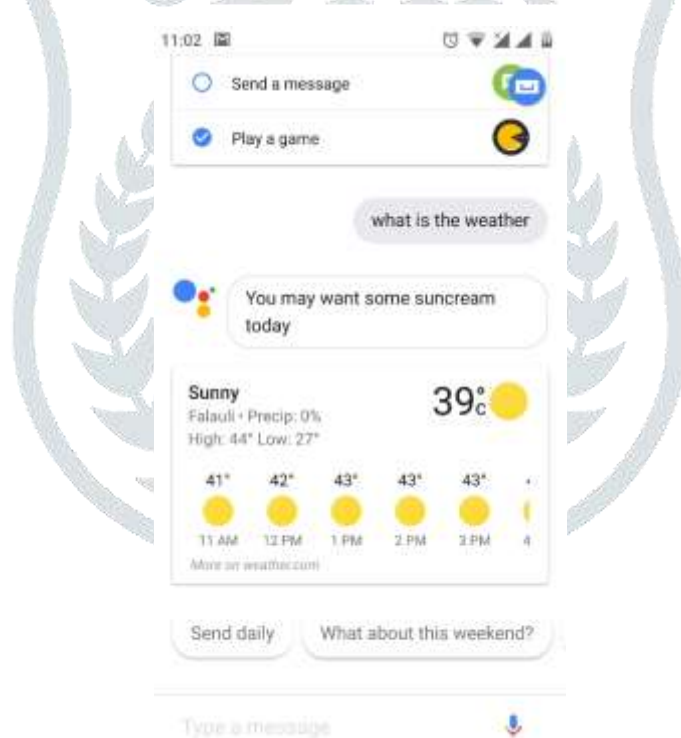

Fig.2 Snapshot of Google assistant running on an android smartphone

B. Siri

Siri is a virtual assistant made by Apple and exclusively for Apple devices like Macbooks, iPhones, iPod, iPad etc. Most of the time it is activated with the help of voice input, but it can also accept text commands by changing some settings in the device. It performs all the functions Google Assistant does. The main problem with Siri is that it is not as widely used as Google Assistant because Android holds the major share in handheld devices in India. Siri being exclusive to Apple devices cannot be run on other devices makes it somewhat limited in its usage.

C. Cortana

Cortana is another virtual assistant developed by Microsoft for windows, android and iOS devices. It can automate both the offline and online tasks. This is the in house virtual assistant for Microsoft Windows. It can be used to check weather, set reminders play songs and search web which basically includes all the necessary stuff required by a virtual assistant to do. This is the widely used virtual assistant on computers.

Fig.3 Snapshot of Cortana running on a Windows PC

D. Alexa

Alexa is a new player in the virtual assistant space in India. It is developed by Amazon. It was initially designed to work with Amazon's set of smart devices but was later on ported to other devices including Android and iOS. It is mainly used to work with services offered by Amazon but it can also work as a regular assistant without the need of Amazon's services. Most of the smart home equipments available in the market come with Alexa capability pre-installed. It takes voice as the medium of input.
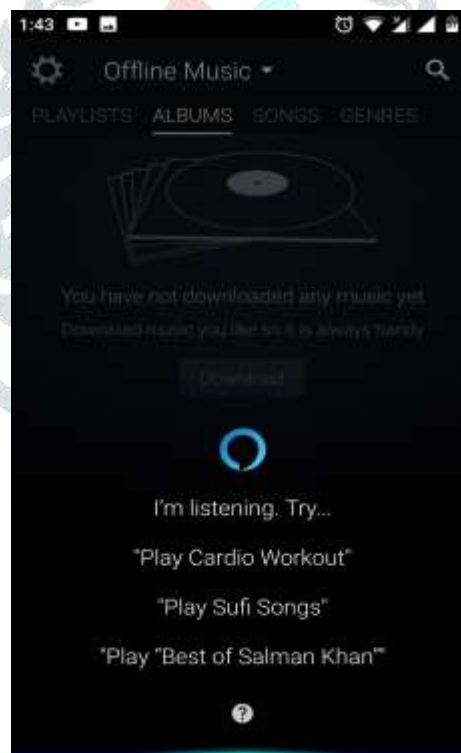

Fig.4 Snapshot of Alexa services running on Amazon Music app

IV. USABILITY OF VIRTUAL ASSISTANTS IN INDIA

A. Google Assistant:

This is the only virtual assistant available in India which supports an Indian language (Hindi). This unique feature of Google Assistant makes it unique compared to other virtual assistants which will be discussed later. It can play news from Indian websites like Times of India, NDTV and India Today. It can read out the recipes according to Indian region and location from its database. The trouble is that sometimes the units given for the recipes may not be according to Indian preferences. There is one more USP of Google Assistant which is the understanding of contextual questions. For example: If Google Assistant is asked a question

"What is his age?" just after the question related to prime minister of India, it would give out the result as age of Indian prime minister. It understands all the Indian accents quite well. All this has been made possible by Google with the help of artificial intelligence (machine learning and deep learning).
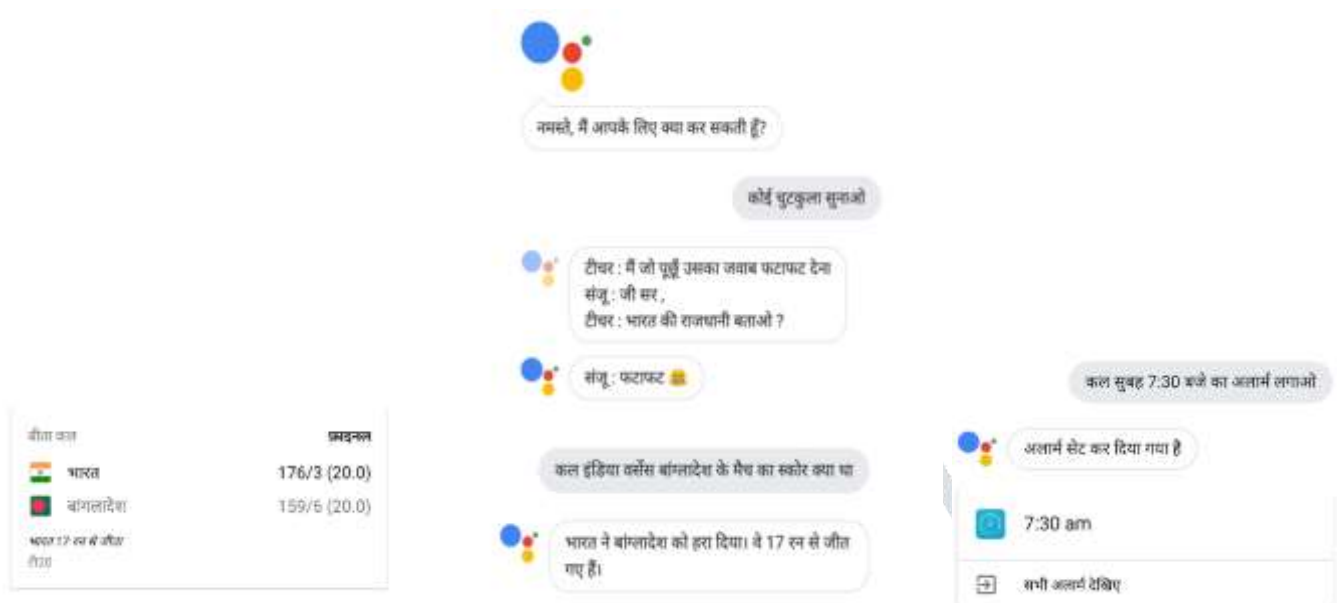

Fig.5 Snapshot of Google Assistant in Hindi running on an android phone

B. Siri:

Siri is exclusive to Apple devices which is the main reason for its limited reach in India. It can perform all regular tasks like setting alarm, playing songs etc. But it lacks the good understanding of Indian accent. It does not support any Indian language. The navigation using maps with the help of Siri is not as good as it is in developed countries like America and Canada.

It cannot easily catch up with the Indian accents and does not gives recommendations based on Indian audience. For example it does recognize the question "When was movie Kal ho naa ho released?" but it does not have the data to answer this. So, though the iOS devices are available in India but its virtual assistant Siri needs more improvement with context to Indian audience.

Fig.6 Snapshot of Siri running on an iPhone

C. Cortana:

Cortana is a virtual assistant developed by Microsoft. It does not understand any Indian language but knows the Indian accent for English. Cortana is the only desktop virtual assistant widely used in India. "Let's chat", "Set a reminder" are some of the built-in Cortana commands. Simple commands like "Restaurants near me" and "Book a movie ticket" opens the default browser to generate response and completes the query.
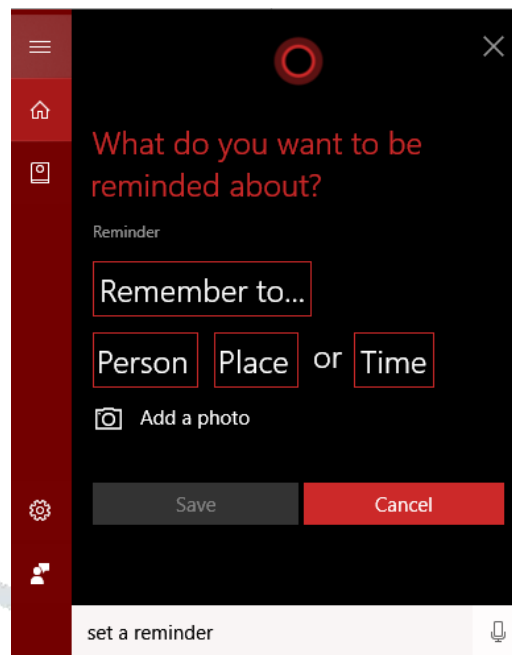
Fig.7 Snapshot of Cortana setting a reminder on a Windows PC

Cortana is able to give answers related to date and time. For example it answers "When was movie kal ho naa ho released". It gives the answer in the default browser. And there is no contextual understanding. Cortana can also help with automations too.

D. Alexa:

Alexa is the virtual assistant developed by the major e-commerce company Amazon. It has partnered with service providers like Indian Express, Saavn, and Zomato which makes it easy for the Indian audience to directly interact with these service providers. Alexa is the dedicated virtual assistant on Amazon produced devices ranging from their smart speakers (Echo) to the tablets (Kindle Fire). These devices does not require any smartphone connected to them. They take voice inputs. Alexa has an Indian accent which makes it easy to interact with the Indian audiences. Alexa app can be downloaded on to smartphones also. It can read ebooks and set reminders, basically it can do all the stuff which a virtual assistant is required to do.

V. CONCLUSION

A. Problem with the different service providers: There are different virtual assistants available in India. The main challenge lies in linking different service providers to all the virtual assistants available.

B. Indian Language Understanding: All the virtual assistants need to be improved to make them understand as many Indian languages as possible as it will help them to be more useful in Indian scenario.

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