

# Intelligent Personal Assistant – An Android Assistant Requisite

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## Abstract

In the Modern Technical Era of updating technology, everything keeps on updating, but the humans spend more time with these devices to make the work easier for them, such as calling and texting a person, ordering food, setting alarms, taking a selfie and etc. These actions can be done automatically by the mobile using the voice input to make things even easier, but what if a device can be smarter to understand the emotions of the user and act accordingly to make the human emotionally stable. This paper mainly focuses on the existing systems of virtual assistants and what new features can be added to the existing system. In order to make the virtual assistant more interactive by making the on-time recommendations and reducing the glancing time at the screen, another enhancement that can be done by, adding offline access to as many commands as possible to make the user interaction with the device even faster.

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## 1. Introduction

Nowadays, smartphone usage is being increased drastically, there are many smartphone competitors such as Google, Samsung, Xiaomi, Sony, HTC, Microsoft, Apple, etc. uses many Operating systems such as Windows, Android, and IOS each having a different type of virtual assistants such as Google Assistant, Cortana and Siri. The leading smartphone companies started to introduce a virtual personal assistant, which comes embedded into the smartphone, and the first digital virtual assistant was Siri, which was introduced in the iPhone 4S on 4th October 2011.

It is estimated that Samsung has 31.49% of market shares when compared to the other smartphone companies such as Apple, which holds 22.09%, Huawei holds 10.02%, Xiaomi holds 7.79% and other smartphone companies hold 3.27% of Mobile Vendor Market Share Worldwide according to October 2019 survey. It is also estimated that 85% of smartphones run on android globally and iOS captures 13.28% of operating system market shares and stands in second place and therefore the personal assistant should be made on an android platform to make it easier to reach most of the people. [1]

According to a survey conducted in July 2019, a striking 79% of users agreed that voice technology improves and contributes to my quality of life, 92% of users agreed that voice technology saves time and 56% of users agreed that they rely on voice technology for daily tasks. The survey unfolds the complaints about the accuracy and precision of the digital personal assistant that only 69% of the time it responds to the question or command given by the user. As per the survey result, it also unfolds that 52% of users ask digital personal assistants for directions while driving, 51% use them to make phone calls, 50% send a text to others through dictating to the assistants. 49% of users use them to check weather and play music on their devices. 48% use them to do general web searches and 41% of users ask assistants to set alarms and 16% use them to do online shopping. Others do some similar tasks like checking the news and others doing other stuff like reducing the brightness and volume levels on the smartphone. [2]

This paper presents an intelligent digital personal assistant for android smartphones which not only does the common things, but also detects the user's emotion and act accordingly to make the user feel comfortable.

## 2. Literature Review

Martin Molina proposed architecture for a system to create an intelligent assistant for public transport management, which helps the operators of the control center for making difficult decisions in difficult situations such as the problem of bus allocation in urban areas and cities with high population. Martin also proposed two applications using the same architecture in the cities of Torino (Italy) and Vitoria (Spain) [3].

Omyonga Kevin and Kasamani Bernard Shibwabo proposed and developed an application for real-time voice recognition, which is used to control the smartphone operations. They also proposed a solution for offline voice access to the users to make the user's work even easier and faster, because as of slow data connections, the recognition speed of the voice is reduced and therefore causes delays to take actions for the commands given by the user. The solution to offline recognition of voice makes the application faster than Apple's Siri. They suggested that the future work of the application helps the user to give voice commands in noisy environments. [4]

Pawan D. Mishra, Harshwardhan N. Deshpande, Navneet A. Agarwal and Atul. D. Raut proposed a smart texting system application using voice recognition for android users. The proposed system by them is used to evaluate the voice of the user and convert voice messages into text messages. It uses Hidden Markov Model (HMM) for text message input. [5]

Tong Lai Yu and SanthrushnaGande, Ronald yuthese three have developed an application in the android domain, which helps students such as physically handicapped who could not write programs. The application is built with the help of some open-source or free tools that are available on the internet. [6]

Yu Zhong, Jeffrey P. Bigham proposed an application, which is useful for the blind people that provide voice control over all the existing applications in the smartphone by dictating the instruction, set to the blind people from the context on screen. The application also supports many voice commands at once for making the application experience seamless. [7]

Santhosh K.Gaikwad, Bharati W. Gawali, Ronald yu have proposed a technique to conclude the difference between the different stages of speech recognition system and also concluded that the MFCC is the best feature mining in speech. GHH and HMM are the best modeling techniques used for the recognition of speech. [8]

## 3. Survey of Android Users

A survey of a certain amount of android users is taken to understand the usage of virtual assistants in their mobiles and the ways of usage in their daily life. The users are of different group ages and different genders.

Three age groups are used in the survey – i) 65% of young age, ii) 25% of middle age group people and iii) 10% of old aged people. The survey also consists of both

males and females in order, to have more consistent information about the usage of virtual assistants.

The young age group is very much fascinated about the voice assistants than the middle age group and old age group, as we asked about the usage of the voice assistant present in their smartphones they all replied with fascinating and interesting answers. Many people replied with common answers such as making calls, texting people, checking the weather and others, but some people replied with some different answers with suggestions.

After the analysis of different commands, it is found that 85.5% of people use voice assistant for calling and texting to others. 35% of people surf the internet and ask questions. 49% of people play music and do other activities such as play games, 16% of people do online shopping using voice assistants and 9% people use assistant to know the meaning of a word, ask time, take notes, open camera and other applications and at-last very few people ask the voice assistant to toss a coin. These are some of the basic common commands given by the users. Some people also wanted to have a continuous conversation with the voice assistant.

Some people of old age wanted to share their feelings with the voice assistant and make the assistant as a personal companion for the user; these are some of the suggestions given by the users to make the assistant a perfect voice assistant. The survey is also represented in the graph below [Fig 3.1]

**Survey on different types of commands by different users of voice assistant**

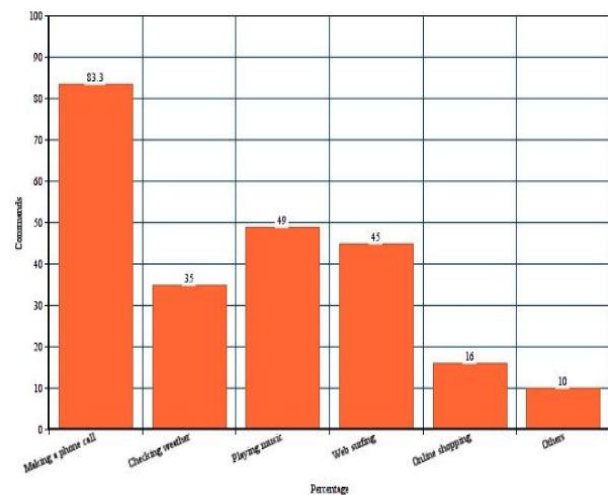


Figure 1: Graph for % of commands given to voice assistants

**Figure 3.1: Survey on different types of commands by different users of voice assistant**, illustrate that the making phone calls command is more frequently used command. When compared with other commands such as checking weather which is of 35%, playing music, web surfing, online shopping and other commands which are of 49%, 45%, 16% and 10% respectively.

#### 4. Future Plan

Based on the survey done about the voice assistant or virtual personal assistant, it is recommended that the android application should be built with the required specifications and features to accomplish the satisfaction of the user. Because as the voice assistant is smarter, we have to make it smarter than before, by adding the below features mentioned.

- The major requirement, requested by the users is the addition of emotion detection of the user and making the voice assistant as a personal companion.
- Adding wallpaper changing options
- Language options
- Adding activity control of the assistants.
- Voice-based reminders
- Continuous Conversation
- Getting weather forecast based on time.
- Attractive animations with character animation for assistants.
- Get the account balance.
- Booking a reservation at a restaurant
- Making payments to friends and rent
- Voice analysis to define the emotion of the person and play a song accordingly.
- Control music and other shuffling using voice.

#### 5. Result

Therefore, the main purpose of this survey was to find the interaction between users and VPA's. From the above fig, it can be found that commands such as "Make a phone call" or "Call a person" are the most commonly used commands when compared with other commands such as "Play a song", "What is the climate" and many other commands or queries.

With the above survey, it can be concluded that the VPA's are used to make human life easier and faster, without even having a glance at the device by using commands to make the assistant do the rest of the work. It can also be concluded that the VPA's can also detect user emotions.

#### 6. Conclusion

From the discussion with this paper, we can conclude that in the future there will be a more intelligent implementation of the application using emotion detection with a sequence of questions or a continuous conversation between the user and the assistant. The emotion detection can also be done by using the voice and image input of the user. Additionally, adding a special animated character, which represents the assistant, could make the users more fascinated to use the assistant.

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