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## Research Article

### VOICE SEARCHING TOOLS FOR LIBRARY SERVICE-A STUDY

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#### ABSTRACT

Giving a clear introduction and understanding on building voice enabled applications using the frameworks of different Software platforms is the primary objective of this work. Enhancement of the conventional user interfaces, foundations for building voice applications and their necessity in the libraries is clearly dealt with.

##### *Key Words:*

Cortana, SIRI, OK Google, Speech Capture device, Speech Recognition Software.

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## INTRODUCTION

The rapid explosive innovations taking place in the Information Technology industry coupled the Electronics industry have made many constructively disruptive changes in the way tasks used to be carried out. Once such major path breaking technological innovation we are witnessing now is the emergence of voice based searching tools getting integrated almost into every electronic device hitherto using traditional key based inputs.

This article presents a comprehensive analysis of the major tools deployed for voice based searching in various platforms across different kinds of electronic devices. This article also discusses the likely impact of each of this tools in the context of enhanced and precise user experiences to the entire library fraternity.

### *Components of a Voice Searching Tool*

We now present a generic, platform neutral model of a voice searching tool.

#### *Speech Capture device*

Usually the microphone or the associated devices act as the interfacing point between the humans and the devices. They receive the human voice in continuous format and convert it in to machine understandable digital formats. Technically there

also identified as analog to digital converters, which digitally encode the speech wave form.

#### *Digital Speech Processing Module*

This is the complex aspect of speech recognition vital and complex this normally comes either as a hardware chip or as a software module are in hybrid formats. The functionalities implemented are the complex aspect of detecting word boundaries and filtering out unimportant data.

#### *Specialized Speech Recognition Software*

This is normally implemented as a set of Dynamically Linked Libraries, i.e programs which will be invoked and executed as per the needs. They convert the digitalized speech into text format using standard pattern recognition algorithms. They also can perform enhanced tasks like diction, language specific interfaces etc. The software modules can also perform the reverse task that is they can readout continuous streams of textual data by performing text to speech conversion.

Having discussed in nutshell about the components that makeup Speech Recognition software, let us now explore in detail some of the major and commonly used Speech Recognition software.

#### *Google Voice Search*

Google played the perfect innovative disrupter role when it introduced its OS, Android, for mobiles, tablets and of course

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PCs with the mobile devices fast eclipsing the traditional PCs, Google has remind the unassailable market trader in that segment with no sight of the competitors even in the race. A study by IDC (International Data Corporation) research source nearly 87% of all the smart phones run on Android.

Google Voice Search is a Google product which helps the user to use Google search by speaking on the mobile phone/desktop/laptop/tablets. The essential and the mandatory requirement for using this product in a device is that device must have Android has the operating platform. Google Voice Search Seamlessly integrates well with other popular Google products like Google maps, Google dictionary, translator, you tube etc. The striking and most significant aspect of Google Voice Search is its ability to support wide variety of languages spoken across the globe, apart from English language. The recognized language list of Google Voice Search is continually growing for example in the current year of the 2017 Google Voice Search has expanded its support based for the Indian languages of Bengali, Gujarati, Kannada, Malayalam, Tamil, Telugu and Urdu. With the market for Android based devices soaring up higher, The Google Voice Search has emerged as the de-facto choice for the new age users.

Google Voice Search can be interacted via a set of well defined procedures, also called Google Voice API. Library solution developers can tap into this relatively unexplored area by interfacing their solutions with Google Voice Search. By doing so they can ensure that the library users overcome the barriers of time and space. The constraints of accessing the library only when its open and again only when the user physically visits the library vanish with this integration.

**Microsoft Speech Recognition Tools**

Microsoft the giant in desktop operating systems windows has integrated voice recognition capabilities into its flagship brand of OS-Windows with a combined market share of over 87% of all the desktops and laptops using windows as their OS, this provides a ubiquitous opportunity for the users across the globe to access their devices through voice. The model employed by Microsoft speech API is relatively a simpler one. The core functions are wrapped in separate files called DLLs (Dynamically Linked Libraries) to make access easier for programs to interface with these core classes, wrapper classes and wrapper controls are provided in the development environments which encapsulate the functionalities and just provide easy properties and methods to the external world, which can be easily invoked and manipulated. Also a special set of rules, called the grammar, which are application specific and which validate the user inputs against this predefined set are available to the programmers.

Undoubtedly Microsoft Speech API is a boon to the library automation solution developers. By integrating their solutions with this, they open up a seamless window of opportunities to library user communities. Since Microsoft OS continues to be the de facto choice, almost the entire user community can be reached at one go.

**Linux/Unix Speech Recognition Tools**

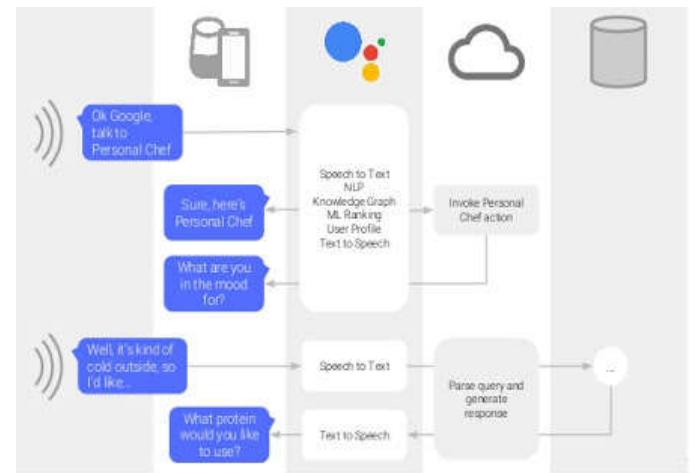
A sizable number of global user population use linux/unix as their operating systems to power their devices. Traditionally

linux/unix have not well supported speech recognition but off late linux supports speech recognition through popular TTS engines like eSpeak, MBROLA, Festival and others. Developers on these platforms can make use of this and integrate their solutions with them.

So for we have discussed the major voice recognition engines widely in use. We will see some of the intelligent voice assistance.

An intelligent software assistant, also called as virtual assistant is software agents that can perform tasks are services for an individual. They use Natural Language Processing for their user interfaces. The individual will get the feeling of interacting with an intelligent human assistant instead of interacting with the machine.

**OK Google**



“OK Google” is the virtual assistant built inside android smart mobiles the user invokes simply by saying OK Google. Once invoked the user can talk to be machine as though conversing with an intelligent personal assistant. For example one can ask “nearest beauty parlor”, “spiritual books Selling shop”, “best non-veg restaurants” “weather forecast for tomorrow” etc. For each of this queries Google will list out the best possible answers customized to individual user preferences. Google has integrated its voice assistant with all its other products like music, maps, you tube, etc undoubtedly “OK Google” is a boon to the Google user fraternity.

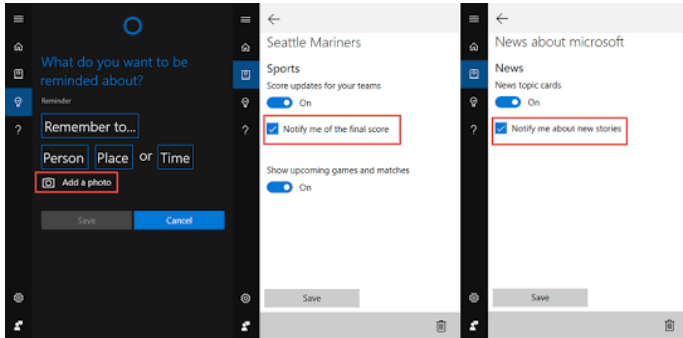
**SIRI**



SIRI is Apple Inc.’s answer to Google voice assistant it runs on apple smart phones and macbooks, apple TVs SIRI users voice queries and a natural language user interface to answer questions, make recommendations and perform actions by

delegating requests to a set of internal services. SIRI is a continually self evolving assistant, meaning that with ongoing usage it adapts to users searches and preferences, language usages, etc. The results returned by SIRI are also individualized.

### Microsoft Cortana



Microsoft is a late entrant into the smart phone market. It soon caught up with the rest with its Cortana, the virtual assistant for windows phone and its latest desktop operating system Windows 10. Cortana recognizes natural voice and answers question can set reminders and works with major languages.

### Reason for people to use Voice Search

Katherine Watier, famous internet marketing coach and social media consultant lists out the following factors as the prime motivation for people to use voice search.

- Humans can speak 150 words per minute vs type 40 words per minute.
- 21% don't like typing on their mobile phone and so turn to voice search.
- 42% say use while driving is a reason for using voice search.

### Current use of Voice Search Reflected in Statistics

- According to Search Engine Watch, "Google Voice Search queries in 2016 are up 35x over 2008.
- According to Microsoft/ Tech radar, "Cortana now has 133 million monthly users".
- According to Global Web Index, "We estimate that 325.8 million people use voice control in the past month".

- According to The Economist, "A third of smart phone owner user their personal assistance regularly".
- According to AYTM, "90% of users said that they have used personal assistant used like SIRI or Cortana in the past day".

### Future Prediction for Voice Search Growth

- According to comscore "50% of Voice Searches will be Voice Searches by 2020".
- As per Mediapos "About 30% of searches will be done without a screen by 2020".
- According to a report from Technavio, "By 2019 Voice recognition market will be a \$601 million industry".

### CONCLUSION

Voice Search has been made an integral part of all new age devices and applications. Almost all major software platforms support voice search with programmable interface options for existing software developers to hook their solutions. With all indicators pointing in the direction of rapidly increasing adaption by user, libraries too can't lag behind and should expand their services adapting to this technological advancement.

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