International Journal of Advances in Engineering and Management (IJAEM)
Volume 3, Issue 6 June 2021, pp: 460-465 www.ijaem.net ISSN: 2395-5252

JARVIS: A Virtual Assistant for Smart Communication

Sakshi Acharya, Upendra Jain, Raman Kumar, Shakuntla Prajapat, Shekhar Suthar, Prof. Ritesh Kumar Jain

Computer Science & Engineering,
Geetanjali Institute of Technical Studies, Udaipur, 2018-2021

Submitted: 25-05-2021 Revised: 01-06-2021 Accepted: 05-06-2021

ABSTRACT –
Someofthebasictasksthataresupportedbymostofthevirtual assistants (Jarvis) are:"Jarvis" became essential man or woman of Tony's Stark's lifestylesassistantinMoviesIronMan.Unlikeuniquecomedian in which Jarvis became Stark's human butler, the film model of Jarvisisanintelligentpcthatconverseswithstark,video display units his family and assist to build and software his superhero suit.
In this Project Jarvis is Digital Life Assistant which makes use of especially human communication means such Twitter, immediate message and voice to create manner connections between human and his apartment, controlling lighting and appliances, help in cooking, notify him of breaking news, Facebook's Notifications and many more.
The important challenge of a Jarvis is to limit the usage of enter gadgetslikekeyboard,mouse,contactpens,etc.Thiswillessen each the hardware fee and space taken via way of means ofit.
KEYWORDS-Desktop Assistant, Python, Machine Learning, Text to Speech, Speech to Text, Language Processing, Voice Recognition, Python 3.8.

I. INTRODUCTION

In the 21st century, human inter play is being changed through automation very quickly. One of the main motives for this variationisperformance.There'sadrasticextradeintechnology as opposed to advancement. In today's world, we educate our machine'stodotheirdutiesthroughthemselvesortoassumelike human beings the usage of technology like Machine Learning, NeuralNetworks,andmanyothers.Nowwithinsidethe modern day era, we are able to speak to our machines with the assist of digital assistants(Jarvis). There are agencies like Google, Apple, Microsoft, and many others with digital assistants like Google Now, Siri, Cortana, and many others. which facilitates their customers to manipulate their machine through simply giving enter with inside the form ofvoice.

These types of virtual assistants are very useful for the elderly, the blind and physically challenged, children, etc. to ensure that interactingwiththemachineisnolongerachallengefor humans[1].

☐	Checking weather updates
☐	Sending and checking mails
☐	Search on Wikipedia
☐	Make and receive calls
☐	Stream music
☐	Open applications
☐	Text messages etc.

International Journal of Advances in Engineering and Management (IJAEM)
Volume 3, Issue 6 June 2021, pp: 460-465 www.ijaem.net ISSN: 2395-5252

The Jarvis we have developed is a desktop-based built using python modules and libraries. This is just a basic version that could perform all the basic tasks which have been mentioned abovebutcurrenttechnologyisalthoughgoodinitisstill tobe merged with Machine Learning and Internet Of Things(IoT) for betterenhancements.
Allyouneedtodoisgiveacommandtothejarvisandther est will be performed by thejarvis.
Withthehelpofvoice-activatedvirtualassistants,therewillbe no need to write long codes to perform a task, the system will do so for us. The machine will work in three modes- supervised, unsupervised or reinforcement learning depending upon the usage for which the assistant is developed. This is all possible with the help of machinelearning.
TheIoTnowhelpstheassistantinteractwithneighborin gsmart devices and acts as a single interface that controls everything around it. With the participation of the IoT, it will be possible to control other intelligent devices, which in turn interact with each other via theInternet.
So with a capable virtual assistant, we will be able to control manythingsaroundussingle-handedlywithonlyoneplatform.
initiativeoftheprojectistostudytheviewsandissuesrel atedto the integration of AI into the classroom. speech into text. Then process the text to get the result of the processed request in to speech,whichisthefinalresult.Themosttime-consumingofthe two is STT, because the system must first listen to the user's voice,anddifferentusershavedifferentTheprojectaffe ctedfour school districts. 900 students use 90 Amazon Echo Dot devices. Echo Dot was chosen because of its low cost and compatibility issues. Adevice such as a music teacher, math teacher, school consultant, administrator, elementary school teacher, and class assistant. Teachers trust Alexa to simplify some learning processes, especially by using timers and reminders. Voice assistants provide information instead of searching for informationonacomputerortablet.Both partieswereinawe of the use of the device in the classroom and tried to find ways to use the device in certain projects and situations and in many of them.Youhavealreadyusedasimilardeviceathome.
Thestudy also recommends collaborating with professors, professional programmers,andcomputerscienceteacherstodevelo pspecific skills not included in the existing catalog of Alexa capabilities. The study does not include any observation data or device log files, but instead relies onself-reported perception surveys And Interviews[5].

Figure 1: Timeline Of Main Voice Assistants

International Journal of Advances in Engineering and Management (IJAEM)
Volume 3, Issue 6 June 2021, pp: 460-465 www.ijaem.net ISSN: 2395-5252

II. LITERATURE SURVEY

AdityaSinhaetal.introducedvoice-activatedvirtualpersonal intelligent assistants for the visually impaired. The project can effectively and effectively recognize and respond to the user's voice through voice as if they were speaking. Work offline and learn about voice recognition agents and modules for Indian accents. The purpose is to include the use of Java Sphinx-4 library, Mary TTS and neural network to learn the integration in the API skill[2].

In 2017, Othman proposed an article in Volume 8 of the International Journal of Scientific& Engineering Research about the voice-controlled personal assistant with the Raspberry Pi. The project shows implementing a voice command system as an intelligentpersonalassistant(IPA)canperformnumeroustasksor servicesforapersonwhousesRaspberry.Piasthemainhardware to implement this model, which works with the main input of a user'svoice[3].

According to Mustafa Elshafei, Virtual Personal Assistant (VPA) is a next-generation operator service for mobile and smart device users. VPA can effectively respond to voice commandsandprovideasinglepointofcontactthatseamlessly interacts with a wide range of information. It also monitors phone calls, manages personal activities through the calendar, enables users to access its task manager through a voice interface,andincludesallcommonfunctions.Delivery Service. With Virtual Personal Assistant, users can optimize time and cost, increase overall productivity, and minimize interference with normal workprocesses[4].

DousayandHall(2018)discussedtheUniversityofIdaho(UI) Echo Project running in the2017-2018 academic year.

Figure 2: Voice Controlled Appliances Affecting Our Daily Life

III. SYSTEMARCHITECTURE

- SPEECHRECOGNITION

The speech recognition engine used by this program is the Google Speech Recognition API, which is imported into Python using the "Import Speech Recognition as SR" command.Thismoduleisusedtorecognizethevoiceinputby theuser.

This is a free API provided and maintained by Google. This is a very lightweight API that helps reduce the size of the application[6].

- TTS &STT

First,useaspeechrecognitionenginetoconverttheinputresult of the custom query. The last step is to convert the conversion oftheresultoftheprocessedquerytospeechwhichisthefinal users, some of which are easy to understand, while others are noteasytohear.ThisisthestepwehavefullyrealizedTime depends on it. After the speech is converted to text, the command can be run and the result is returned to the user soon[7].

- IMPORTEDMODULES

A. PYTTSX3

Thepyttsx3isanofflinemodulethisisusedfortextualcontent tospeechconversioninPythonanditissupportedwiththeaid of using each Python 2 & 3. The run and wait capability is likewise in this module only. It determines how a great deal time the gadget will anticipate another enter or in different phrases the time c language amonginputs.

It is a free module available in the Python community, and you can use pip to install other modules.

B. DATETIME

Imported the DateTime module to support date and time functions.Forexample,theusermaywanttoknowthecurrent date and time or schedule a task at a specific time. Therefore, thismodulesupportsclassesformanagingandperformi

International Journal of Advances in Engineering and Management (IJAEM)
Volume 3, Issue 6 June 2021, pp: 460-465 www.ijaem.net ISSN: 2395-5252

ngdate and time operations. This is an important module, especially for tasks where we want to keep track of time. The module is very small and can control the size of the program. If the module is too large or too heavy, the system will lag behind and respondslowly.

C. WEBBROWSER

Thismoduleenablesthesystemtodisplayinformationt ousers on the Internet. For example, a user wants to open a website and enter an entry such as "Open Google". The input is processed through a web browser plug-in, and a Google open browser is shown to the user. The browser to be used is the standard (default) webbrowser.

D. WIKIPEDIA

Wikipedia is a Python library that allows virtual assistants to process Wikipedia-related queries and display the results to users. This is an online library and you need to be connected to the Internet to get the results.

The number of lines that the user wants to output can be set manually.

E. OS MODULE

OS Module provides an operating system dependent functionalities.Whenyouwanttoperformoperationso nfilessuch asreading,writing, or editingpaths,all of thesetypesof functions are available in an operating system module. All available operations throw an "OS Error" for errors such as invalid names, paths, or arguments that may be incorrect or correct but are not accepted by the operatingsystem.

F. SMTPLIB

Python has modules for handling mail and mail servers in the standardlibrary.SMTPLIBdefinesanobjectcalled"S MTPClient Session Object", which is used by users to send emails. There are 3 steps: initialization, sending mail (). If other parameters are specified, namely host and port, the connection method with these parameters will be called in the first step ofinitialization[8].

DESIGN

The general structure of our system consists of the following phases:

a) Taking user information in the form ofvoice.
b) Theconvertedtexthasnowbeenprocessedtoachie ve the desiredresult.
c) Thetextcontainsoneortwokeywordsthatdetermi ne what query is to be executed. If the keyword doesn't match any of the queries in the code then the jarvis asks the user to speakagain.
d) The result, which is in the form of text, is converted back into speech to present results to theuser.

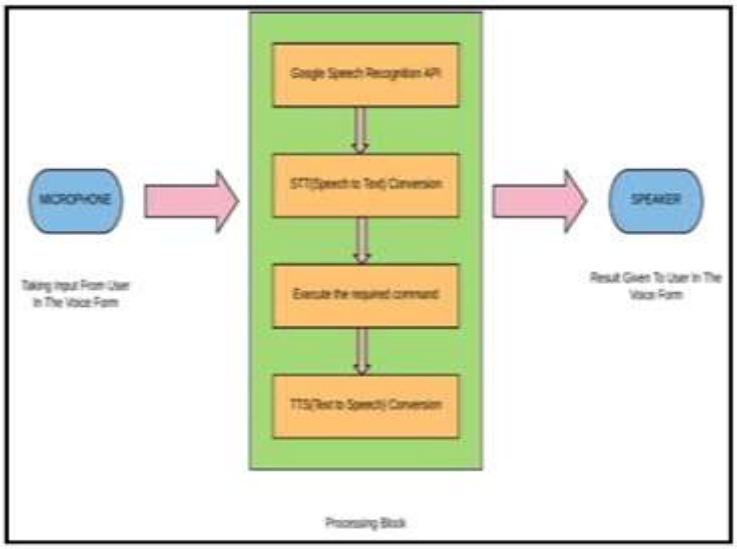

Figure 3: Processing Block Of STT To TTS

PROPOSEDSYSTEM

The proposed system will have the following functionality:

- The system continues to wait for commands and the listening time is variable, which can be changed depending on userrequirements.
- The system can have both male and female voices according to userrequirements[7].
- The functions supported in the current version include playing music, emails, texts, browsing Wikipedia or Features supported in the current version include playing music, emails, texts,

International Journal of Advances in Engineering and Management (IJAEM)
Volume 3, Issue 6 June 2021, pp: 460-465 www.ijaem.net ISSN: 2395-5252

search on Wikipedia, or opening applications installed on the system, opening items in the web browser,etc.

- The system continues to wait for commands and the listening time is variable. This can be changed according to userrequirements.
- If the system is not able to gather information from the user input it will keep asking again to repeat till the desired no. oftimes .

IV. FUTURE SCOPE

The currently available virtual assistants (Jarvis) are fast and responsive, but we still have a long way to go. The understanding and reliability of existing systems need to be greatly improved. In critical situations, the assistants available today are not yet reliable. These assistants have built-in virtual assistants with artificial intelligence, including machine learning, neural networks, etc. And the Internet of Things. With the introduction of these technologies, we can reach new heights. The goals that virtualassistantscanachievefarexceedwhatwehaveachievedso far. Fictitious, but it sets a new standard for what voice activated virtual assistants canachieve[9].

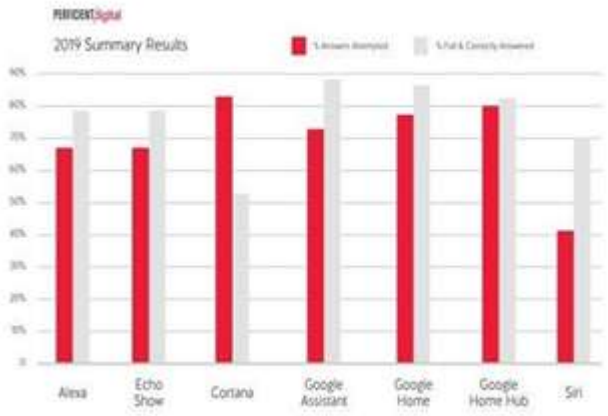

Figure 4: Accuracy Of Results Over Time

V. CONCLUSION

The main objective of the project was to develop a desktop assistantthatwouldbeusedtofindtheanswerstoquestionsasked by the user. Provide enough information that the user will need. A background study was carried out which provided anoverview of the speaking process and all relevant information. Desktop wizardavailable.Adesktopassistantalreadyavailabletotheuser wasanexcellentservice.Thesystemdevelopedwascreatedinthe Python programming language, to be more precise. Python 3. Various libraries are used, Speech Recognition, Text-to-Speech Converter and Short Mail Transfer Protocol(SMTP). Itprovidesweatherinformation,news,canplaymusic,cansearch topicsonWikipedia,cansetalarms,andviewthecurrent dateand time. Users can collect information through this application. Reduceworkloadandtime.WithNLPusersupport,you canmake inquiries in a very formal way. You don't have to be very strict and specific to your requirements. Users must understand the general rules of English. The goal is to enable people to answer their questions quickly andeasily.

ACKNOWLEGEMENT

We sincerely thank and respect our guide and mentor, Mr. Ritesh Kumar Jain Sir, Professor, GITS, Dabok, Udaipur, for his insightful guidance, vigilant supervision and valuable critical appreciation throughout the project.

REFERENCES

[1] D O'SHAUGHNESSY, SENIOR MEMBER, IEEE, "Interacting With Computers by Voice: Automatic Speech Recognition and Synthesis" proceedings of THE IEEE, VOL. 91, NO. 9, SEPTEMBER 2003

[2] Aditya Sinha, Gargi Garg, Gourav Rajwani, Shimona Tayal, "Intelligent Personal Assistant". International Journal of Informative & Futuristic Research, Volune. 4, Issue 8, April 2017.

[3] Emad S. Othman ."Voice Controlled

Personal Assistant Using Raspberry Pi". International Journal of Scientific and Engineering Research Volume 8, Issue 11, November-2017.

[4] MoustafaElshafei, "Virtual Personal Assistant for Mobile Users".

[5] https://files.eric.ed.gov/fulltext/EJ1267812.pdfpage8

[6] Phatnani, Mr. J. Patra and Ankit Sharma'"CHATBOT. ASSISTING: SIRI" Proceedings ofBITCON-2015 Innovations For National Development National Conference on Research and Development in Computer Science and Applications, E-ISSN2249–8974.

[7] Sutar Shekhar, P. Sameer, Kamad Neha, Prof. Devkate Laxman, " An Intelligent Voice Assistant Using Android Platform", March 2015, IJARCSMS, ISSN: 2327782.

[8] VINAY SAGAR, KUSUMA SM, "Home Automation Using Internet of Things", June-2015, IRJET, e-ISSN: 2395-0056.

[9] "Speechrecognitionwithflatdirectmodels,"IEEEJournal of Selected Topics in Signal Processing, 2010. [8] Rishabh Shah, Siddhant Lahoti, Prof. Lavanya. K, "An Intelligent Chatbot using Natural Language Processing".International Journal of Engineering Research, Vol. 6, pp. 281-286, 1 May2017.