iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 10 **Issue:** IV **Month of publication:** April 2022

DOI: https://doi.org/10.22214/ijraset.2022.41852

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue IV Apr 2022- Available at www.ijraset.com

Perceptive Personal Voice Assistant

Dr. Vasudha Vashisht[1], Ankit Rai[4], Dikshant Sharma[2], Ansh Sharma[5], Ajinu Eapen Mathew[3]
[1, 2, 3. 4, 5]*Department of Computer Science and EngineeringAmity University Uttar Pradesh*

***Abstract:** In recent years, Artificial Intelligence (AI) and Machine Learning (ML) has shown progress in the field of technology. We know that the future of technology can be full of robotics. One of the most useful application of AI is Natural Language Processing (NLP). Voice Assistants is one of the greatest innovation of all time. It changes the way of livingof the people in many aspects. Mainly it was first introduced in smart-phones and then it gets its own popularity in the market. Voice assistants are using cloud computing for communication with the users. It is mainly used in households to control a lot of technology related devices. Most common devices that are using voice assistants are smart speakers and they are being used in colleges, homes, schools etc. There are many voice assistants present in the market such as 'SIRI' by Apple, 'Alexa' by Amazon, 'Bixby' by Samsung. We are also trying to create abasic Voice Assistant by using Python. There are so many useful technology such as speech recognition that will be used in this project. We are creating a VA names Arsenal that is capableof executing a lots of commands. The purpose of this paper is to study how voice assistants and smart speakers are usedin everyday life and they way in which we can create a voice assistant.*

***Index Terms:** Natural Language Processing, Voice Assistant, Speech Recognition, Python, Artificial Intelligence*

I. INTRODUCTION

Upcoming technologies like virtual reality, augmented reality and voice interaction are reshaping the way peopleengaging with the developing digital experiences. Voice control is the future of human race which will develop further in the future drastically, thanks to advances in cloud computing, Artificial Intelligence (AI) and the internet of Things(IoT). In the last years,the evolution of automation led to the development of the ways which are ther to makethe life of the user more fluid and ongoing as all these voice assistant are become a basic need of the humans and everything is being automated for the betterment of the user these voice assistants such as Apple's Siri, Google's. Assistant, Microsoft's Cortana and Amazon's Alexa are allthe example and techs that makes doing tasks more easy and enjoyable and multi-tasking a lot easier as while doingany work without using your hands you can achieve many things that wouldn't have been possible without the increaseof automation and neural technologies that are making thistask more and more easy . Voice assistants use technologies such as voice recognition, speech synthesis, and Natural Language Processing (NLP) to provide resource to the users. A voice interface is needed to make IoT technologies easier to use as connected things work directly from the help of a voice assistant which answer your command without muchof physical work that should have be involved. Besides voice assistants use their features into many things which we useon a daily basis it just needs a microphone which you willuse to give commands and a processor which can handle all the instruction and run the program.Our model is Run on python based coding and will work on any personal computer or laptop which has a speaker and microphone which is usedto get the command from the user and give the appropriate response or do the work which has been given to it. Cloud based platforms are now using the voice assistants in their homes, cars and other things which can now be accesseddirectly with the help of these voice assistant. Voice assistantsrely on a cloud–based architecture, since data has to be sent from here and should be able to receive to centralizeddata centers. A smart speaker is relatively simple by design, The basic idea is that the user makes a request through the voice-activated device, and then, the voice request gets streamed. This is the whole process that is done in the voice assistant and here we introduced the whole project.

II. LITERATURE REVIEW

P. Ponveni, Saiprasath and Shalini S mainly these researchers had tried to focus on issues such as human interaction, contextual understanding which are not solvedyet and they created a voice assistant for that. They createda Virtual Voice Assistant named Buddy which combines normal inputs with a self a learning AI. There model is also compatible for the pc.[1]

Dr.M. Sharada Varalakshmi, Dr.P. Lavanya and Sai PrakashReddy proposed their VA names Jarvis which is capable of handling a lots of work related to twitter, Facebook, YouTube, Instagram, etc. It is also made to give them the breakingnews and also the stock prices of going on in the market. For some exactness reasons they tried to test the usefulness on 2 speakers in which one is male and other is female.[2]

Dhiraj Pratap Singh, Deepika Sherawat and Sonia had designed a VA that consists of commands that comes inbuiltin our system such as music player names Groovy, Notepad, Chrome, Firefox and a lots of other commands. Currently itis only capable when there is an active internet system.[3]

Shravankumar Jha had just researched about the VA andhe find that in these days its easy for users to use their VAthat can be used in mobile as well as PC. He also say that in future it can also be possible for VA to be bilingual language that can easily understand so many different langusges and react to them.[4]

According to Prof. Emad S. Othman his VA is capableof being used as a surveillance system which can easily detect the voice of the person who is standing outside thedoor. Also it can be a mode of entertainment and for blind peoples. It is also used for the information means as well asfor predictions.[5]

Anusha S and N Vignesh Karthik done their research under Sampada K S. In this they compared the chatbots tothe Voice Assistants and they find that VA are more better in many aspects than Chatbots. Chatbots are not present in so many language's and there can be a lot of issues due to them. There is one new approach that is used named ontology. This mainly uses mapping technologies that are mainly connected to the RDBMS and it stores their whole info. so that it canbe further used.[6]

Ms.Ayushi Y. Vadwala, Ms.Krina A. Suthar and Ms.Yesha A. Karmakar had done research and done the studysome releated to android users and the way they use VA in these days. They continue their survey in 100 peoples and find that more than 80 uses VA for calls, nearly 20 for remainders and alarms, 45 for web search etc. According to them in future there can also be language options in VA and it will also help the Indian citizens who do not know US accent.[7]

George Terzopolous and Maya satratzemi made Voice collaborators and brilliant speakers will be more engaged in the coming future as they can be utilized effectively for some reasons. There are difficulties that emerge, for example, language boundary as voice associates can't communicate in all dialects. Instructors ought to be prepared and urged toutilize voice collaborator to adjust that nature as these are some extremely effective strategies for learning.[8]

Dr. Kshama V. Kulhali, Dr. Kotrappa Sirbi and Mr. Abhijit J. Patankar according to Making of PARI is profoundly engaged for blind individuals who can chip away at their voice orders. PARI likewise has capacity to work withoutweb association. It has different functionalities that are like cell phones like administration of different applications and organization associations. Significant highlights of PARI are watchword learning, voice design identification and so forth Despite dialects utilized, it can work proficiently and to react to client's voice orders speedier than other web-based voice colleague's.[9]

Abhay Dekate, Chaitanya Kulkarni and Rohan Killedar researched Voice controlled collaborators could be executed with man-made consciousness to use in regular language handling. This all prompts shrewd utilization of innovation for different applications like controlling IOT and in webapplications. This can result into making human lives simpler and more agreeable.[10]

Regna Gubareva and Rui Pedro Lopes categorized the VA on the basis of Student support. They classified them into fourdifferent parts: remote tutor, online secretary, virtual agent and the mentor agent. They think that there is lack of motivation in todays students and they really need some technology that can give them a way to start their studies so for that personal VA is created and due to this its become easy for them to continue their studies and gain resular knowledge.[11]

In medical care field, Voice right hand can assume such a significant part by contributing voice-based frameworks. Voice collaborators are accepted to be more trusted and dependable than human-human communication. voice-based frameworks and instruments are drawing in more group step by step with more intricate and human-like elements.[12]

According to Mrs. A.M.Sermakani, , J.Monisha, G.Shrisha and G.Sumisha VA is only designed to make the use of input devices as much less as possible. There VA uses AI as well IoT that makes it more powerful as well there can also berisks of privacy and need of more security. Their model isalso preferable for handicapped kids.[13]

Ankit Pandey, Vaibhav Vashist, Prateek Tiwari, Sunil Sikkaand Priyanka Makkar says that their VA is capable of sending emails, updating to-do-lists and also opening web servicestasks. They told about the connection of microphone with the whole VA in this paper. Their future plan is to connectit with cloud so that it can be easily used for multiple user concept.[14]

Deepak Shende, Ria Umahiya and Monika Raghorte have mainly focused on making a basic voice assistant which is there on their computer and they use it locally without any cloud based support their data exchange and data readingeverything is stored in their on personal computer which can be used without any linking of any kind.[15]

Alena Ermolina and Victor Tiberius Research is mostlydone to make the work of health professionals like Doctors work Easy and not to replace them as the voice assistant can only assistant with the limited information that it would be able to retrieve from the human body through instruments, So VIPAs is made to help the professional to make his worka lil easier as it could test and give results but can't prescribeit with any advice without the help of professional as without the brain and experience of the human brain we cannot conclude to give medical advice.[16]

Abeed Sayyed, AshpakShaikh , AshishSancheti and SwikarSangamnere research paper is a very basic project which is made to help us with many tasks in our daily life likechecking the weather, opening chrome, streaming music, opening some application on your pc as such this was madeon python platform using PyCharm software that is an open source software which implements python, ML projects whichcan be done easily on this software as they have said. This is for personal use which uses internet to get the commands to give results.[17]

III. PURPOSE PLAN OF WORK

The proposed plan began by giving voice contribution tothe voice colleague by the client through amplifier whichlater handled and broke down by voice associate. the voice information can be in any way similar to getting any data, procedure on PC's inside records and so forth This is the review dependent on perusing previously mentioned writing and testing their models. Discourse acknowledgment has beenutilized to convert the voice input into text. Then, at that point,this text is then, at that point, gone through the focal processorwhich examinations the motivation behind the order and calls the required content for execution. Then its main role is to accept the commands and then execute them. This makes the voice assistant more powerful and even useful. As comparedto others we are also trying to execute the Whats app messagesfrom the assistant.

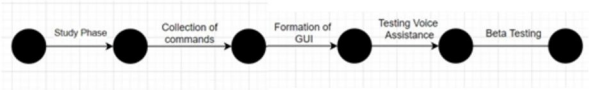


Fig. 1. PERT chart of our project

So as we start our work, our main focus will be on speech recognition tool and as we said that it becomes easy as we start using python Speech Recognition. Then after thiswe will be adding 'wish' method to our project that makes Arsenal to respond to the user whenever he start using the VA.

Then we need a lots of command that should be present in VA so that it should be capable of executing to that commands. Currently we are including notepad, chrome, Firefox, Camera, Whats App, YouTube etc. After adding all these items we are thinking to make the GUI for our VA so that it becomes easy for the random users to use it.

IV. PROPOSED METHODOLOGY

Voice assistant is a big project. It needs a lot of librariesand technologies. We know that the most basic part of creating a voice assistant is that it should be capable enough to recognize our voice and react to our commands. So there are so many things needed to be done starting from the platform that we should use for our project.

A. Why Python?

Python is mainly used because it can be easily understandable. It is mainly standard language to create any project such as voice assistant. Python consists of lots of inbuilt libraries that are pre-installed in the language. We realize that there are such countless dialects like c, c++ that can likewise be utilized yet when contrasted with python there are extended just as their documents are not effectively accessible. We need speech related libraries in our projectand even we had to find all those ways in which we can execute the commands.

B. Context Extraction

Context Extraction is automatic process. Mainly it tries to pull out the structured information. This Extraction of information is applied on unstructured documents. It is a process in which we obtain different features. Features for instance vocal tracks, pitch and power. It mainly uses the algorithm of NLP (Natural Language Processing). There are many activities that can be present in content extraction such as automatic annotation out audios and videos.

C. Speech Recognition

This is the base library that is used in our project. Its workis to convert the spoken language into text so that it become easy for the machine to understand what the user is trying to convey. We will focus on the main part of speech recognition that is called Recognizer. This mainly converts users speech into texts. PyAudio is also one of the main library that is present inside the speech Recognition and its main work isto access the microphone when command is generated inside the program.

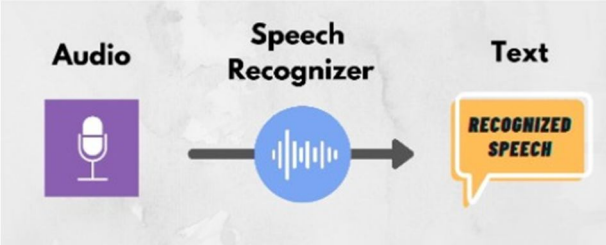


Fig. 2. Example of the process in which Speech Recognition works

D. Command Execution

Now we know that in any voice assistant we had a part in which we give commands to our assistant and its work is to execute that command. We mainly need OS library for this concept. This library helps us to execute our commands in much easier way. We generally use this library for execution of any software or application present in our system. This makes our assistant to accept the commands and react to it.

E. Text-To-Speech

Text-To-Speech is essentially utilized for change of Speech from Text given by the client. It names itself told us about his work. TTS is mainly used to change the given text to particular speech. In other words, a TTS Engine Convertscomposed type of text into phonemic portrayal, then, at that point, changes over the phonemic portrayal to wave forms which brings about well built. TTS has fostered a ton and accompanies various dialects gave by the outsider distributor's.

V. CONCLUSION AND RESULT

Under this paper, we had created a voice assistant whichis capable of running all commands from the users and even without termination of any error. We used Python 3 as our base-platform and there is large amount of libraries present. Our VA will needs a base password to execute the queries which makes it better so that for that particular moment oftime only one user can access it. We are even trying it tomake it highly user friendly by implementing the GUI for our particular VA so that it helps them more to understand it in a better manner.

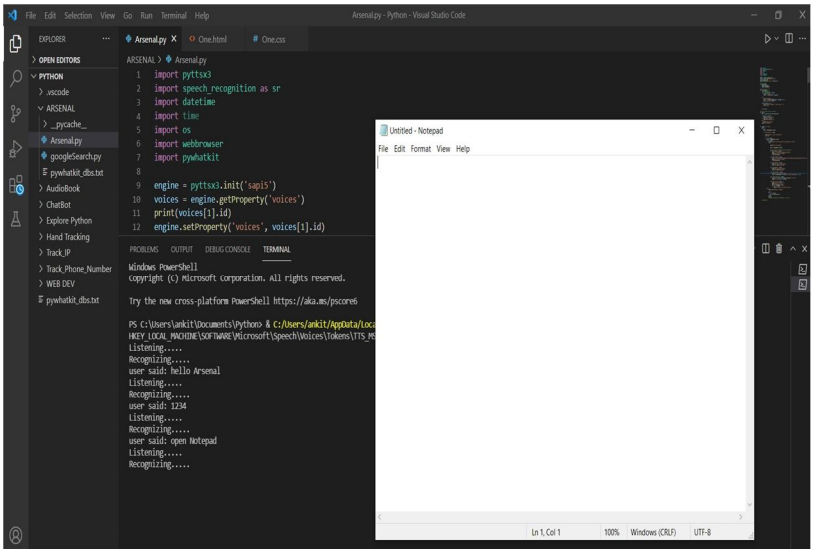


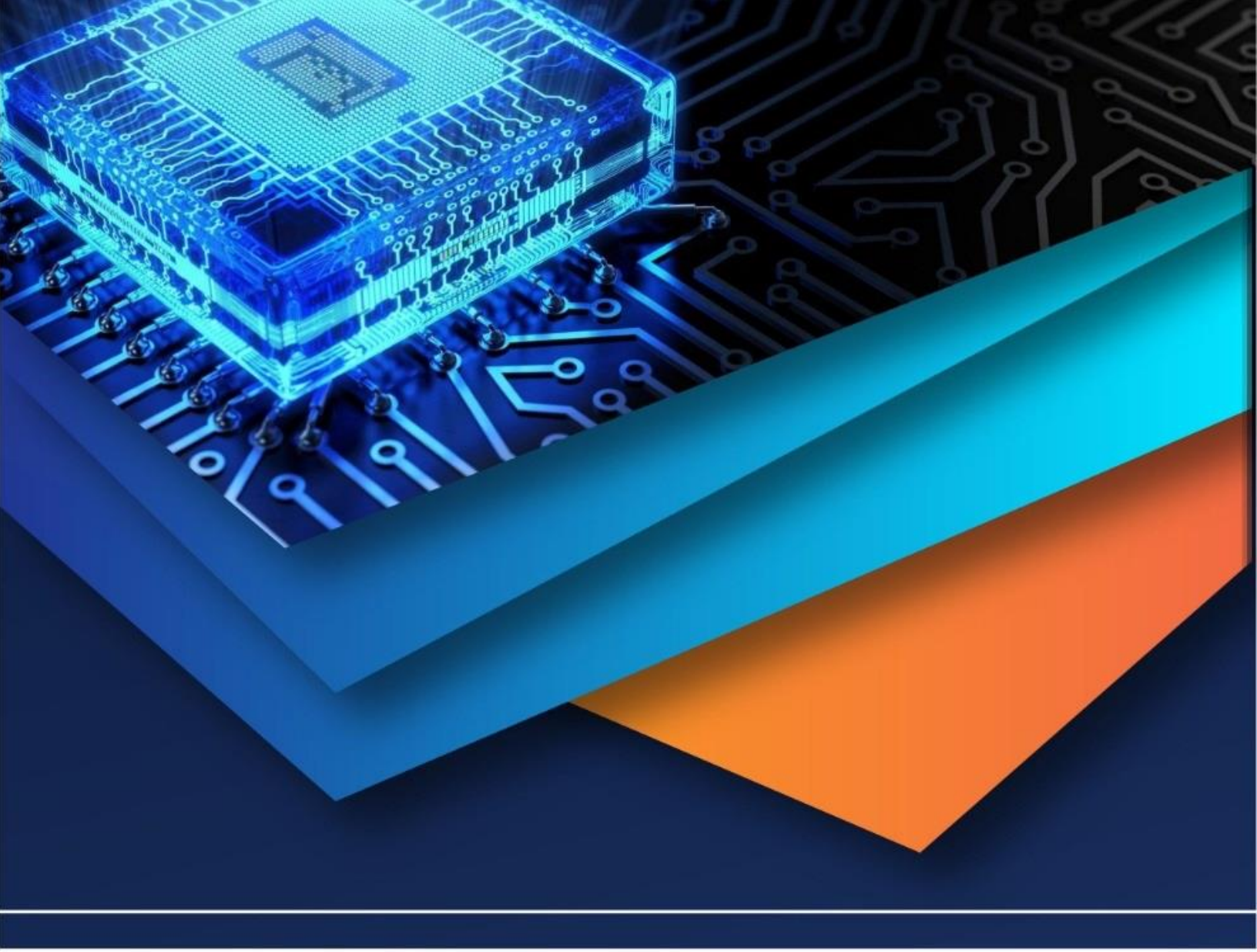
Fig. 3. Image Of the Editor where it worked

VI. ACKNOWLEDGMENT

This particular project was completed under Dr. Vasudha Vashisht who is our main guide for this project and supported by Department of Computer Science and Engineering, Amity University Uttar Pradesh. Thanks for all the support to our Guide Dr Vasudha Vashisht and Amity University.

REFERENCES

[1] P. Ponveni, Saiprasath, Shalini S. ”An Efficient Virtual Voice Assistantfor Physically Challenged People”. 2021
[2] Dr.M. Sharada Varalakshmi, Dr.P. Lavanya, Sai Prakash Reddy. ”Jarvis- A Virtual Assistant based on Artificial Intelligence”. 2020
[3] Dhiraj Pratap Singh, Deepika Sherawat, Sonia. ”VOICE ACTIVATED DESKTOP ASSISTANT USING PYTHON”. 2020
[4] Shravankumar Jha. ”An Analysis on Voice Assistant”. 2021
[5] Ass. Prof. Emad S. Othman, Senior Member IEEE - Region 8, High Institute for Computers and Information Systems.”Voice Controlled Personal Assistant Using Raspberry Pi”. 2017
[6] Anusha S, N Vignesh Karthik, Sampada K S. ”Comparative Study on Voice Based Chat Bots”. 2018
[7] Ms.Ayushi Y. Vadwala, Ms.Krina A. Suthar, Ms.Yesha A. Karmakar. ”Intelligent Android Voice Assistant - A Future Requisite ”. 2017
[8] George TERZOPOULOS, Maya SATRATZEMI. ”Voice Assistants andSmart Speakers in Everyday Life and in Education”. 2019
[9] Dr. Kshama V. Kulhali, Dr. Kotrappa Sirbi, Mr. Abhijit J. Patankar. ”Personal Assistant with Voice Recognition Intelligence(PARI)”. 2017
[10] Abhay Dekate, Chaitanya Kulkarni, Rohan Killedar. ”Study of Voice Controlled Personal Assistant Device”. 2016
[11] Regina Gubareva, Rui Pedro Lopes. ”Virtual Assistants for Learning: A Systematic Literature Review”. 2020
[12] Carolin Wienrich, Clemens Reitelbach, Astrid Carolus. ”Voice Assistantsin the Context of Healthcare Investigating”. 2021
[13] Mrs. A.M.Sermakani, , J.Monisha, G.Shrisha, G.Sumisha. ”CreatingDesktop Speech Recognization Using Python Programming”. 2021
[14] Ankit Pandey, Vaibhav Vashist, Prateek Tiwari, Sunil Sikka, Priyanka Makkar. ”Smart Voice Based Virtual Personal Assistants with Artificial Intelligence ”. 2020
[15] Deepak Shende, Ria Umahiya, Monika Raghorte, Aishwarya Bhisikar, Anup Bhange. “AI Based Voice Assistant Using Python” . 2019
[16] Alena Ermolina , Victor Tiberius , Prof Dr rer pol Dr phil. “Voice- Controlled Intelligent Personal Assistants in Health Care: International Delphi Study”. 2021
[17] Abeed Sayyed, AshpakShaikh , AshishSancheti , Swikar Sangamnere , Prof. Jayant H Bhangale. “Desktop Assistant AI Using Python”. 2021



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY