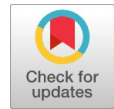


Smart Python Coding through Voice Recognition

M. A. Jawale, A. B. Pawar, D. N. Kyatanavar



Abstract: In today's world, many artificial intelligence applications developed using programming languages like Python, R and so on. Each language comes with its own programming structure and syntactical forms. Programmers are broadly classified into three categories namely, novice users, knowledge intermittent and expert one. For novice users, it is always a challenge to write a code without typographic errors though users know theoretical knowledge of Programming language, its structure and syntax as well as logic of program. Therefore, this paper explores use of voice recognition technique in the field of programming, specifically for writing program with Python programming language. In experimental analysis, it found helpful for new Python programmers and provide new learning curve for programmers wherein beginner can experience hassle free program writing. This paper adds new way of creating interest in beginners for judging their coding paradigm understanding and explore one of the area for user experience field for better programming Integrated Development Environment Development (IDE).

Keywords: Artificial Intelligence, Learning, User Experience, Voice Recognition.

I. INTRODUCTION

Programming involves human efforts, hardware and due to manual typing through keyboard, there are many chances to meet an error while typing. As programming is important for students and innovation, as manual typing is time, consuming there is a need for an advanced system, which would reduce programmer's effort and promote smart work. The system, which we are going to develop, is easier than this manual typing of code. We are going to recognize the voice of user through the microphone and those keywords will be matched with the stored keywords if they are matched then that will be displayed on editor and that is the code or programme in a specific language, which can be further compiled and executed through the voice instructions of user. In the first phase of proposed system, we made use database for the keywords comparison and further in the second phase, we will be going from machine learning concept in which the next keyword will be recognized by using the previous keyword by using the machine learning algorithm and will be printed on the editor will be compiled and executed through user voice instructions.

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Existing systems like Google assistant recognizes the voice and will perform the Operate according to the voice instructions, but in our system we are developing The same approach for programming purpose user will able to program or code Through voice without using the keyboard and will able to compile and execute The code through voice instructions of user. In this paper we chosen Python as programming language because of following reasons: Case Sensitivity, Strongly Typed, Object-Oriented, Dynamic one.

II. AIM, SCOPE AND OBJECTIVES

A. Aim

Aim of this system is to make development of Python program easy and interesting and allow anyone to develop a program with minimal programming knowledge.

B. Scope

The goal of this system is to provide an easy platform for the users to develop a Python program easily, to create more interest of user in programming, to reduce the use of resources, and minimize the human efforts and reduce the time.

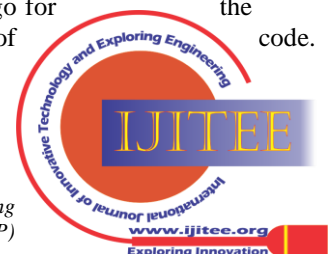
C. Objectives

Based on findings and requirement, Following objectives are set for this work.

Proposed System will provide the facility of developing a code through voice instructions. System will be able to save Python the recognized code by voice instructions. System will provide the compile the developed code through voice instructions. System will be able to compare the keywords with database. It will provide the way to get the recognized keywords on the editor. It will provide the facility to execute the developed code through voice instructions.

III. SYSTEM MODEL

The system, which is available now days is Google Assistant, but this system recognize the voice and performs an operation. The system, which we are going to develop, will support the specific operation that is developing a computer program through the voice of user, which recognized by the system. Keywords will identified as Key in voice input and will mapped to prepared dictionary database of stored keywords. If it found in this set, it will displayed in user workspace for further processing otherwise an error message will give to user with prompting for correct voice input. After this operation, we will be having the code, which can be further compiled and executed through user's instructions. The specific words as if compile and run will recognized by the system then system will go for the compilation and execution of the code.



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The proposed system consist of following modules:

- User Workspace Designing.
- Voice Recognition.
- Matching Keywords and Print on Editor.
- Compile And Execute The Code.

User Workspace Designing

In this module, we are designing an editor or notepad on which recognized keywords will printed. The printed code can be compiled and executed through user voice instructions.

Voice Recognition

In this module the proposed system will recognize the voice of user through the microphone and print that keywords on terminal and then on editor.

Matching Keywords and Print on Editor

The recognized keywords can compared with the keywords, which stored in database and if the comparison returns zero value then the recognized keyword will printed on editor.

Compile and Execute the Code

The printed code can compiled and executed through the voice instructions of user.

The entire system architecture and its workflow is shown in following figure 1.1 and 1.2 respectively.

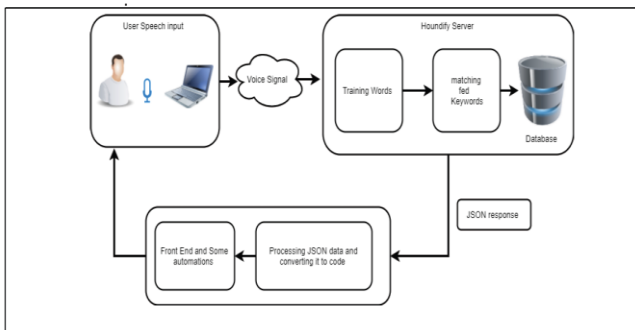


Fig 1.1 Proposed System Architecture

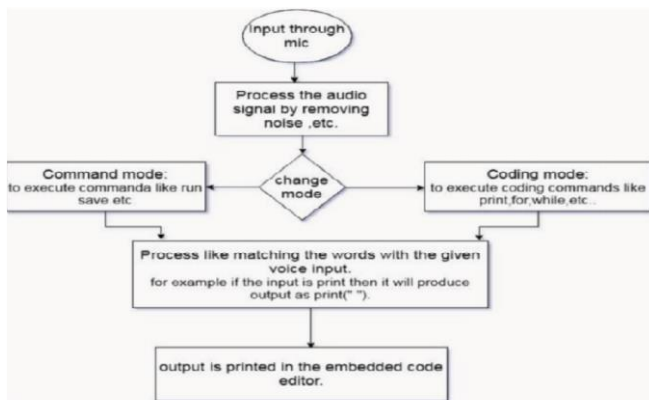


Fig 1.2 Proposed System Workflow

Similarly, Fig 1.3 represents behavioral view of the system, which modelled with UML Use Case diagram for

better understanding.

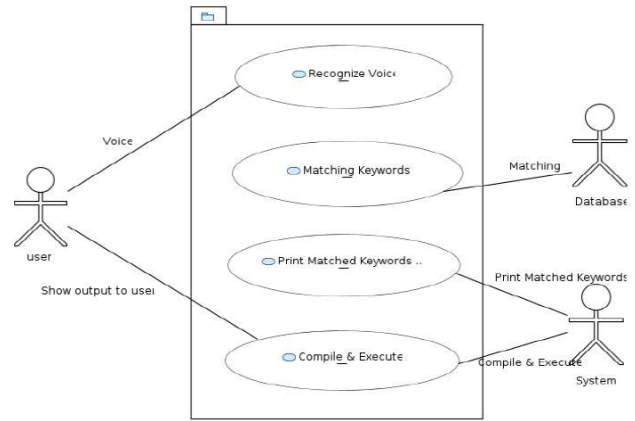


Fig 1.3 Behavioral Representation of System

IV. RESULT ANALYSIS

A. Implementation Details

The said system implemented using following hardware and software requirements for initial results generation.

Hardware Requirements are: Processor –Core i3, Bus speed - 2.5 GT/s DMI, Hard disk - 160 GB, Memory size – 4 GB RAM, Microphone and main interface of system is developed with Software Requirements including PHP, MySQL 5.7.11, JQuery, HTML, CSS and JavaScript.

B. Testing Environment

The developed system tested with Window 7.0 and above as well as on Linux 14.4 and above.

C. Result Discussion

The developed system has given an interface where in the beginning user will select Create Program option and will start creation of program through voice, as each field in developed user interface is voice enabled as shown in Figure 1.4.



Fig 1.4 User Interface of System

Using this interface, user can enter the program details with the help of voice. The details as per voice input of user will be fetched from database and made available to user as shown in figure 1.5.



Fig 1.5 Program Details available on Screen

Once, it is done and user clicks start code button from given interface, system extracts contents through database intelligently and make it available to user as shown in figure 1.6 which look like completely as code written in Python programming language.

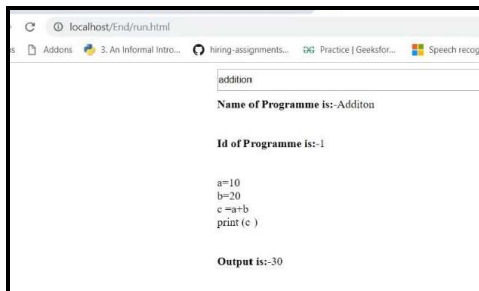


Fig 1.6 Program Details available on Screen

V. CONCLUSION

We addressed the problem of user while developing a computer program. Developing a computer program is not an easy task it needs hardware resources which user have to handle. While continuous typing the code there may be possibility of injuries to the fingers of the user. To avoid the problems we are designing a system in which the computer program can developed through the voice. The voice will be recognized by the system and that recognized words or word will be compared with the stored keywords in the database and if they are matched then that will be printed on editor and after this again by recognizing the specific keywords the program will be compiled and executed. This system will be easy to use, it reduce human efforts and the use of hardware resources. It would be surely useful for blind as well as novice plus knowledge intermittent users.

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