Real-time Interactive and Artificial Intelligence

Divij H. Patel

Abstract: ***In this modern era, artificial intelligence becomes the most essential and useful system. It is not only limited to computers, but smartphone industries, robotics, machine development, and many more areas are affected. Usually, all places have different usage, and people can feel that change in its working ability and the background process. This research is based on Artificial intelligence related to computer systems. In standard, computer-based artificial intelligence comes with the primary and similar functionality like when a person asks the question it gives an appropriate answer based on that. Also, a user must work with given interfaces like graphical or command-line. However, the present system is independent of an interface. That means a user does not need to work with limited boundaries.***

Index Terms: ***console window, interactive, keystroke capturing, Real time, send-keys, transparent interface.***

I. INTRODUCTION

Nowadays, most computer companies or smartphone industries are trying to develop their artificial intelligence software and applications that can help in technological advancement. Many famous computer companies have been functioning their Artificial intelligence algorithms. (That can work with voice recognition system or word(symbol) recognition.) Most of them need the internet connection to work efficiently and effectively, because of the large size of the database. A system can operate without internet connectivity, but it comes with a substantial inbuilt database, that consumes a large amount of computer space. Artificial intelligence is an extensive topic; as per earlier discussion, artificial intelligence or machine intelligence might have different algorithms and graphical interfaces. All AI (Artificial intelligence) software has one common feature: “when an input string is entered, whether query or search string, the software will give them appropriate output.” The user must work graphical or command-line interface like there is one input window in which the person must type input and then after software will give an output in the output window. Moreover, the present software will work continuously in the background by hiding the console window concept [2], [3].

These are the significant differences between my researched software and available conventional AI systems. This modern (my researched) software provides transparent or independent interface [3]. Besides, there is no interface given. Still, a user can use any other available interfaces to access this AI system. For example, a user can use notepad, WordPad or sticky notes, and many others; as an interface.

These are the significant differences that make the present system innovative. Also, there are many challenges with the concept of transparency or independent user interface; For example, if someone is using WordPad, and AI software is running in the background, the software will catch the typing activity and interrupt the user by generating and keystroking output at the cursor point. However, this problem is solved by adding pause and resume(restart) features [2], [3]. So, the user can pause AI software by merely pressing an assigned function key, and after completing typing work, the user can resume the software as same way it paused.

II. FLOW CHARTS

Five kinds of flowcharts are attached to represent different working procedures. These flow-charts are as follow.

- Capturing the input from an interface.
- Analyzing the taken inputs.
- Generating an appropriate output at the cursor point.
- Pause and resume feature.
- Terminate the process.

Divij(author) has researched much conventional software’s algorithms and created a new concept of interface free interactive AI named as “Real-time interactive and artificial intelligence.” The flow-charts mentioned above are the symbolic and graphical representations of the newly created AI’s computer code. Let us begin with the overview of the working procedure. Any user who wants to add these AI (Artificial intelligence) services will install the provided software first. Then double-click to open installed software and after the initial process, a console window will disappear from the screen. Then after, software is working in the background and keeping track of all the inputs given by the user. In other words, it is keeping track of all the keystrokes given to an open interface. After the user completes typing activity, software or present AI system will start execution on tracked keystrokes. Afterward, the software will send the appropriate output at the cursor-blinking position. The output might be the answer to the question asked by the user or anything else related to the given query. The focus is on the interface-free concept; for example, the user can interact with a computer just by sending keystrokes, he/she can use any interface to send keystrokes [2].

This method can use to access services, like dictionary services, command prompt or terminal commands execution and call another functions or web-links [2], [3].

Furthermore, below flow charts will make the clear sense about the working method.

Manuscript published on 28 February 2019.
***** Correspondence Author (s)

Divij H. Patel*, student at confederation college, 1450 Nakina drive, Thunder Bay, Ontario, Canada P7C 4W1.

A. Capturing the inputs from interface

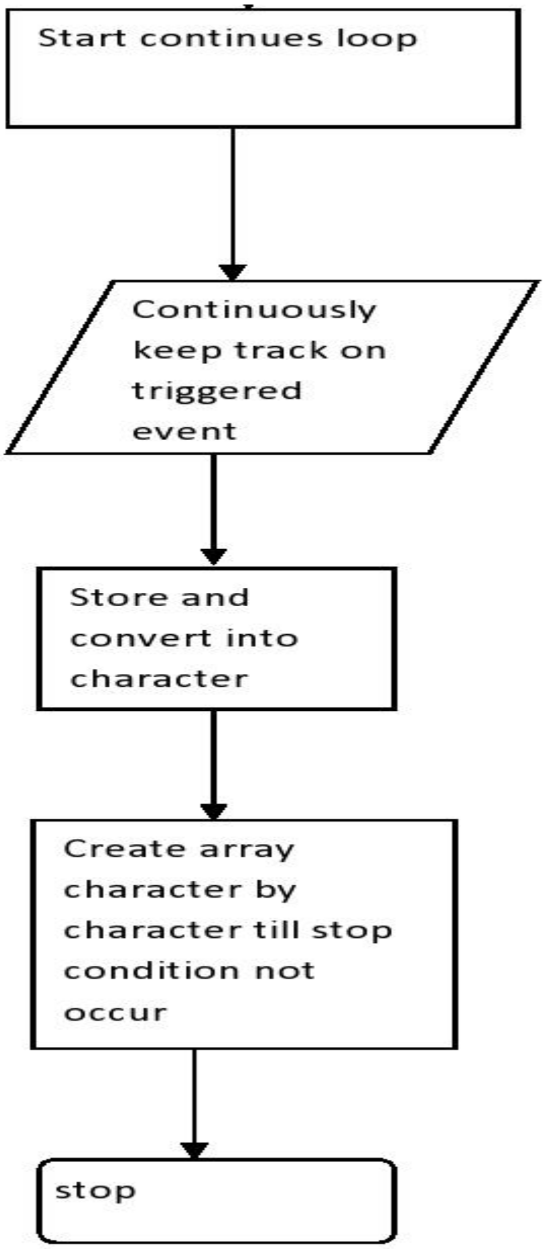

Start continues loop
Continuously keep track on triggered event
Store and convert into character
Create array character by character till stop condition not occur
stop

Fig. 1: Capturing the inputs from an interface.

The First symbol of flowcharts defines the starting process where software starts working. The Last shape shows the end process means where the part of the process will end or done with capturing input.

This software is an executable file that can start with the double click. At the first time after double clicking or start executing, it will show a user manual that has some basic instruction to use the innovative AI software. Then after, it will disappear from the screen and start execution in the background. Hiding the console or background execution is the reason that, software must capture the input differently. With the starting of the software, one continuous loop will start, and it will keep track of every typing activity. It does not matter what the interface is; it will capture all the key events [4]. Then, after that, it stores those keystrokes in an array variable. Every keystroke has ASCII (American Standard Code for Information Interchange) codes so first need to convert the keystrokes into a human-readable form like string. Then after, one by one, it stores the strings in character-arrays. There is a limit for storing the input in character array. It will capture and save characters or keystrokes until the ASCII code of "enter" key will not be pressed. After it occurs, it will pass that array value to next function and clear it to recapture another value. It uses the same array variable, again and again, to store and pass the values.

B. Analyze the taken Inputs

Below flow-chart will start from where the last flow-chart stops. In other words, it will begin to analyses of the taken input.

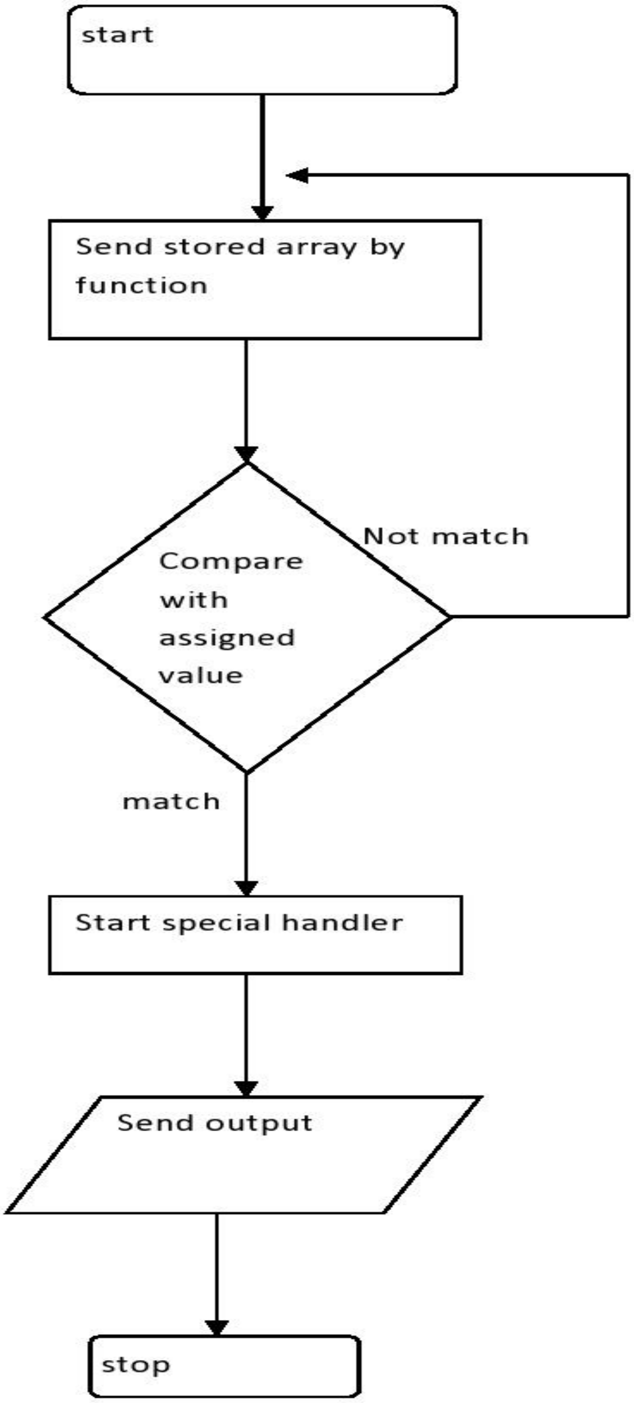


Fig. 2: Analyze the Taken Inputs.

Published By:
Blue Eyes Intelligence Engineering
and Sciences Publication (BEIESP)

After capturing fixed length character array, the handler will be passed to the next function. In that, it will break that character array or sentence into the small parts. Then, every part will compare individually against others in the database or previously generated AI results. Mainly, the code has two bunches of stored and made data. The first one has prior taken inputs from the user and probability results. The second one has a set of appropriate or logical outputs that could be the result. Both sets are equivalent to each other. So, the character-array, having a small part of user input stored, will go to input function and compare with every available data. If it matches, then the same number or sequence of output from the output bunch will be provided as a result. Otherwise, it will start comparing another part of the input. This analyzing process will continuously run in the background.

C. Generating an appropriate output at the cursor point

In previous, we observed how user input will be analyzed and generate the output. However, it provides the output at the cursor-blinking point. So, the below flow chart will show how it will proceed.

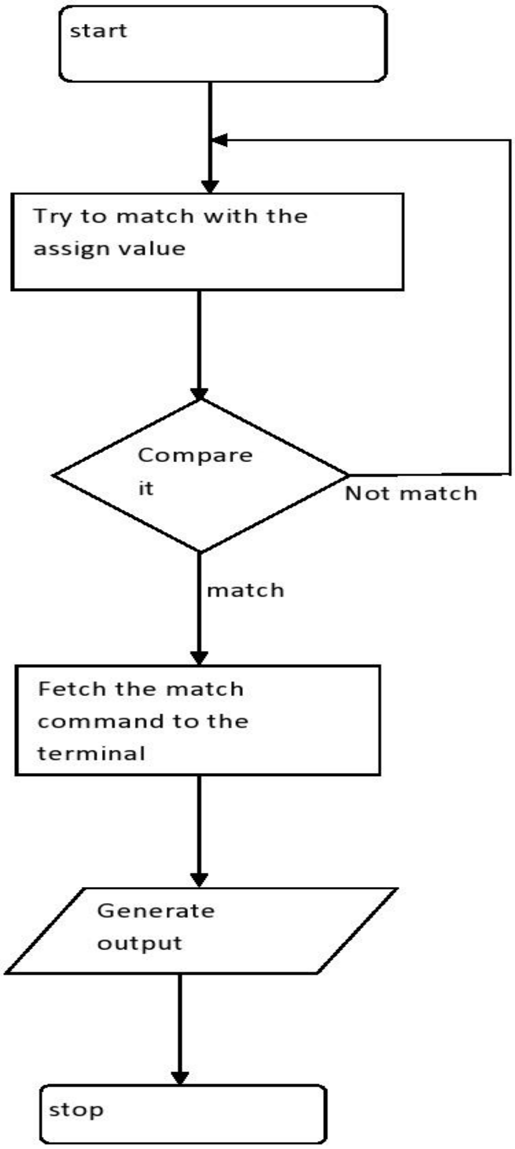

start
Try to match with the assign value
Compare it
Not match
match
Fetch the match command to the terminal
Generate output
stop

Fig. 3: Generating an appropriate output at the cursor point

After breaking the captured inputs into smaller parts, every part will compare against available in the input function. If matches, then the same column number and the row number of output will be generated from output bunch. In this software, interface is user-friendly, so the result will be keystroked at cursor point by send-keys concept [9] or in the same interface where the input has been given. That is how this software achieves user-friendly interface. In common words, if a person will type a question in notepad, it will capture that ASCII's [4] and convert it into an appropriate form, then after, it will analyze and keystroke back the generated or matched output to the notepad.

D. Pause and Resume feature

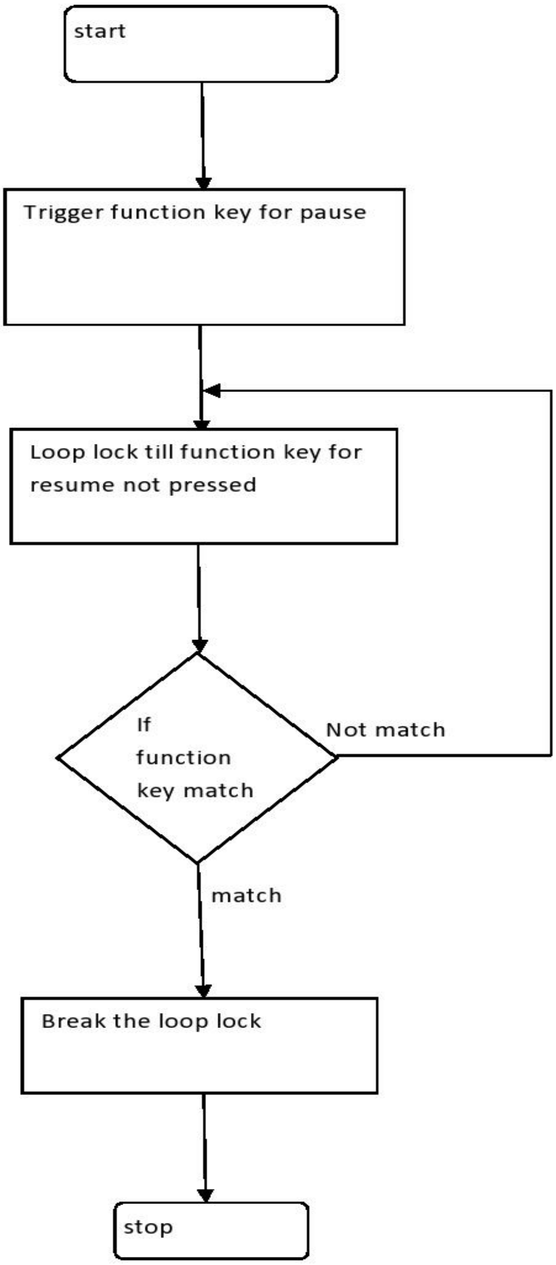

start
Trigger function key for pause
Loop lock till function key for resume not pressed
If function key match
Not match
match
Break the loop lock
stop

Fig. 4: Pause and Resume feature

Published By:
Blue Eyes Intelligence Engineering
and Sciences Publication (BEIESP)
© Copyright: All rights reserved.

Furthermore, this software works on the concept of the real-time input and output capturing and keystroke generation [8]. Earlier in the paper, it was mentioned as the use of a transparent or user-friendly interface. In some condition, if a user is doing some typing related work and he/she starts this AI software. So, now that both processes can interrupt each other; for example, AI software will start capturing typing activity, then it will generate and type unwanted keystrokes as the results. This problem is solved by adding pause and resume features. If a user presses the assigned function key, then background AI software will pause working until the user presses another function key for the resume. Working process for this feature is the same way as regular input and output checking process.

There is another function defined with an infinite loop. To press some function-keys are the only way to get in and out from this loop. When a user presses function key for pause, code handler will be in that loop until the user pressed another loop-breaking function key.

So, for the time it is held in the loop, it will not be able to capture any input. It is called the pause period.

E. Terminate the process

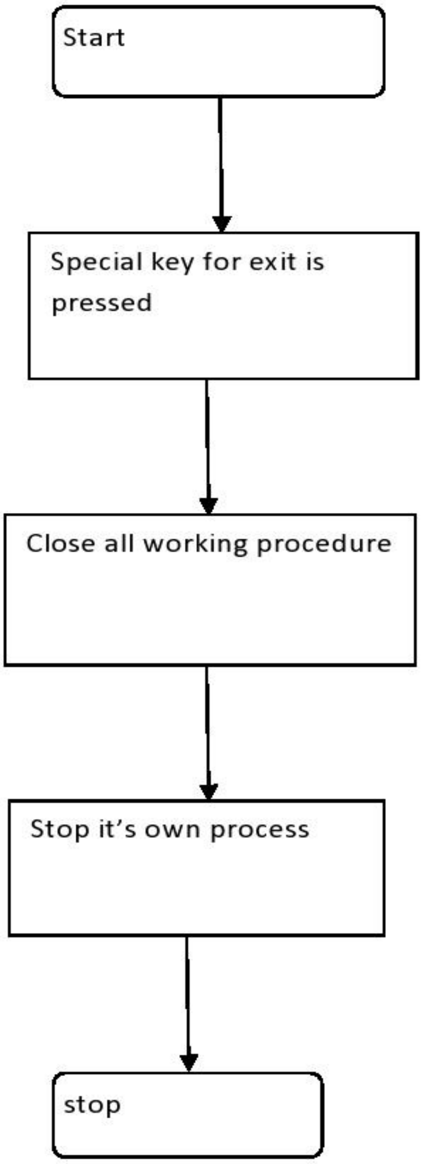
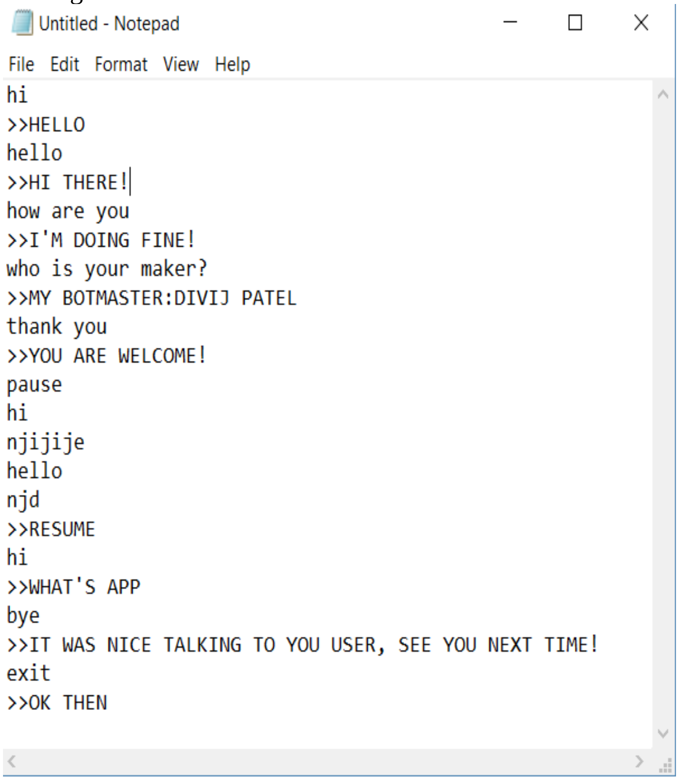


Fig. 5: Terminate the process

Additionally, it does not have a graphical or command-line user interface because it works based on real-time typing activity. The first question to arrive in mind is how to close this software. There is also one more feature to close this transparent AI: a user can type "exit." Yes, the user needs to type "exit" and it will capture and analyze this ASCII and then terminate itself. In the flowchart special function-key is the keyword "exit."

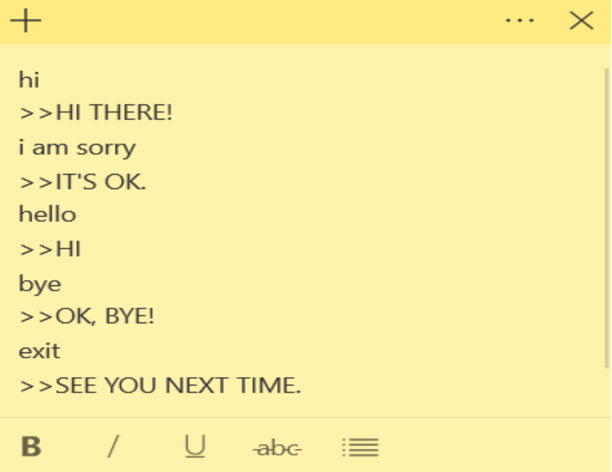
III. EXECUTION

From the above discussion, it makes a clear vision about the working procedure of the present system and some benefits over the available conventional systems. Now let us refer to some screenshots and make it clear how it will work after starting an execution.



```
hi
>>HELLO
hello
>>HI THERE!
how are you
>>I'M DOING FINE!
who is your maker?
>>MY BOTMASTER:DIVIJ PATEL
thank you
>>YOU ARE WELCOME!
pause
hi
njijije
hello
njd
>>RESUME
hi
>>WHAT'S APP
bye
>>IT WAS NICE TALKING TO YOU USER, SEE YOU NEXT TIME!
exit
>>OK THEN
```

Fig. 6: Notepad as an interface



```
hi
>>HI THERE!
i am sorry
>>IT'S OK.
hello
>>HI
bye
>>OK, BYE!
exit
>>SEE YOU NEXT TIME.
```

Fig. 7: Sticky note as an interface

Published By:
Blue Eyes Intelligence Engineering
and Sciences Publication (BEIESP)

The user tries to access an artificial intelligence software by notepad as an interface [**Fig. 6**].

After starting the execution, when user types "hi" in notepad and presses enter, so the background process captures that string and analyzes it. Then, generate the appropriate output like "hello."

After the user types another string like "how are you," the software key-strokes the answer like "IM DOING FINE." That is how this present software works.

After a user types, "pause" as an input and the background system pauses the execution and starts waiting until the user presses the function key to resume the execution. When the user types a function key, which is "F7" in this case, software again starts replying in the interface.

The same thing happens when the user tries to interact with another interface like sticky notes [**Fig. 7**], and it works the same way as usual. The only difference is the interface is changed. Also, a user will type "exit" or "bye" at the, end and the system will terminate itself by "exit(1)" command.

IV. FUTURE SCOPE

The benefit of this idea is, it suggests a program that can work without any interface and still function more efficiently than currently available artificial intelligence systems. The user can choose what kind of interface he/she wants to use. Like, other artificial intelligence systems, present AI software can answer every asked question and can handle some critical problems too. In the next update, I want to add features like dictionary and self-learning process. This way, the user can find the meaning of any word without going online. It will give the best computer and user interaction experience. Besides, it will be able to make google search through any available interface, and the user will get search result to the same interface.

V. CONCLUSION

The present software is like; A program that can work without any interface and still able to work better than most of the available artificial intelligence systems. One can interact with available interfaces like notepad, Microsoft office, sticky-notes, and many more. It also provides quick services like opening other programs, message-typing, access audio-video, and many more. The most important aspect of this software is to facilitate the necessary tasks. Such as question-answer interaction, dictionary services, and other programs that run without any internet connection. Whole application occupies very less space in main memory.

REFRENCES

1. D. Patel, "Copy-Paste Commands with the Additional Facilities", *International Journal of Computer Applications*, vol. 159, no. 4, pp. 9-13, 2017.
2. D. Patel, "Spyware triggering system by particular string value" published at *International Journal of Engineering Research and Development*, vol. 11, Issue. 09, pp. 32-36, 2015.
3. D. Patel, "Assigning shortcut keys", 3726/MUM/2014, May. 27, 2016.
4. International Business Machines Corp, "Keystroke queuing system", US4410957A, 1983.
5. M. Paquette and E. Schlegel, "Enabling and disabling hotkeys", US7757185B2, 2010.
6. T. Edwards and H. Allen, "Programming software for usability evaluation", 1997. L. Orcutt, "Voiced programming system and method", US8315864B2, 2012.
7. E. Bachaalany, "SendKeys in C++ -CodeProject", *Codeproject.com*, 2004. [Online]. Available: https://www.codeproject.com/Articles/6819/SendKeys-in-C. [Accessed: 14- Jun- 2004].
8. M. Singley and J. Anderson, "A Keystroke Analysis of Learning and Transfer in Text Editing", *ACM SIGCHI Bulletin*, vol. 20, no. 1, p. 81, 1988.
9. D. Schramm, "Artificial intelligence system", US4670848A, 1987.

AUTHORS PROFILE

Divij H. Patel was born in Nadiad, Gujarat, India in 1995. He Received a bachelor's degree in computer engineering (2017) from Gujarat Technological University, Gujarat, India. Now he is completing the postgraduate certification in 'Information and Communication Technology Solution for Small Businesses' from Confederation College, Thunder Bay(ON), Canada. During the engineering period, he researched numerous topics and published three research papers with different international American and Indian journals mentioned below. The first research paper is "Spyware Triggering System with the Particular String Value," the second one is "Multipurpose Reminder System." Both papers published with International Journal of Engineering Research and Development. The third one is "Copy-Paste Command with Additional Facilities" published with International Journal of Computer Applications, New York, USA. Also, he has been filled three patents on different inventions and algorithms with the Indian patent office. The Smart Wearing Cap Device is one of them. The second one is about Assigning Shortcut Keys, and the third one is Folding Calculator. Also, he got featured in many newspaper and news channels like; Gujarat Samachar, Sandesh News, Vichar Kranti News, DNN Link News Channel, VTV News Channel.