

WEB-BASED CHATBOT FOR CONTINUOUS CONVERSATION USING ARTIFICIAL INTELLIGENCE

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Abstract - Chat-bot is emerging as a significant technology in shaping the future by connecting physical devices or things with ANDROID. It also presents various opportunities for the intersection of other technological trends which can allow it to become even more intelligent and efficient. In this project, we focus our attention on the integration of Intelligent Conversational Software Agents or Chat-bots with android. Literature surveys have looked into various applications, features, underlying technologies and known challenges of android. On the other hand, Chatbots are being adopted in greater numbers due to major strides in the development of platforms and frameworks. The novelty of this project lies in the specific integration of Chat-bots in the android scenario. Identification of the newer challenges and possible future directions with this new integration have also been developed.

Key Words: Arduino, Artificial Intelligence (AI), Chatbot, Embedded C.

1. INTRODUCTION

Chatbots are used as a messaging service provider which provides an instant messaging framework. Its goal is to provide conversational service to the people who interact with bots normally called a user in an efficient way. The fastest way and minimal confusing web application and mobile application are easy for installation without any need for installation packages. These packages are easy to manage and distribute. Chatbots differ from other chatting applications as they do not contain any online status and or last seen and call with other users. There are different types of a chatbot available to be used in web applications. The open-domain chatbot is used to retrieve all general information like general knowledge, weather forecast, etc. For example alexa bot, cortana bot from windows siri bot from apple or google assistant.

The main contribution of our work is the development of chatbot using Fuzzy logic, natural processing algorithms like pattern parsing, sentiment analysis, etc., Some of the technologies like machine learning and its algorithm are used in a chatbot for parsing the sentence. The algorithms of machine learning like Bayesian network, neural network, recurrent neural network are used in this

chatbot. With the help of the bag of words (BOW), the detection of cyberbullying can be done easily. The advantage behind this chatbot is user-friendly and can get related information according to the user queries as well as avoidance of bully words.

2. PROPOSED METHOD

This proposed system is to activate dynamic answers using mp3 modules with a chat-bot. It uses chat-bot with a speaker and a mouth action with Arduino microcontroller connected to a servo module which keeps monitoring the connected actions. The connected water motor can be turned on or off using a chat app bot which we have to develop separately. The final output is that when we turn on or off the load using chatbot app after chatbot will convey the respective answers for our questions using mouth action and speaker the mouth action connected to the microcontroller using a servo motor and speaker connected through mp3 SD card-based modulator. We can also monitor the status using LCD.

3. OBJECTIVE

To design a low-cost device to optimize voice recognition, accuracy and less delay to detect the disease of the patients and the severity of the disease. Industrial data can be stored in the chatbot for fast remembrance. To design a chatbot that is helpful for blind and deaf people.

4. BLOCK DIAGRAM

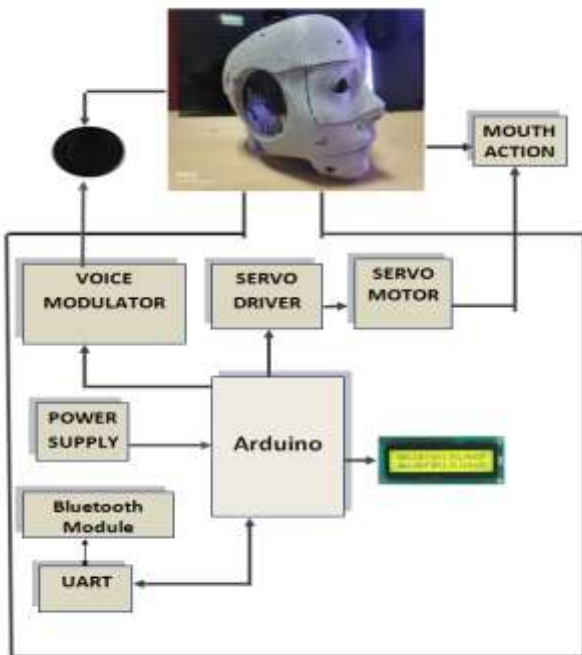


Fig 1-Block diagram

4.1 ARDUINO UNO

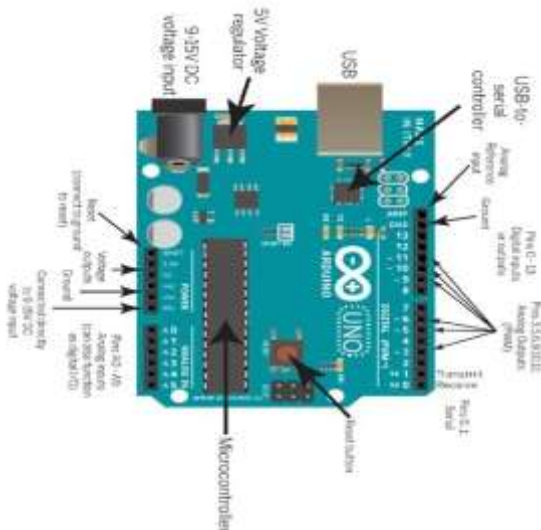


Fig 2-Arduino Board

An Arduino is a microcontroller-based kit which can be either used directly by purchasing from the vendor or can be made at home using the components, owing to its open-source hardware feature. It is used in communications and in controlling or operating many devices. It was founded by Massimo Banzi and David Cuartielles in 2005. The Arduino Uno is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the

microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started. [2]

4.2 BLUETOOTH



Fig 3- Bluetooth

Bluetooth is a telecommunications industry specification that describes how mobile phones, computers, and personal digital assistants (PDAs) can be easily interconnected using a short-range wireless connection.

Using this technology, users of phones, pagers, and personal digital assistants can buy a three-in-one phone that can double as a portable phone at home or in the office, get quickly synchronized with information in a desktop or notebook computer, initiate the sending or receiving of a fax, initiate a print-out, and, in general, have all mobile and fixed computer devices be coordinated. [2]

The Bluetooth standard, like WiFi, uses the FHSS technique (Frequency-Hopping Spread Spectrum), which involves splitting the frequency band of 2.402-2.480 GHz into 79 channels (called hops) each 1MHz wide, then transmitting the signal using a sequence of channels known to both the sending and receiving stations. Thus, by switching channels as often as 1600 times a second, the Bluetooth standard can avoid interference with other radio signals.

Bluetooth works by the simple principle of sending and receiving data in the form of radio waves. Every Bluetooth enabled device has a card-like attachment known as the Bluetooth adapter. It is this Bluetooth adapter that sends and receives data.

A Bluetooth adapter has a particular range of connections. One electronic adaptor can notice another Bluetooth device only if the second device is present within the range of the first device. When they are within the range, they can strike up a connection between themselves. Striking up the connection between two Bluetooth devices is known as the pairing of devices.

4.3 LIQUID CRYSTAL DISPLAY



*Fig 4- LCD 16*02*

We are using the LCD 16*02 display module to display the PPM levels of ammonia gas in the breath sample. It contains 16 pins. The term LCD stands for liquid crystal display. It is one kind of electronic display module used in an extensive range of applications like various circuits & devices. These displays are mainly preferred for multi-segment light-emitting diodes and seven segments. The main benefits of using this module are inexpensive; simply programmable, animations, and there are no limitations for displaying custom characters, special and even animations. The R/W pin Toggles the LCD between Read/Write Operation. The Pin 7-14 are data bits (DB0-DB7) pins used to send command or data to LCD. The pin 6 enable control pin must be held high to perform read/write operation. Pin 15 and 16 are the LED positive and negative Pin.☐

When sufficient voltage is applied to the electrodes the liquid crystal molecules would be aligned in a specific direction. The light rays passing through the LCD would be rotated by the polarizer, which would result in activating/highlighting the desired characters. The power supply should be of +5v, with maximum allowable transients of 10mv. To achieve a better/suitable contrast for the display the voltage at pin 3 should be adjusted properly.

The ground terminal of the power supply must be isolated properly so that voltage is induced in it. The module should be isolated properly so that stray voltages are not induced, which could cause a flicking display.

LCD is lightweight with only a few, millimeters thickness since the LCD consumes less power, they are compatible with low power electronic circuits, and can be powered for long durations. LCD does not generate light and so light is needed to read the display. By using backlighting, reading is possible in the dark. LCDs have a long life and a wide operating temperature range. Before LCD is used for displaying proper initialization should be done. LCDs with a small number of segments, such as those used in digital watches and pocket calculators, have individual electrical contacts for each segment. An external dedicated circuit supplies an electric charge to control each segment. ☐

This display structure is unwieldy for more than a few display elements. Small monochrome displays such as those found in personal organizers, or older laptop screens. The pixels are addressed one at a time by row and column

addresses. This type of display is called passive-matrix addressed because the pixel must retain its state between refreshes without the benefit of a steady electrical charge. As the number of pixels increases, this type of display becomes less feasible.

Very slow response times and poor contrast are typical of passive-matrix addressed LCDs. High-resolution color displays such as modern LCD computer monitors and televisions use an active-matrix structure. A matrix of thin-film transistors (TFTs) is added to the polarizing and color filters. Each pixel has its dedicated transistor, allowing each column line to access one pixel. When a row line is activated, all of the column lines are connected to a row of pixels and the correct voltage is driven onto all of the column lines.☐

The row line is then deactivated and the next row line is activated. All of the row lines are activated in sequence during a refresh operation. Active-matrix addressed displays look "brighter" and "sharper" than passive-matrix addressed displays of the same size, and generally have quicker response times, producing much better images. A general-purpose alphanumeric LCD with two lines is 16 characters. So the type of LCD used in this project is 16 characters * 2 lines with 5*7 dots with the cursor, built-in controller, +5v power supply, 1/16 duty cycle.☐

4.4 ARDUINO IDE

Arduino is a microcontroller board based on ATmega328 that needs to be programmed and it is fed with a hex code version of the code written in the high-level language. The Arduino Integrated Development Environment (IDE) is a cross-platform application that is written in functions from C and C++. It is used to write and upload programs to Arduino compatible boards So, Arduino development boards are fed with the code via Arduino IDE. Embedded C language is used as a language to code on Arduino IDE. The Arduino IDE supplies a software library from the Wiring project, which provides many common input and output procedures. User-written code only requires two basic functions, for starting the sketch and the main program loop, that is compiled and linked with a program sub-main into an executable cyclic executive program with the GNU tool chain, also included with the IDE distribution. The Arduino IDE employs the program to convert the executable code into a text file in a hexadecimal encoding that is loaded into the Arduino board by a loader program in the board's firmware.☐

4.5 VOICE MODULE

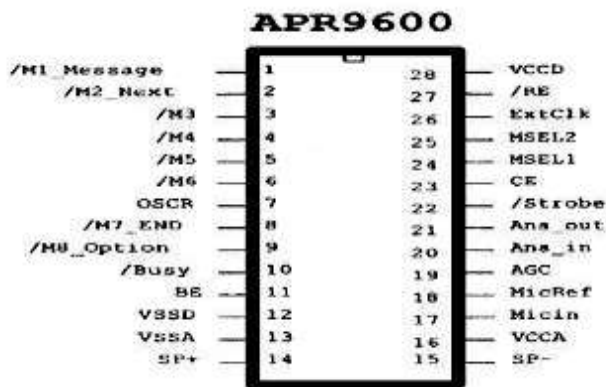


Fig 4.5- APR9600

APR9600 is a low-cost high-performance sound record/replay IC incorporating flash analogue storage technique. The recorded sound is retained even after the power supply is removed from the module. The replayed sound exhibits high quality with a low noise level. The sampling rate for a 60 second recording period is 4.2 kHz that gives a sound record/replay bandwidth of 20Hz to 2.1 kHz. However, by changing an oscillation resistor, a sampling rate as high as 8.0 kHz can be achieved. This shortens the total length of sound recording to 32 seconds.

Total sound recording time can be varied from 32 seconds to 60 seconds by changing the value of a single resistor. The IC can operate in one of two modes: serial mode and parallel mode.

In serial access mode, sound can be recorded in 256 sections. In parallel access mode, sound can be recorded in 2, 4 or 8 sections. The IC can be controlled simply using push-button keys. It is also possible to control the IC using external digital circuitry such as micro-controllers and computers.

The APR9600 has a 28 pin DIP package. The supply voltage is between 4.5V to 6.5V. During recording and replaying, current consumption is 25 mA. In idle mode, the current drops to 1A.

The APR9600 experimental board is an assembled PCB board consisting of an APR9600 IC, an electret microphone, support components, and necessary switches to allow users to explore all functions of the APR9600 chip. The oscillation resistor is chosen so that the total recording period is 60 seconds with a sampling rate of 4.2 kHz. The board measures 80mm by 55mm.

4.6 SERVO MOTOR

A servo consists of a Motor (DC or AC), a potentiometer, gear assembly, and a controlling circuit. First of all, we use gear assembly to reduce RPM and to increase torque of the motor. Say at the initial position of servo motor shaft, the position of the potentiometer knob is such that there is no electrical signal generated at the output port of the potentiometer.

Now an electrical signal is given to another input terminal of the error detector amplifier. Now the difference between these two signals, one comes from the potentiometer and another comes from other sources, will be processed in a feedback mechanism and output will be provided in terms of the error signal. This error signal acts as the input for motor and motor starts rotating. Now motor shaft is connected with a potentiometer and as the motor rotates so the potentiometer and it will generate a signal.

After some time the position of potentiometer reaches a position that the output of potentiometer is the same as the external signal provided. At this condition, there will be no output signal from the amplifier to the motor input as there is no difference between externally applied signal and the signal generated at potentiometer, and in this situation, the motor stops rotating.



Fig 4.5- SERVOMOTOR

5. CONCLUSIONS

We have developed chatbot as well as trained the chatbot using Arduino and so we can implement such techniques in android. Our proposed algorithm shows better performance and accuracy than existing so we decided to use it in the future. We aim to provide an effective and convenient solution regarding chatbots.

In this paper, we present a method to design a rapid method of Chatbot to help the Blind and Deaf People to remember the forgotten things. It is a very Useful Chatbot to Recognize the Voice and Playback.

REFERENCES

- [1] X. Li, J. Niu, M. Karuppiah, S. Kumari and F. Wu, "Secure and Efficient Two-Factor User Authentication Scheme with User Anonymity for Network-Based E-Health Care Applications", Journal of medical systems, Vol.40, No.12, 2016, p.268.
- [2] Megha Rathi, Aditya Malik, Daksh Varshney, Rachita Sharma, Sarthak Mendiratta, "Sentiment Analysis of Tweets using Machine Learning Approach".
- [3] Robert P. Futrelle, Jeff Satterley and Tim McCormack, "NLP-NG - A New NLP System for Biomedical Text Analysis", Biological Knowledge Laboratory College of Computer and Information Science Northeastern University, Boston, MA 02115 {futrelle, jsatt, timmc} @ccs.neu.edu.☐
- [4] A. Graesser et al., "Auto Tutor: An intelligent tutoring system with mixed-initiative dialogue", // Education, vol. 48, no. 4, 2005, pp.612-618

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