

IOT and AI BASED SMART HELPDESK ROBOT FOR STUDENTS IN COLLEGES AND UNIVERSITIES

1st Irshad Ahmad lone, 2nd Firdoos Ahmad Wani

¹Assistant Professor, ²Teaching Assistant

¹Department of Higher Education,

¹Government Degree College Kulgam, J&K,India
waqtkalamha@gmail.com

Abstract - Human life is becoming easier in this digital age as old manual methods are replaced by nearly everything being automatic. Nowadays, the internet has merged into daily life to the point where people feel powerless without it. IoT technology first made an appearance in the world of colleges many years ago. The deployment of wireless sensor networks has made it possible for many worldwide campuses to be recognized for their cutting-edge infrastructure. [6] IoT can facilitate student collaboration on projects, local or remote communication with peers, real-time analysis and annotation of course materials, and remote access to learning resources like virtual laboratories. In colleges a help desk is a single or group of human representatives who offers real-time student support. A help desk is essential for providing students with assistance and responding to their questions. [1] The institute's total performance will benefit more from automating and creating the Help desk robot. In essence, this study suggests the usage of IoT and Arduino as a technique that can be applied to student assistance or help desk.

IndexTerms - Smart arduino project, AI and IoT based Helpdesk, Students Helpdesk, Robot Helpdesk, College students of Kashmir

I. INTRODUCTION

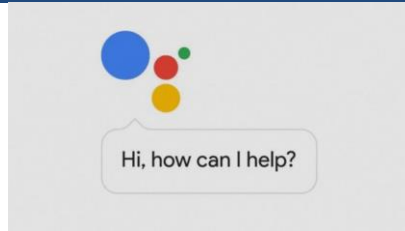
The network of physical items known as the Internet of Things (IoT) includes the devices, sensors, and network connectivity that allow these objects to gather and share data. To more directly integrate the physical world into digital systems and to increase efficiency and accuracy, the Internet of Things enables items to be sensed and controlled remotely through the existing network infrastructure. [2] IoT can communicate without the need for a human. In healthcare, communication, and automation some early Internet of Things applications have already been created. The interconnection of the objects in the network is a crucial necessity for an IoT. As we all know, a chatterbot, also known as a chatbot, is a computer program or device that converses with humans via text or audio. A chatbot is similar to the automated voices we hear on bank or customer service calls. Conversations take the form of written text using the textual technique also, just as WhatsApp. Here, the Arduino serves as the primary controller. The Arduino platform consists of a physical programmable circuit board (often referred to as a microcontroller) as well as programming software, or IDE (Integrated Development Environment), which can be run on a PC and is used to create and upload PC code to the circuit board. The Arduino Software (IDE), based on Processing, and the Arduino Programming Language (based on Wiring), can be used to accomplish this. The Arduino, in contrast to previous programmable circuit boards, allows one to upload code to the circuit board effectively using a USB link without the need for additional hardware. Additionally, the Arduino IDE uses a modified version of C++ that makes learning to program easier.

II. LITERATURE SURVEY

Before personal computers were ever invented, the first chatbot was introduced. Eliza was the name given to it when it was created by Joseph Weizenbaum in the MIT Artificial Intelligence Laboratory in 1966. [5]



Following then, other virtual assistants were introduced. Conversational assistants were initially introduced by Apple, Siri. [3] As the ideas gained traction, Google quickly released its Google Assistant for Android. Microsoft created Cortana as a response, following the example.



This was advanced with the introduction of smart speakers, which allowed speech communication between people and the bots. A distinct type of conversational user interface is represented by Alexa.



The "Chatter Bot Algorithm," developed by Michael Maudlin in 1994 and published in the book Julia, was used to respond to the questions. From this original concept, more efforts to establish a chatbot system were developed. To utilize the Chat-Bot program, the user must log in. The user can submit complaints and inquiries at that precise moment. When a user submits a question to the bot, the context of the inquiry is identified and NLP is used.

[4]Software Advice conducted a poll of IT professionals and found some intriguing patterns in the help desk software market. Surprisingly, 68% of respondents said they still use on-premise systems, despite the popularity of cloud-based help desk software. The survey also finds that 84% of responding organizations intended to raise their help desk software investment, with 44% of those companies citing the need for new capabilities as the primary driver.

III. IMPLEMENTATION/ METHODOLOGY

Students can ask for help from this sophisticated AI-based College Smart Helpdesk Robot. The system architecture is depicted in Fig. A. The Robot extends a warm welcome to the student before requesting a name so that the user can interact with the system. The student then speaks several inquiries about various college classifications. The system asks the student if it helped in answering after going through each step. The users can continue using the college helpdesk system by short clarifying their questions if they are unable to find the correct response.

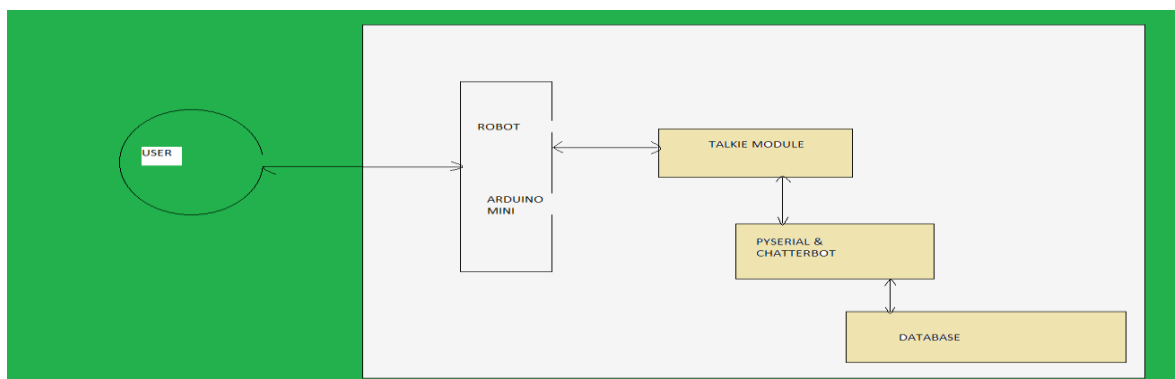


Figure .A (Architecture of Smart Helpdesk Robot)

The system turns the audio to text before utilising an NLP algorithm to find the keywords. The entire text is then divided up into individual words or sentences. After a specific amount of processing, the algorithm checks the accurate response in the database and uses the text-to-voice converter software to turn it into speech. The student is then given the response. If the Robot is unable to identify the solution to a particular query, it simply notes the issue and sends a message to the administrator asking them to update the database with the solution. In this fashion, the robot serves as an automatic helpdesk Assistant for the college students. This intelligent helpdesk robot can answer nearly all questions about academics, admissions, exams, departmental landscape, professors, and the most recent news of the institute.

The following is a list of materials required to create a smart student helpdesk robot:

- 1) Arduino Pro Mini
- 2) sound module
- 3) LM7805 regulator IC

- 4) An amplifier module
- 5) Speaker
- 6) audio jack
- 7) battery
- 8) library named “talkie”
- 9) PySerial, Python API module
- 10) ChatterBot library in python

IV. ADVANTAGES:

- 1) Deliver services quickly.
- 2) All time accessible.
- 3) Saves manpower.
- 4) Reduces the cost of operations.
- 5) Automates routine work.
- 6) Fulfils student needs and expectations

V. CONCLUSIONS

This project involved developing a college-specific helpdesk robot that can be specifically tailored to the education domain. By installing this robot in the college, it will solve student queries very accurately because it is a domain-specific helpdesk system. When a student engages with this robot, it will immediately and effectively responds to their exact questions.

VI. REFERENCES

- [1]: https://www.researchgate.net/publication/332162562_A_Machine_Learning_Based_Help_Desk_System_for_IT_Service_Management
- [2]: https://www.researchgate.net/publication/351554927_Internet_of_things_IoT
- [3]: https://www.researchgate.net/publication/336734161_A_Brief_History_of_Chatbots
- [4]: Help Desk Software Buyer Trends - 2015 (softwareadvice.com)
- [5]: Paper ELIZA - a computer program for the study of Natural Language Communication between man and machine (chatbots.org)
- [6]: https://www.researchgate.net/publication/325803863_Defining_the_IoT