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.2022.41638

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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

Aarogya Centre- A Complete Healthcare Website

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Abstract: ***During the COVID-19 pandemic, everybody was forced to restrict their human interaction to avoid the spread of coronavirus. All the doctors and other employees in the medical industry were working day and night to eradicate the virus. Getting health-related consultation from doctors was risky as an individual had to physically go to a doctor for a checkup. Artificial Intelligence (AI) is the fastest-growing field and is expanding rapidly in other work sectors including the medical sector. Our proposed system is to develop a platform in which all queries related to health can be fulfilled. To start, every individual will need to create a profile on the platform by providing a few details. The user can insert their previous medical records onto the profile so that they can store their entire medical history in one place. On the platform, there will be three modules, chatbot, video chat, and appointment booking. The chatbot can predict the disease and give healthcare advice according to details provided by the user. In the video chat module, the user will be able to communicate with a doctor through video call or only through chat. In the appointment booking module, users can book an appointment with different doctors and hospitals for checkups. With the help of the platform, an individual can save a lot of time and money for simple health-related problems. The platform would also be beneficial for people living in remote areas as they can easily access good medical consultations.***

Keywords: Artificial Intelligence, Chatbot, Web Development, Prediction, Disease, Query Processing.

I. INTRODUCTION

With increasing birth rate and decreasing death rate due to advancement in the medical field, it's found that the number of doctors is less to serve the need of the increasing population. During the COVID-19 pandemic, everybody was forced to restrict their human interaction. So, getting health-related consultations from doctors was risky as an individual had to physically go to a doctor for a check-up. Minor health-related issues can be resolved at home under proper assistance. So, in this case, an AI-powered platform can help to resolve these issues without leaving the comfort of home.

Artificial Intelligence (AI) can be defined as an industry that is related to the automation of intelligent behaviors and it must be based on applying theoretical principles as well as the operation of applicable models. It is the study of intelligent agents. The term "artificial intelligence" is applied when a machine mimics "cognitive" functions that humans associate with other human minds, such as "learning" and "problem-solving. Artificial Intelligence gives the supreme power to mimic the human way of thinking and behaving to a computer. According to Buchanan B. G., AI is created from fantasies in the 19th century, when science fiction writers had used the prospect of intelligent machines to foster non-human's intelligence, thence to make us think about our human characteristics.

A chatbot is a computer program that conducts a conversation via auditory or textual methods. These programs are designed to provide a clone of how a human will chat and thereby it acts as a conversational partner rather than a human. For various practical purposes like customer service or information acquisition, a chatbot is being used in the dialog system. Most chatbots use natural language processing for interpreting the user input and generating the corresponding response but certain simpler systems search for the keyword within the text and then provides a reply based on the matching keywords or certain pattern. Today, chatbots are part of virtual assistants such as Google Assistant and are accessed via many organizations' apps, websites, and instant messaging platforms. Non-assistant applications include chatbots used for entertainment purposes, research, and social bots which promote a particular product, candidate, or issue.

II. PRELIMINARIES

A. Motivation

We often need to consult a doctor for small problems and with the advancement of science and a general unbalance in the birth and death rate, the doctor-patient ratio is also highly affected. Plus, in situations like the ongoing pandemic, where we are restricted to the bounds of our homes, the need for an AI-powered platform that could help resolve these issues without leaving the comfort of our homes increases significantly.

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B. Limitation

For efficient working of the platform, an uninterrupted internet connection is required. To generate precise predictions, accurate data should be provided while conversing with chatbot. To generate precise predictions, accurate data should be provided to the chatbot. Video chat or message can be only done with the doctor who is available for video chat or message.

III. LITERATURE REVIEW

A. McKinsey & Company on Transforming healthcare with AI : [1]

"In their research paper, they have hailed the significant potential of Artificial Intelligence in the healthcare industry claiming it could change the way healthcare is delivered. A report with the European Union's EIT Health explores the way it can support improvements in care outcomes, patient experience, and access to healthcare services. It can increase productivity and the efficiency of care delivery and allow healthcare systems to provide more and better care to more and more people. AI can help in improving the experience of physicians, enabling them to spend a lot of time in direct patient care and reducing burnout."

B. Konstantin Kalinin on Medical Chatbots : [2]

"The best healthcare chatbots are those that run on exclusive AI/ML technologies, support non-scripting intent-based dialogs, protect PHI, and make an impression of an intelligent being overall." "An anytime physician appointment chatbot is the most straightforward variant of implementing AI-powered conversational technology without significant investment."

C. Cynthia Onyefulu on Online Appointment System and Services : [3]

"The online appointment system is regarded as "a win-win solution for patients and physicians…". This view was also expressed by other people. This may be one of the reasons why there are several types of research about online or web-based appointment systems. In India, the authors concluded that although the appointment system has several benefits, it is also affected by multiple factors such as the "arrival and service time variability, patient and provider preferences, available information technology, and the experience level of the scheduling staff". However, online scheduling, they stated, has more advantages compared to the traditional appointment system. According to these authors, in the traditional appointment system, the scheduling is done by coming to the facility, in such cases, the waiting time tends to be reasonably long. The waiting time for the advisee is minimized with the online appointment system."

D. Divya Madhu on Prediction of Disease Through AI : [4]

"She proposed an idea in which the AI can predict the diseases based on the symptoms and give the list of available treatments If a person's body is analyzed periodically, it is possible to predict any possible problem even before they start to cause any damage to the body. Some Challenges are research and implementation costs, and government regulations for the successful implementation of personalized medicine, they are not mentioned in the paper"

E. Priyasankari M on User Dialogue Technology : [5]

"She proposed an idea in which it uses user dialogue. User dialogue is a linear design that proceeds from symptom extraction to symptom mapping, where it defines the corresponding symptom then diagnosis the patient where it's a major or minor disease."

IV. PROPOSED SYSTEM

A. Architechture

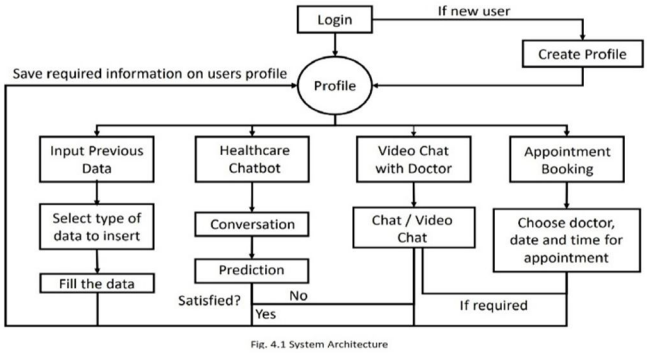
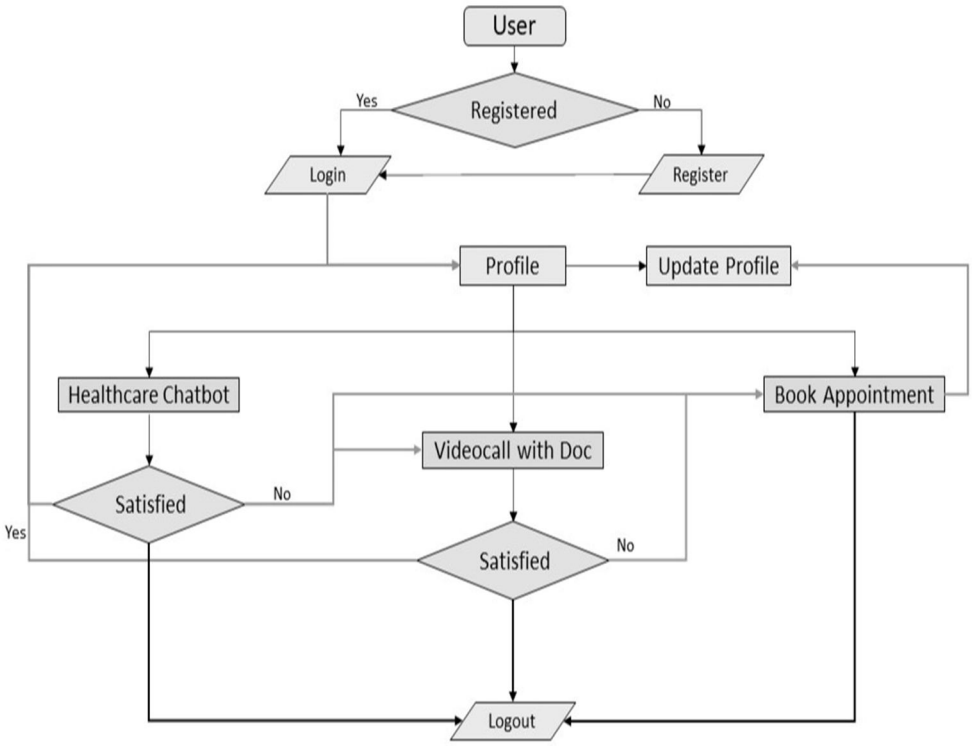


Fig. 4.1 System Architecture

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
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In our proposed, when a user will reach to our platform, firstly he has to login to his account and if he is a new user then he has to register on our website and after registering he has to use those credentials used at the time of register to logon to our portal. At first, he has to submit all his past medical history so that while communicating with doctor or chatting with chatbot, he can get a better solution for his disease. He / She can also book appointment at specific hospital with any specialist through our portal. A chatbot is provided, so that if a user has queries regarding his minor disease like sneezing, cold, etc. then he can chat with chatbot and according to his input a chatbot will give a precise solution on his disease and also chatbot will go through the suggestions given by doctor at the time of video call in textbox. When a user is done with his work then he can logout from his account.

B. Project Implementation



3.7.1 Flowchart

1) Module 1 (User Module)

The first Module is the User module where the user has to complete his profile details by registering on website. He / She has to fill the appropriate details for working of precise working of chatbot.

2) Module 2 (Chatbot)

Another module is of chatbot which works on ML algorithm ie. Bag of Words. For generating precise solution a user must have to save all data correctly.

3) Module 3 (Video-chat with Doctor)

This module works on the Web-RTC API for communication between user and doctor. Through this module user can chat with doctor using text and videocall.

4) Module 4 (Appointment Booking)

Through this module user can book appointment in hospitals with any specialist according to his / her need.

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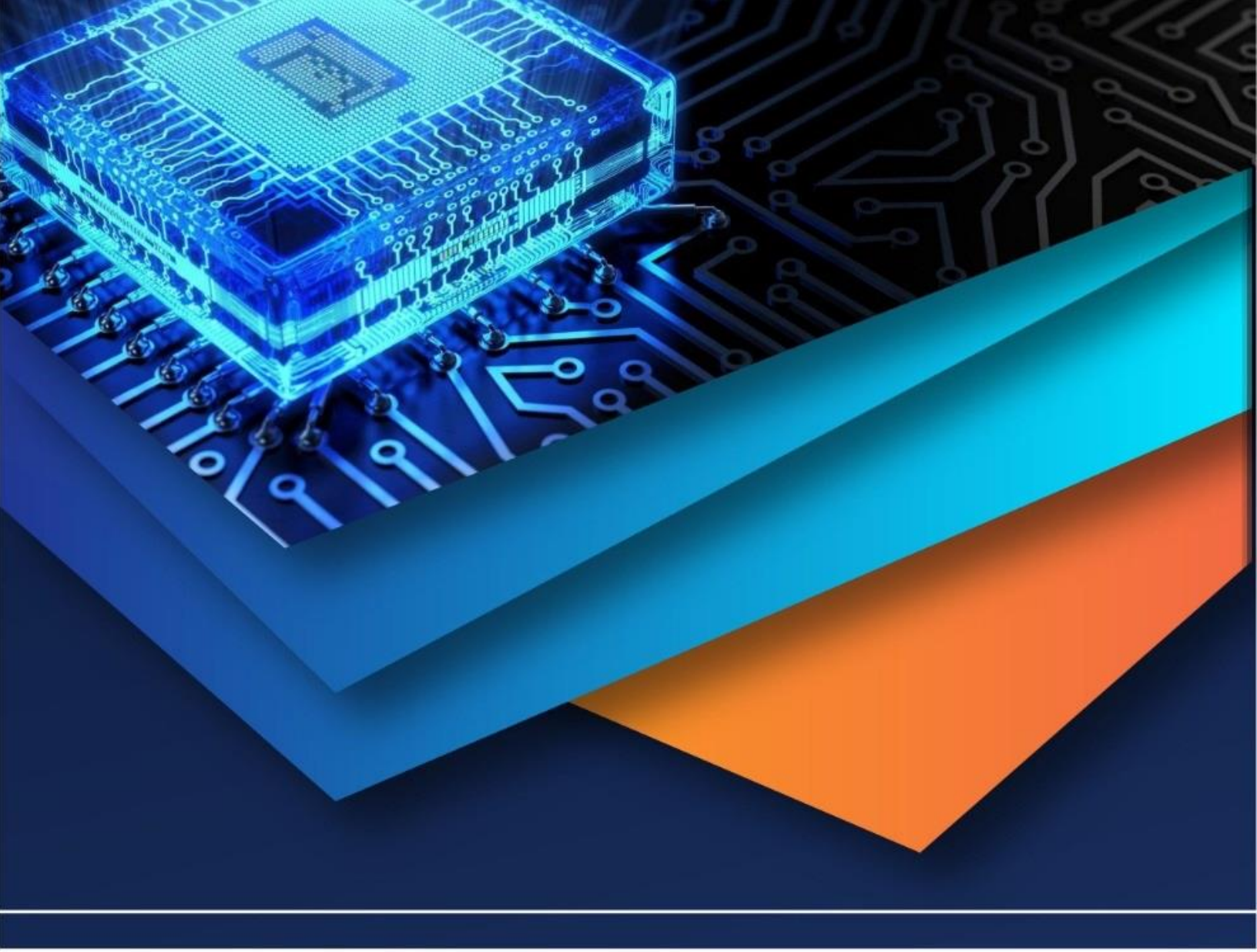
V. CONCLUSION

It has been a great pleasure for me to work on this exciting and challenging project. This project proved good for me as it provided practical knowledge of Python and MySQL. It also provides knowledge about the latest technology used in developing web enabled application and client server technology that will be great demand in future. This will provide better Opportunities and guidance in future in developing projects independently. We are going to provide online healthcare services to people so that the physical interaction between the patient and the doctor decreases. The use of Web RTC API in the project allows the user to hold a video appointment with a practitioner thus overcoming the shortcomings that arise due to the use of a chatbot because an AI/ML chatbot can simulate a conversation with a user but it can only entertain a conversation for which it has been trained.

We can therefore conclude, that the AI-powered platform can provide immediate quality medical consultation to everyone at any place with an internet connection, make communication between patient and doctor easier through online messaging and, in its rare failure, video chatting with a medical professional, and can also store users previous as well as current medical data. Thus, taking the concept of medical healthcare to a whole new level on an online platform.

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