HealthCare Chatbot during Epidemic like Novel Corona Using Dictionary Datatypes in Php and MySQL

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Abstract:

The huge number of deaths caused by the novel pandemic COVID-19, which can affect anyone of any sex, age and socio- demographic status in the world, presents a serious threat for humanity and society. At this point, there are two types of citizens, those oblivious of this contagious disaster's danger that could be one of the causes of its spread, and those who show erratic or even turbulent behavior since fear and anxiety invades our surroundings because of confinement and panic of being affected. In this paper we aim at developing a smart ubiquitous chatbot, called HealthCare Chatbot, for COVID-19 assistance during and after quarantine that communicates with a citizen to increase his/her consciousness towards the real danger of this outbreak. Furthermore, COVID-Chatbot is able to recognize and manage stress, during and after lockdown and quarantine period, using Php Scripting with Mysql database. The robust messages delivered from COVID-Chatbot and its way of communication could possibly help to slow the COVID-19 spread.

Key words*: Interacting Chatbot Module, Body Mass Ratio, Information   Module, Corona Tracker Model, Age Calculator

I.INTRODUCTION

During the novel coronavirus (COVID-19) pandemic, China and the rest of the world have been threatened by the new Covid-19 pandemic, which has killed thousands of people around the world; Mainly because it is a highly infectious disease, which has unleashed a problem in public health systems with the collection of evidence and possible suspected cases of Covid-19. Institutions like the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) have begun utilizing chatbots to share information, suggest behavior. There are some established nCOV-19 virtual agents integrated with messenger applications. The World Health Organization (WHO) has launched a dedicated messenger app in seven languages to keep the public safe from coronavirus infections. Likewise, the German government developed a 'fight COVID messenger bot', the Bangladesh-based SAJIDA Foundation developed an nCOV-19 information bot with a symptom checker and explanations of preventive measures. While in India, the Aarogya Setu mobile app has been recently developed to create awareness of nCOV-19 with the parallel connection of a chatbot . However, all of these bots are serving as medical consultants of the coronavirus, and none of them highlight the issues concerning remote patients in terms of the pandemic. Therefore, our proposed personal health chatbot for rural patients will act as a medical consultant, and also provides simple and relevant measures of not being infected by nCOV-19. Another advantage of this bot includes 24/7 accessibility and assesses the patient's condition in a more human-like way. Due to the built-in backend logic function, it will detect the virus's intensity and provide live interactions with doctors in the handling of dangerous conditions.

In recent years, chatbot use for health-related purposes has increased considerably, from supporting clinicians with clinical interviews and diagnosis to aiding consumers in self-managing chronic conditions. Chatbots have varied widely in their responses to questions about physical health about covid-19.Its users utilize the chatbot to find answers to their questions on protecting themselves from the Coronavirus, to understand the facts and news related to the disease, and to contribute to preventing its spread.Today's people are more likely addicted to internet but they are not concern about their personal health. They avoid to go in hospital for small problem which may become a major disease in future. Establishing question answer forums is becoming a simple way to answer those queries rather than browsing through the list of potentially relevant document from the web.A big disease such as covid-19 can start from small problems such as cold, fever,cough, headache which feels normal but it may beginning of big disease called covid-19. Therefore, our proposed personal health chatbot for rural patients will act as a medical consultant, and also provides simple and relevant measures of not being infected by COVID-19. Another advantage of this bot includes24/7 accessibility and assesses the patient's condition in a more human-like way. Due to the built- in backend logic function, it will detect the virus's intensity and provide live interactions with doctors in the handling of dangerous conditions

1.1. LITERATURE REVIEW

The paper gives the information regarding products which is useful for consumers to obtain what they want exactly. The system takes a plain text as input and answering all type of questions output by qualified user is the output. The purpose is to provide a generic solution to this problem. The database used in the project is MySQL. The illustration and execution of SQL in the pattern-

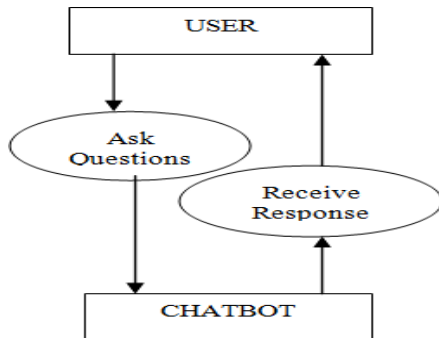matching   operation   is   required

Fig.1: Use Case Diagram of Chatbot Design

The following facts are kept in mind during designing a Chatbot:

A.   Selection of OS:

Windows is used for this project because it is user friendly. It is also robust.

B.   Creating a Chatbot:

For creating a Chatbot, a program has to be written. PHP programming language is used for programming. The Chatbot is created in such a way to help the user, improve the communication and amuse the user.

C.   Age calculator:

You can calculate your age where we need to know the risk of severe illness with COVID-19 increases with age with older adults at higher age.

D.   Body Mass Ratio:

BMR plays a significant role in COVID-19 severity in all age groups. obesity is an emerging independent risk factor for suspectibility and severity of corona virus disease.
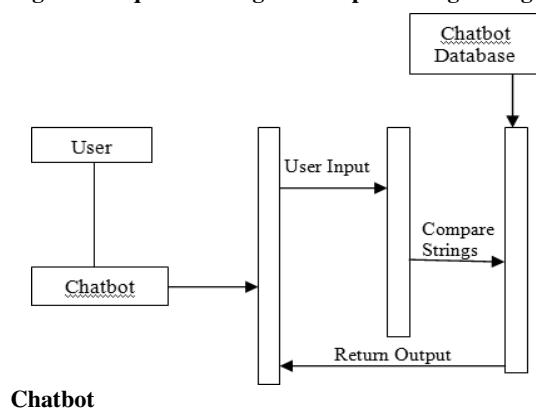
E. Simple:

The design of a Chatbot is very simple. It just answers to the questions asked by the user, if the question is found in the database

F.   Conversational and Entertaining:

The Chatbot responses are a way known to the user. The conversation follows a Basic English language and interacts in an easy to read manner. The conversation between the user and the Bot is entertaining. It is like talking to other person.

Fig. 2: Sequence Diagram Representing Design of the

Chatbot

II. RELATED WORK

The chatbot industry is still in the process of development but it is growing very fast. We implemented human chatbot interaction that will contribute to the health maintenance by solving the problems of many people. Moreover these people would not be embarrassed any more as they will ask for advice from a machine. Awareness about health can be spread using chatbots as chatbot is an interesting feature which can help and interact with people. people with certain   health problems feel embarrassed about their body, so with a talking agent this problem will be solved as people won"t feel shy to talk freely about their problems by providing companionship and support. The BMI will be calculated and the user will be categorized as overweight or underweight. The chatbot will contribute to health management by efficiently analyzing the problems of different people. This tracker provides the number of confirmed cases and deaths from novel coronavirus by country, the trend in confirmed case and death counts by country, and a global map showing which countries have confirmed cases and deaths. This tracker will be updated regularly, as new data are released.

2.1 PROCESSING THE USER QUERIES

This paper gives the information regarding Covid-19 which is useful for patients. Question Answering (QA) systems can be identified as information accessing systems which try to answer to natural language queries by giving answers suitable answers making a use of attribute available in natural language techniques. The system takes a plain text as input and answering all type of questions output by qualified   user   is   the   output.   The purpose is to provide a generic solution to this problem. The database used in the project is MySQL. The data of chatbot are deposited in the database. The database is appointed as information storage and predictor is used for storing.

III. METHODOLOGY

In March 2020, the World Health Organization (WHO) declared COVID-19 a pandemic, caused by the novel SARS-CoV-2 virus. Following the call from the WHO to immediately assess available data to learn what care approaches are most effective and evaluate the effects of therapies, this collection aims to report on original peer-reviewed research articles in methodological approaches to medical research related to COVID-19.As the coronavirus 2019 (COVID-19) pandemic has escalated across the globe, biomedical researchers have rapidly launched an enormous number of clinical research studies aimed at testing diagnostic technologies, therapies, and vaccines. Because of both the large scale and sporadic nature   of

We examined the availability of outcome data fromclinical trials launched during the H1N1, Ebola, and Zika outbreaks in order to test the hypothesisthat results dissemination did not occur rapidly enough to meet established WHO standards for a substantial proportion of human-subject trials completed during these three pandemic events.

IV. Architecture

The designed bot can handle user requests and identify message patterns with Personal Homepage Language (Php). PHP is an HTML- embedded, server-side scripting language software agents and gives the real human interactive experience to users. Depending on user responses, Php logic retrieves symptomatic keywords to assess the existing user medical conditions. Ultimately, we aim to make sure the user feels like they are having a conversation with a health specialist. The functionality of chatbot is defined in two ways: request analysis or return response. At first, chatbot evaluates the severity of the virus through feedback from a predefined questionnaire. Simultaneously, if the user fails to acknowledge precise answers, the bot will fail to provide the correct response. In its response return, after the evaluation of a patient's condition, the chatbot provides an obvious response in the form of either generic text or text retrieved from the knowledge base response.

To achieve the intended response, the fusion of Php with Mysql and JavaScript has been done, because Mysql is helpful for Access of Database and is a fully managed database service to deploy cloud-native applications.

The knowledge base is focused on user message response during the initiation of conversation it should be natural at responding with a suitable back-end logic. The idea behind this is to identify preliminary symptoms of nCOV-19 from the user location. Thereafter, it will display whether the user is likely to be infected or not. The idea behind this is to identify preliminary symptoms of nCOV-19 from the user location. Thereafter, it will display whether the user is likely to be infected or not.

After the user initiating the chat session, the bot engine starts questioning the person regarding symptomatic information. Once it has all of the necessary details, it finds the virus severity percentage that the user experienced and acts accordingly, by either making contact with health specialists or provides information regarding immediate preventive measures.
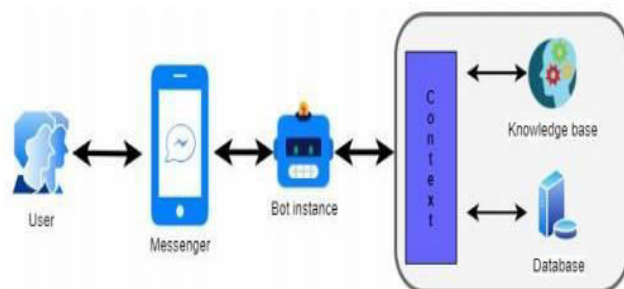

Figure.3: System architecture of chatbot.

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Trial identification:-

We identified eligible trials by searching ClinicalTrials.gov and the WHO International Clinical Trials Registry Platform (ICTRP) for all trials, as well as the Pan African Clinical Trial Registry for Ebola, and the Brazilian Clinical Trials Registry, Cuban Public Registry of Clinical Trials and Peruvian Clinical Trials Registry for Zika. An investigator experienced in the use of trial registries (CWJ) searched each registry using key words and MeSH terms relevant to each PHEIC event (Supplementary Appendix A). After these searches, we removed duplicate trial entries and reviewed the full text of the remaining registry records to assess eligibility. For each included trial, we then downloaded a dataset from the relevant registry database containing key methodologic and logistical information, including the intervention being tested, funding source, and enrollment status. Search for trial results and

publications for each included trial we determined whether results had been posted directly to the registry, and the date on which the results were posted. We also performed a comprehensive literature search to identify peer reviewed publications describingtrial results. Some registries, including ClinicalTrials.gov, encourage investigators to update registry entries with a link to PubMed-indexed manuscripts containing trial results. Additionally, ClinicalTrials.gov uses each entry's unique trial identification number (NCT number) to arial. For registry entries without a linked publication containing trial results, we conducted literature searches to identify relevant publications. The publication search strategy was created in consultation with a team of healthsciences research librarians, and involved searching MEDLINE via Pub-Med, Google Scholar.

Matching of registered trials and publications:-
We determined whether registry entries and publications identified by our search strategy matched by comparing the study title, trial design, interventions, number of participants, recruitment dates, study locations, investigators, and funding sources. A trial was considered published if we identified a peer-reviewed manuscript reporting un-pooled outcome data from the trial in question. Therefore, manuscripts that only described study methods without reporting trial results and those reporting results only as part of a pooled analysis were not considered to contain published results Study outcomes .We utilized the standards for disseminating clinical trial results established by the WHO as the basis for the out-comes of the present study. These standards require both the posting of results to a trial registry within 12 months of study completion and publication of trial results in a peer reviewed journal within 24 months of study completion .The primary outcome for this study was the presence or absence of publicly available results meeting either one of these established standards. To maintain consistency with the WHO standards, we did not consider non-peer reviewed publications or conference abstracts to fulfill the publication requirement. Additionally, we considered each trial's completion date to be the trials primary completion date, or the final date on which data were collected for the trial's primary outcome measure. Our secondary outcomes include full compliance with the WHO results dissemination standards, defined by meeting both the 12-month deadline to post results in a trial registry and the 24-month publication standard. We also report publication status in a peer reviewed journal at any time (regardless of whether publication met the WHO's 24-month standard), and availability of results in a trial registry at any time (regardless of whether this met the 12-month standard). Finally, we report the elapsed time between trial completion and public availability of results in a peer reviewed publication and in a trial registry.

PROJECT DESIGN

Bot Design Scheme
Php Component Design The Php works according to stimulus-response methods and provides simple dialogue modeling. As mentioned, it is a Scripting language with a tag basis. These tags are identifiers that insert commands and make code snippets in the chatbots. Php defines data object classes as objects responsible for modeling patterns in conversation. With the integration of JavaScript in our chatbot, it can detect patterns from user messages and provides precise and meaningful answers. Our chatbot also figures out if the user wants to check the infection status or just wants to know basic measures and symptomatic behavior of the COVID-19 virus. Pattern Recognition Given that a chatbot should understand the patterns of user's requests with predefined JavaScript component. In php, a predefined Dictionary Datatypes helps chatbot in recognition of virus symptoms and if itmatches, our chatbot looks for possible cases of being infected or if it crosses the threshold value immediately, it will connect to the health specialists. 5.2 Dataset and Threshold Values Assessment Any chatbot should be natural while responding to user responses and it needs to have a clear dataset and sustainable backend logic for outcome generation. At the Telemedicine department at the University of Camerino, we have developed a ten-question basic symptomatic questionnaire of COVID-19.

No.	Question	Type
1.	Do you have any kind of diabetes?	Yes/No
2.	Have you or your family been infected with nCOV-19?	Yes/No
3.	Do you know people in your immediate social environment who are or have been infected with the novel coronavirus?	Yes/No
4.	Are you closely interacting with other infected people in your region?	Yes/No
5.	Is your travel history associated with infected countries in the last two months?	Yes/No
6.	Have you used a bed or other premises previously used by someone who was infected by coronavirus?	Yes/No
7.	Have you been in contact with a suspected case-patient of COVID-19?	Yes/No
8.	Any shortness of breath?	Yes/No
9.	Are you facing a sudden rise in body temperature?	Yes/No
10.	Are you coughing often nowadays?	Yes/No

Once the engine retrieves the user feedback for the given questionnaire it will checks the condition case with the data dictionary in php MySQL and shows the answers to the user and the bot will also anticipate immediate preventative measuresto avoid direct contact with others. When the bot engine feels the severity of the user's it automatically alerts the users to contact health specialists immediately in this scenario, chatbot requests a doctor to get in touch with the user with useful clinical information.

Quality Evolution and Comparison

We considered ten different functional aspects of existing individual bots of COVID-19 that were included in this study to evaluate each performance. Primarily, each bot examines the visual look and implementation form on the website and the speech synthesis units. Simultaneously, to evaluate the knowledge base of reliably established bots, a similar line of questioning was asked for each virtual assistant. This enables us to understand language skills, conversation abilities, and text context of chatbots.

Table 2. Performance evolution and comparison of NCOV-19 bots (1: poor and 5: very satisfied).

Functionality	WHO nCOV-19 Launched Bot	Fight COVID Messenger Bot by Germany	SAJIDA Corona Bot Application in Bangladesh	Aarogya Setu in India	Our Bot
Visual Look	3	3	3	4.5	4.5
Form of Implementation on the Website	3.5	3.5	4	3.5	5
Knowledge Base	4.5	4	4	4.5	5
Speech Synthesis Unit	3	3.5	3	3	4.5
Knowledge presentation	5	4.5	4.5	4.5	5
Conversational Abilities, Language Skills and Context Sensitivity	4.5	3.5	4	4	4.5
Personalization	4	3.5	3	4	5
Personality Traits	4.5	4.5	4	4.5	4.5
Emergency Responses in Unexpected Situations	4.5	4	3	4	5
Possibility of Rating Chatbot	3.5	3	3	4	5
Overall Average	4	3.7	3.55	4.05	4.8

In addition, we explore other features like personality traits, personalization and emergency responses with possible user ratings. To assess the quality components of each bot, we used a standard measurement tool rating of 1 to 5 with denotations like 1: very poor, 2: poor, 3: average, 4: satisfied, 5: excellent. Transparent and feasible measures are used, as there is no need to include advanced statistical analysis . Scores of each functionality were given based on user feedback and online patient ratings. In the end, we consider the average score of ten functionalities to gain quality insight into the mentioned COVID-19 chatbots. From Table 1, it is clear that present bots have some functional limitations. We considered all of these problems while developing our new conversational agent. The WHO launched bot (4.0), and the Indian bot application Arogya Setu (4.05) had satisfactory ratings, followed by the other two bots, such as Fight COVID-19 from Germany (3.7), and the SAJIDA corona bot from Bangladesh (3.55).
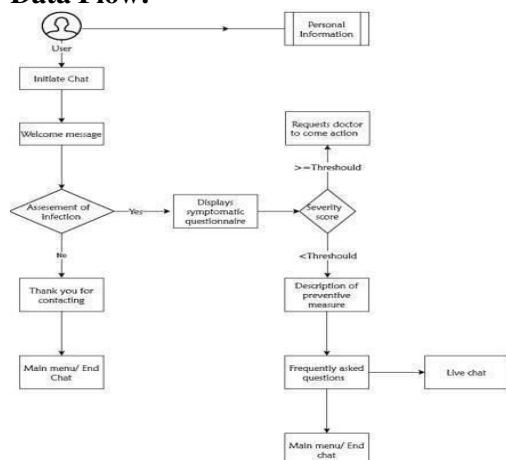
Data Flow:

Figure 2. Working functionality of the developed chatbot.

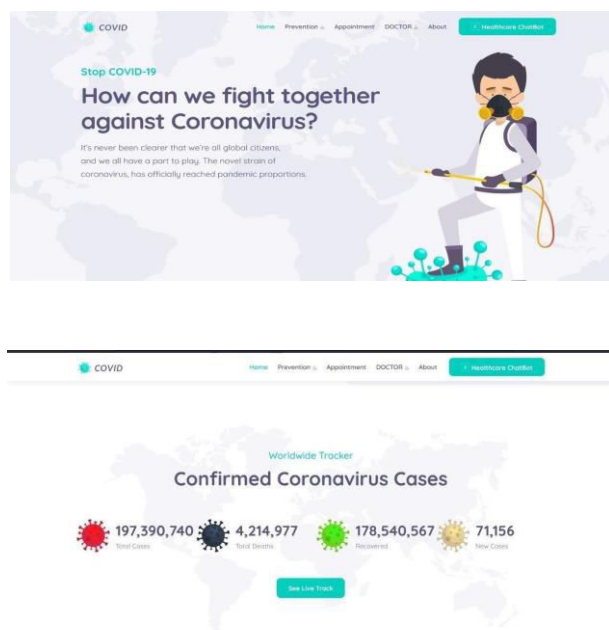It consists of a heterogeneous set of techniques and methods for building intelligent systems with cognitive capabilities of recognizing, classifying, reasoning, diagnosing, or having at least some of these properties. A list (incomplete) of the main problems covered by this discipline includes automatic reasoning, planning, diagnosis and automatic classification. It is well-suited for clinical diagnostic issues and the development of symptomatic description pathways when in need of private medical care. It will be started by identifying the most common patient pathologies who live in remote areas like mountains, forests, and slums. Because of the no availability of COVID-19 clinical information from medical experts, our designed conversational agent with an elaborating questionnaire could enable us to address general questions. The questionnaire threshold outcome is a simple statistical test that represents the origin of developing the AI system symptomatology section. In this study, we randomly selected four international chatbots for COVID-19, including three messenger bots and one Indian application with the built-in chat feature. A comparison of each application was done with ten relevant functional aspects mentioned. Each bot had some limitations and two of them only reached satisfactory outcomesratings. To overcome this, we designed a sophisticated chatbot application that surpassed the mentioned bots. During implementation, the appearance of a chatbot would play a vital role

in measuring quality standards. The bot's visual look resembles the targeted users and enhances their involvement or desire to initiate a chat session.

The adopted three messenger bots had an average visual quality, including graphics of a low quality. However, we maintain a good visual look to attract more users, and the knowledge base stores patient symptomatic information. Speech synthesis units have a special feature of converting written text into a synthetic speech. We felt that no existing chatbot possessed this function with a unique custom voice coupled with a shutdown option. Conversational ability, personalization, and personality traits will be vital to identify symptomatic behavior of the COVID- 19 pandemic. Single embedded links can present preventive measures, and these links work as phrased tag words to the user's input for ongoing conversation. In an emergency, the chatbot provides patient location, symptomatic data, and the infection severity score to a doctor or healthcare organization's automatic voice message alert. This data is then compared with the chatbot clinical knowledge base and delivers preventive actions to the local user. Similarly, it offers a chance to speak with a doctor 24/7 with a live chat feature; the user can feel confident in sharing their personal information of mental health or insight symptomatic behavior of the COVID- 19 virus.
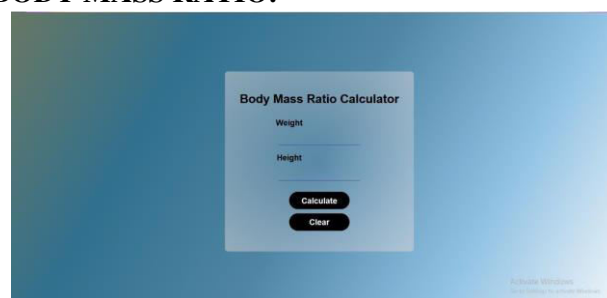
RESULTS:
1.FRONT END:
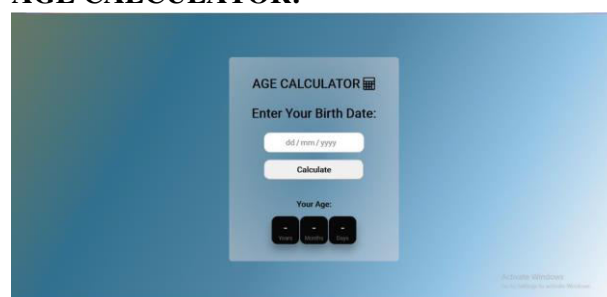

CHATBOT:

CORONA TRACKER:

BODY MASS RATIO:

AGE CALCULATOR:

Conclusion & Future Scope

A chatbot is a great tool for conversation. Here the application is developed to provide quality of answers in a short period of time. It removes the burden from the answer provider by directly delivering the answer to the user using an expert system. The project is developed for the user to save the user their time in consulting the doctors or experts for the healthcare solution. These shows us how the chatbots are improving the state of healthcare in India and will be going very far with its use in a greater number of tasks. It will increase reliability and cost effectiveness to the current scenario of health which proves chatbots to be a boon to mankind. Chatbots have the potential to revolutionize healthcare. They can substantially boost efficiency and improve the accuracy of symptoms collection and ailment identification, preventive care, post-recovery care, and feedback procedures. Healthcare Chatbots, by its very nature, will drive the transformation that

triggers this change.

With the technological advancements of AI, chatbots have come out to be a great tool for quick and easy automation. Ever since they grew popular among the E- commerce and Customer service sectors, many industries have been coming up with ways to implement this technology in their businesses, including healthcare. In fact, there are many chatbot companies coming out with innovative use-cases for their bots. But for a deeper understanding of what exactly do chatbots do in the healthcare industry, we'll have to go step-by-step!

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