Doctor AI Chat Bot with Live Covid -19 Updates

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Abstract : Healthcare is essential for a good life. Unfortunately, consultation with a doctor can be difficult to obtain, especially if we need advice on non-life threatening problems. The proposed idea is to create a system with **Artificial Intelligence** that can meet the requirements. Medical chatbot is built with medical applications having the potential to reduce healthcare cost and improves accessibility to medical knowledge. Some Chatbot's are compact medical reference books, which are useful for patients and for those who want to learn more about health.

The real benefit of the chatbot is to provide advice and information for an healthy life. A text-to-text diagnosis bot engages patients in conversation about their medical issues and provides a personalized diagnosis based on their symptoms. Hence, people will have an idea about their health and have the right protection.

1. INTRODUCTION

Since the discovery of the Coronavirus (nCOV-19), it has become a global pandemic. At the same time, it has been a great challenge to hospitals or Health care staff to manage the flow of the high number of cases. Especially in remote areas, it is becoming more difficult to consult a medical specialist when the immediate hit of the epidemic has occurred.

Thus, it becomes obvious that if effectively designed and deployed chatbot can help patients living in remote areas by promoting preventive measures, virus updates, and reducing psychological damage caused by isolation and fear. This study presents the design of a sophisticated artificial intelligence (AI) chatbot for the purpose of diagnostic evaluation and recommending immediate measures when patients are exposed to nCOV-19.

In addition, presenting **a virtual assistant** can also measure the infection severity and connects with registered doctors when symptoms become serious.

2. Objectives of the Study:

All healthcare providers are always willing to help their patients, but the overwhelming workload doesn't always let them provide the best service. **A 21st medical practice can rely on a chatbot to ensure 24/7 availability**, answer repetitive questions, or schedule appointments. What else can medical chatbots offer to the industry?

- Immediate access to care – A chatbot quickly connects you with the right specialist and alerts the care teams of urgent changes in patients and emergencies.
- Health monitoring and additional information – Patients need more than urgent medical attention. So, ongoing, post-discharge care can be virtually assisted by a bot.
- Easy-to-use for doctors and patients – Conversational interfaces are very accessible and don't have the complexities and learning curve typically associated with new technology.
- Scalability – With technology, healthcare companies can deliver customer service without requiring additional resources (like human staff).
- Convenient for a mobile-first consumer base – Mobile phones are one of the preferred methods of communication with brands, especially for certain demographics. Medical institutes can cater to that audience.
- Improved patient satisfaction – These applications help overcome staff shortages with robotic assistance. No issue will be left unattended.
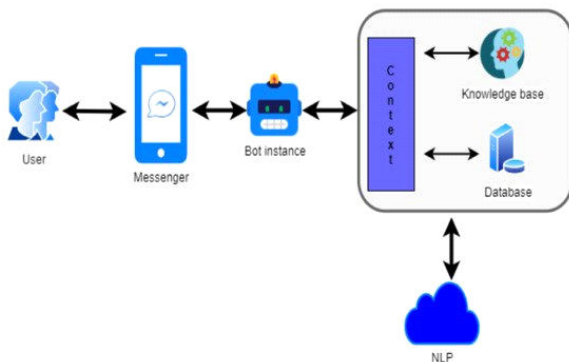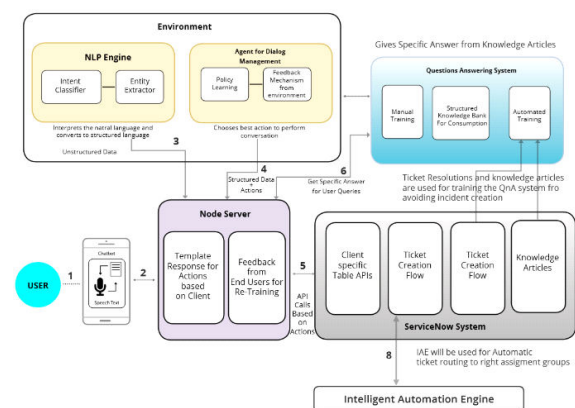

3. ChatBot Architecture:

Chatbot architecture is the heart of chatbot development. Based on the usability and context of business operations the architecture involved in building a chatbot changes dramatically. So, based on client requirements we need to alter different elements; but the **basic communication flow remains the same**. Learn how to choose the right chatbot architecture and various aspects of the Conversational Chatbot.

3.1. Choosing the Right Chatbot Architecture

Choosing the correct architecture depends on what type of domain the chatbot will have. For example, you might ask a chatbot something and the chatbot replies to that. Maybe in mid-conversation, you leave the conversation, only to pick the conversation up later. Based on the type of chatbot you choose to build, the chatbot may or may not save the conversation history. For narrow domains a pattern matching architecture would be the ideal choice. However, for chatbots that deal with multiple domains or multiple services, broader domain. In these cases, sophisticated, state-of-the-art neural network architectures, such as Long Short-Term Memory (LSTMs) and reinforcement learning agents are your best bet. Due to the varying nature of chatbot usage, the architecture will change upon the unique needs of the chatbot.

Following are the key components of a conversational chatbot architecture:

- Question and Answer System
- Plugins/Components
- Platform integration
- ManyChats
- DialogFlow

4. Literature Survey:

4.1. Endurance: A Companion for Dementia Patients: Many people suffering with dementia retain much of their conversational abilities as their illness progresses. However, the shame and frustration that many dementia sufferers experience often make routine, everyday talks with even close family members challenging. That's why Russian technology company Endurance developed its companion chat bot. Many people with Alzheimer's disease struggle with short-term memory loss. As such, the chatbot aims to identify deviations in conversational branches that may indicate a problem with immediate recollection – quite an ambitious technical challenge for an NLP-based system. In addition, since the chatbot is a cloud- based solution, physicians and family members can review communication logs taken from the bot to identify potential degradation of memory function and communicative obstacles that could signify deterioration of the patient's condition. Interestingly, the as-yet unnamed conversational agent is currently an open- source project, meaning that anyone can contribute to the development of the bot's codebase. The project is still in its earlier stages, but has great potential to help scientists, researchers, and care teams better understand how Alzheimer's disease affects the brain. A Russian version of the bot is already available, and an English version is expected at some point this year.

4.2. Casper: Helping Insomniacs Get through the Night: If you suffer from insomnia, you'll know that the feeling of almost suffocating loneliness – the idea that everyone else in the world is resting peacefully while your own mind betrays you with worries and doubts – is among the worst parts of not being able to sleep. Enter Casper's amazingly named Insomnobot 3000 (which truly is one of the most tongueincheek, retro-futuristic names for a chatbot I've ever come across), a conversational agent that aims to give insomniacs someone to talk to while the rest of the world rests easy. At this point, Insomnobot 3000 is a little rudimentary. The responses offered by the agent aren't quite right. But I'm not sure whether chatting with a bot would help me sleep, but at least it'd stop me from scrolling through the never-ending horrors of my Twitter timeline at 4 a.m.

4.3. UNICEF: Helping Marginalized Communities Be Heard: So far, with the exception of Endurance's dementia companion bot, the chatbots we've looked at have mostly been little more than cool novelties. International child advocacy nonprofit UNICEF, however, is using chatbots to help people living in developing nations speak out about the most urgent needs in their communities. The bot, called U-Report, focuses on largescale data gathering via polls – this isn't a bot for the talkative. U-Report regularly sends out prepared polls on a range of urgent social issues, and users (known as "UReporters") can respond with their input. UNICEF then uses this feedback as the basis for potential policy recommendations. U Report sent a poll to users in Liberia about whether teachers were coercing students into sex in exchange for better grades. Approximately 86% of the 13,000 Liberian children U-Report polled responded that their teachers were engaged in this despicable practice, which resulted in a collaborative project between UNICEF and Liberia's Minister of Education to put an end to it.

ALICE – which stands for Artificial Linguistic Internet Computer Entity, anacronym that could have been lifted straight out of an episode of The XFiles – was developed and launched by creator Dr. Richard Wallace way back in the dark days of the early Internet in 1995. For all its drawbacks, none of today's chatbots would have been possible without the groundbreaking work of Dr. Wallace.

5. Research Methodologies:

5.1. Usage of Health Care Chatbots

A total of 30% (30/100) of participants indicated that they had direct personal experience with the use of chatbots for health-related issues. Physicians were also given a list of currently available health care chatbots, to examine their familiarity with some of the interfaces that could be potentially accessed by patients. Table 1 shows physicians' use of these health care chatbots, which are intended to provide personalized health and therapy information, provide relevant products and services to patients, as well as suggest diagnoses and recommend treatments based on patients' symptoms. The findings indicated that most of the currently available chatbots were not generally used or heard of by physicians.

Of the 30 participants who have used health care chatbots previously, 4 (13%) were very satisfied, 10 (33%) were somewhat satisfied, 8 (27%) were neither satisfied nor dissatisfied, and 8 (27%) were somewhat dissatisfied with their application. Of all the physicians in the survey, 18% (18/100) stated that their patients use health care chatbots (24%, 24/100, stated that patients did not use them), but the majority (58%, 58/100) were unsure or did not know whether their patients use them.

In total, 42% (42/100) of physicians believed that chatbots are either very important (9%, 9/100) or somewhat important (33%, 33/100) in health care, whereas 26% (26/100) believed that they are somewhat unimportant (18%, 18/100, 18%) or very unimportant (8%, 8/100); 32% (32/100) of physicians believed that they are neither important nor unimportant. Similarly, 44% (44/100) of physicians stated that they would be

very likely (9/100, 9%) or somewhat likely (35%, 35/100) to prescribe the use of health care chatbots to their patients within the next 5 years; 34% (34/100) of physicians stated that they would be somewhat unlikely (22/100, 22%) or very unlikely (12/100, 12%) to do so. A total of 40% (40/100) of physicians also indicated that they would be very likely (11/100, 11%) or somewhat likely (29%, 29/100) to recommend the prescription of health care chatbots to their HCP colleagues, whereas 37% (37/100) indicated that they would be somewhat unlikely (25%, 25/100) or very unlikely (12%, 12/100) to do the same.

5.2. Perceived Benefits of Health Care Chatbots to Patients

Participants were asked to what extent they thought health care chatbots would benefit patients in specific areas of health management (Table 2). An average of 42% (42/100) agreed to some extent in the benefits associated with health care chatbots, whereas an average of 25% (25/100) disagreed to some extent in these same potential benefits. More than half of physicians agreed that health care chatbots could help patients better manage their own health (54/100, 54%), improve access and timeliness to care (53%, 53/100), or reduce travel time to their HCP (52%, 52/100); almost half of physicians believed that health care chatbots could prevent unnecessary visits to HCPs (49/100, 49%) or that patients may disclose more information to chatbots compared with HCPs (41%, 41/100).

In terms of specific health-related outcomes of chatbot use for patients, an average of 45% (45/100) of physicians believed in some type of physical, psychological, or behavioral health benefit to patients (Table 3). More than half of physicians believed that health care chatbots could improve nutrition or diet (65%, 65/100), enhance medication or treatment

adherence (60%, 60/100), increase activity or exercise (55%, 55/100), or reduce stress (51%, 51/100).

6. Sources of data:

On a fundamental level, a chatbot turns raw data into a conversation. This data is usually unstructured (sometimes called unlabelled data, basically, it is a right mess) and comes from lots of different places. A chatbot needs data for two main reasons: to know what people are saying to it, and to know what to say back.

Consider a simple customer service bot. The chatbot needs a rough idea of the type of questions people are going to ask it, and then it needs to know what the answers to those questions should be. It takes data from previous questions, perhaps from email chains or live-chat transcripts, along with data from previous correct answers, maybe from website FAQs or email replies. All of this data, in this case, is training data.

7. Modules Overview:

• **Informative website:** It is a website containing all the information and a landing page to interact with the chat bot.

• **Doctor AI ChatBot:** It is a chat bot widget integrated within the website for the user to interact easily using any web browser on any device with an internet connection.

• **Live Covid-19 Updates:** This modules contains two parts which are a statistics table showing the number of cases and recovered patients using the public API provided and a graphical map representation of the world map with same data.

8. CONCLUSION AND FUTURE WORK

Chatbots have been on the rise since a couple of years and have already faced a wide adoption. They are bringing a new way for businesses to communicate with the world and most importantly with their customers and with the rise of emerging technologies and Artificial Intelligence (AI). Proving their usability in the field of customer support, the chatbots can also be extended to help users mentally like a companion. Our chatbot, **Doctor AI ChatBot**, is one such approach. It helps the adolescent users to talk freely about their mental conditions without being hesitant about it. It proves to be a great help towards society as mental health is a topic of grave concern especially in the youngsters. The future scope of this project would involve analyzing the different kinds of emotional disturbances faced by the teenagers and their causes. This would help to evolve happier generations. The concept of RNN can be used for implementation of a conversational chat bot.

9. Future work can be done:

A payment gateway can be integrated to book an online appointment with a doctor.

What Are the Benefits of Online Payment for Doctor Appointment?

• 24*7 booking: Anytime Anywhere.

• Organize your schedule better.

• Minimize patient no-shows.

• Making employees and staff more productive.

10. REFERENCES

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