Healthcare Chatbot System using Artificial Intelligence

Himani Mittal, Varun Srivastava, Shri Krishna Yadav and
Suraj Kumar Prajapati

July 16, 2021

Healthcare Chatbot System using Artificial Intelligence

Dr. Himani Mittal[1] , **Varun Srivastava[2], Shri Krishna Yadav[3], Suraj Kumar Prajapati[4]**

[1]Associate Professor, E&C, R.K.G.I.T. GHAZIABAD
Email:hima9fec@rkgit.edu.in
[2] Department of ECE. R.K.G.I.T GHAZIABAD
Email:26octobervaru@gmail.com)
[3]Department of ECE. R.K.G.I.T GHAZIABAD
*Email:*sikera86@gmail.com*)*
[4]Department of ECE. R.K.G.I.T GHAZIABAD
Email:surajkrprajapati0804@gmail.com

Abstract

Artificial intelligence (AI) is now a days increasingly being used in healthcare. Here, AI-based chatbot systems can act as automated chat bot sysytem, capable of abet health, providing education, and potentially prompting behaviour change. Exploring the motivation to use health chatbots is required to predict intake; however, few studies to date have blow their acceptability. This research aimed to explore participants' willingness to engage with AI-based health care chatbots. With India's growing population, rising birth rate, and declining death rates due to advances in the medical field have found that the numbers of doctors have dwindled to meet the growing demand for the population. This situation can be better understood when we travel to cities in public hospitals where low availability of doctors is a major cause of improper treatment of patients and in some cases the resulting death. Sometimes even doctors can make the mistake of providing appropriate treatment results in a patient's death. To deal with such cases there is a need for a smart chatbot and Intelligent that can give advice to doctors and sometimes even patients about what to do in such situations that ultimately lead to the saving lives of hundreds of people. A situation because sometimes doctors can make a mistake while looking for symptoms but a specially designed machine cannot make such a mistake. This AI-based medical discussion can make a decision based on the patient's request. In this case, it uses its own database and in some cases where something is not available in its database at the request of the user, it collects information from a search engine like Google and provides it to the user in Audio format as Google does.

Keywords: Health care, Chatbot, AI, Symbols, Database, Google

Introduction

Chatbots, as a part of AI devices, are natural language processing structures performing as a digital conversational agent mimicking human interactions. While this generation remains in its developmental phase, fitness chatbots may want to probably growth get right of entry to to healthcare, enhance doctor–affected person and clinic–affected person verbal exchange, or assist to control the growing call for for fitness offerings consisting of through faraway testing, remedy

adherence tracking or teleconsultations. The chatbot generation permits for such sports as precise fitness surveys, putting in place non-public fitness-associated reminders, verbal exchange with medical teams, reserving appointments, retrieving and analysing fitness facts or the interpretation of diagnostic styles considering behavioural signs consisting of bodily activity, sleep or nutrition.nine Such generation may want to probably modify the shipping of healthcare structures, growing uptake.

Now the day posts may be visible at some stage in the enterprise to manual the consumer in keeping with their want. They are to be had at IRCTC with Dishachatbot's name, at banks, and at diverse on line journey corporations consisting of MakeMyTrip. As we pass closer to digitalization in which marketplace call for maintains to develop every day all of the time. Increasing Indian costs and the supply of junior medical doctors to serve the want for an enlargement populace is a main purpose of the want for scientific dialogue with inside the scientific enterprise. Even at any other time, Physicians could make a mistake while you make a decision approximately the purpose of signs in a affected person and as a consequence endanger a affected person's fitness. For example, all through the last decade of the 90's Mohammed Benaziza additionally called the 'splendid killer' changed into one of the main bodybuilders withinside the Bodybuilding enterprise. She died due to Hypokalemia (which means excessive tiers of potassium) in her frame. Because of this excessive potassium level, he changed into getting frame aches. The medical doctors could not apprehend what changed into going on and arrived at the belief that Mohammed has no potassium which creates cramps with inside the frame. So the medical doctors have positioned an excessive amount of potassium in his frame main to the unfold of a cramp closer to his coronary heart and in the end

death. Here it's far too many instances in which even medical doctors can do it in blunders. Therefore to keep away from this kind of scenario there may be a want for a scientific chatbot which can manual medical doctors approximately what to do in such important situations. Its use isn't restricted to as much as medical doctors however also can be used automatically someone as an emergency in which It can display the consumer approximately the right primary remedy the individual being handled changed into taken. And a disorder, without a doubt via way of means of risk affords solutions to 3 questions requested via way of means of the chatbot, it could choose the kind of disorder someone is struggling from. After all if one desires to recognise approximately protection measures and treatments to be taken while chatbot chat can and offer info concerning it.

Literature Review

Sometimes, sufferers' patients have hesitation to proportion their issues comfortably. That's why it may happen that the doctor fails to identify the disease and cannot provide satisfactory diagnosis. Ai based healthcare system provides a suitable way for patients to communicate without hesitation by text-to text conversation where by using natural language patient can share their symptoms so that based on their symptoms our system identifies disease and provide necessary solution and also day to day healthcare advice so that patient can avoid diseases and get more information about their health. The Chatbot system will act as a digtal medical doctor and allow patients to interact with the virtual doctor. For the development of this Chatbot natural language processing and pattern matching algorithm is used. It is developed using the GoogleDialogflow[1]. The Chatbot will act as a virtual doctor and make it possible for the patient to interact with the virtual doctor. Our

gadget focuses entirely at the evaluation of nlp to extract signs, that could make it less complicated for elderly, less technical users to communicate. [4] The Natural Language Processing permits users to ask a query. The machine understands the important elements from the users input that may relate to particular features in a data set, and gives an answer. The stored information contains the text file like the symptoms related to particular disease on the basis of which we can predict the disease. Paper uses Artificial intelligence for prediction of the disease based on the symptoms and gives the list of available treatments. [5] Pattern matching strategy is utilized as a part of most Chatbot and it is very regularly being referred to as a reply framework relying upon coordinating kinds. Patterns can be created by one self using logical operators that are AND, OR, NOT. [6] .The researcher used Watson's discussion tool designed and trained by the Blue blending platform. PriyasankariM [7] suggested an idea in which he uses the user dialogue. User dialogue is a straightforward continuous design from the issue of symbols to the symbols map, where available describes the corresponding symptom and diagnoses the disease patient where it is a major or minor disease. BenildaEleonor [8] paper introduces Pharmabot: A General Practitioner of Pediatric Medicine Chatbot. Pharmabot, which is a chatbot to discuss that is designed to provide, suggest, and provide information on its generic medicines for children.

Methods

There is a demand of this kind of machine that's beneficial in analysis and might make the analysis smooth and interacting like informal chat. We suggest a machine which is able to hack a communication with the consumer. We suggest a Chatbot so one can ask questions from customers to diagnose his or her trouble. It permits the affected person to at once have interaction with it and inform his or her trouble openly. The vintage Chatbot can be a patron verbal exchange machine and their fine attempt can be a query and solution web page on a web site . in the proposed machine the Chatbot will acquire records from sufferers related to their conditions. the information ought to attain the proper analysis. The machine facilitates customers to post their court cases and queries concerning their fitness. The Chatbot will make clear the consumer's signs with a chain of questions and consequently the symptom affirmation are going to be done. Each symptom being entered is as compared to the signs of the not unusualplace illnesses in the listing of illnesses in the database. The illnesses are shortlisted supported the pinnacle customers enter at the query evaluation. The correct disorder is diagnosed and certain to the pinnacle consumer via way of means of the Chatbot.

Methodology

The Health-Care Chat Bot System have to be written in Python and run Google conversation plateform Google Dialogue flow, GUI hyperlinks and a easy, reachable community API. The machine ought to offer a potential parallel operation and machine layout have to now no longer introduce scalability problems in regards to the quantity of floor computers, drugs or presentations linked at anybody time. The stop machine have to additionally permit for seamless recuperation, with out facts loss, from person tool failure. There ought to be a sturdy audit chain with all machine moves logged. While interfaces are really well worth noting that this machine is probable to comply to what's to be had. With that during mind, the maximum adaptable and transportable technology have to be used for the

implementation. The machine has criticality in to this point as it's far a stay machine. If the machine is down, then clients ought to now no longer note, or note that the machine recovers quickly (seconds).The machine ought to be dependable sufficient to run, crash and glitch loose extra or much less indefinitely, or facilitate blunders recuperation sturdy sufficient such that system faults are by no means discovered to its stop-customers.
.

Data Analysis

This segment describes the evaluation for each thematic class. Each segments ends with a precious of the findings from the literature evaluation.

Bot Response :This class consists of research on consumer-communication chatbots interplay, focusing on adaptive conversational behaviour expressed through conversational retailers in healthcare. Chatbots are certainly gaining self-gaining knowledge of capacity via purpose category and sample matching to deliver herbal interplay.

Bot Personality: The research targeted on consumer domination and undertaking with the bot even as concerned in the interplay.

● Character-pushed communicate. Chatbot communique is based on text. The bot should increase smooth connection with customers and deliver, even complex, statistics at some stage in a digestible manner. This creates content material local to the bot medium, on the grounds that customers chat with the bot as they may with a lover.

● Speaking in sure voice tone. Users connect to a bot earlier than beginning a

communication: the name, profile photo and bot description make a contribution in growing expectancies closer to the communication. Research has explored the electricity of conversational retailers to decide a social bond with customers through showing behaviors indicative of worrying and empathy.

● Speaking in one-to-one space. Research has proven that friction would possibly stand up from electricity variations among customers and consequently the device (the bot), in particular while concerned in one-to-one communication. Users would possibly try and exert their manipulate over the device or display aggressive attitudes closer to the bot agent Bot character should outline steps to manual customers to discover and control their intention. The bot have to be one step earlier than the consumer and infer consumer traits to evolve its reaction. for instance , the bot have to nation which subjects it covers while greeting the consumer, as underneath:

 Bot: I can help you song your each day food regimen and workout.

This manual results in one a number of the furnished alternatives being decided on through the consumer. we would want to recognise what motivates customers inside a communication and the manner this could be programmed into chatbot conduct. Bot character should replicate the suitable area it is employing. for instance , if the chatbot is gathering preliminary consumer records, then it have to gather the information step-through-step, as illustrated underneath.

Bot: you may insert your age underneath
User: I'm 30 years antique
Bot: Right, 30 years antique, and what does one have nutritional restrictions?

Response Flexibility: Conversational retailers have to take care of crucial cases,

like out of doors context questions. They targeted on human-to human vs human-to-bot communique and consequently the impact of each techniques for instance , through offering one-of-a-kind blunders messages as reaction to an equal query posed through the consumer. The bot have to cowl abnormal cases, like a key-word related to any other department of the selection tree or a key-word it really is absolutely inappropriate to the context. If the consumer asks a random query or hints the bot with unrelated questions, then it is vital that the bot now no longer repeat itself with a reaction inclusive of:

Bot: Sorry I didn't pretty get that!

If the bot maintains to deliver no records on exchange path of action, then the chance that a consumer will go away the bot is extraordinarily high.

Conversation Flow: on this the consumer-bot again communication factors that must be incorporated into the communication glide Moreover, if the consumer can't discover a method to his/her query, it's miles practical to characteristic an alternative for the consumer to deliver comments approximately the query. the motive is to prevent customers from getting annoyed and deliver steering instead of time and again saying "Sorry, I failed to recognize that", as underneath

User: what number sports do I even ought to carry out today?
Bot: you still have the following sports to carry out: act1, act2, act3, you may write the pastime to report.

Conversation Length: that is regularly related to the amount of statistics introduced through bot messages and consequently the manner it is structured. In fact, the whole chatbot structure is based on communication glide. All approximately humans are speaking with the bot for prolonged

durations, the communicate lacks vocabulary richness Unlike, GUI that defines policies for each interplay which regularly frustrates customers, CUI should be releasing of their familiarity, e.g.,

Bot: I can song your food regimen, sleep, tension and workout. Please pick out your alternatives: User: Anxiety Management

Dialogue shape: Dialogues have to be specific to a site and a demographic. This considers diverse functions to shape the communication in a manner that it considers consumer engagement and correctly covers the task. People generally tend to fashion their communique to healthy that of a chatbot . Using a communique tone that suits with consumer preferences, emotional nation, conduct and demographics will increase the opportunity of bot achievement to construct the proper interplay. To attain this, researchers use numerous modelling languages, speech popularity and different herbal language knowledge tools. The intention is to have a effective ontology capable of construct communique communicate and stumble on consumer emotional states and intents. Chatbot scripting languages, inclusive of Chat Script and AIML (Artificial Intelligence Markup Language) are utilized in phrase matching in opposition to a selection of debate styles to provide a coherent solution following a number responses related to such styles . For example, the sample may want to be:

User: What became my workout plan remaining month.
Bot: Preparing all beyond workout plans.

Results
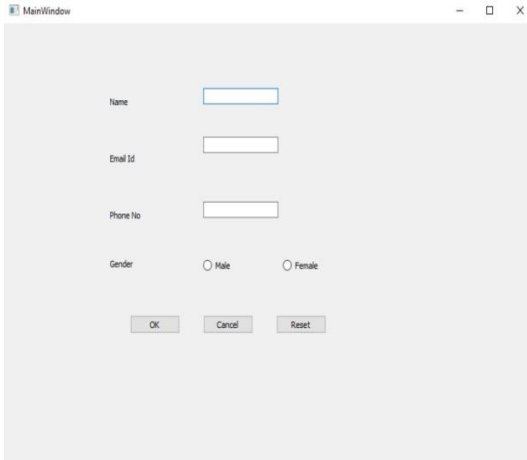
Snapshot of Result:

- Snapshot
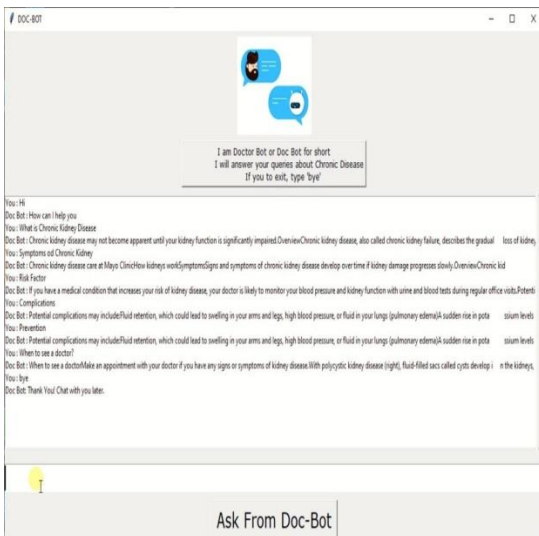
- Analysis of Result

Figure 1 Registration page

Figure 2 Chatbot Dialog box

Discussions

To our knowledge, this is often the primary study exploring the acceptability of AI-led chatbot systems for healthcare from the attitude of the overall public with no pre-existing medical conditions. the notice and experience of health chatbots were low amongst our participants, and most had mixed attitudes towards these novel technologies. The chemical analysis showed that a considerable proportion was hesitant to AI and health chatbots, mainly due to concerns about the accuracy and security of those services. Although they were seen as a convenient and anonymous tool for minor health issues which will carry a level of stigma, the shortage of empathy and professional human approach made chatbots less acceptable to some users. The survey demonstrated that the participants were more willing to use these systems to seek out general health information over checking out the results of medical tests or specialist advice. Amongst the secure predictors of acceptability were positive attitudes towards health chatbots and therefore the curiosity about new technologies that would improve health. Although these innovative services were acceptable by the bulk of participants, we propose that 'AI hesitancy' would have a negative influence on the engagement and effectiveness of these technologies.

Conclusion

Our medical discussion provides medical assistance to patients with some common diseases such as colds, flu, typhoid, malaria, jaundice, etc. We are developing a system due to the need for population growth country. Such programs are available in some countries but not in our country. The use of chatbot is a medical field indeed otherwise our thoughts. We are covered almost every point deserves a medical chatbot to support the needs of the patient. A few years ago there

are many models of medical dialogue that have been around an invention that was too expensive for the average person but we have tried to overcome this back in our healthcare chatbot program. At present, the proposed chatbot is within the design phase, which can be followed up by total design into code soon, with plans to launch this app within the next few months. Initially, we might wish to release the basic version soon, especially within the context of the severity of this pandemic of the novel coronavirus. We are developing this chatbot engine in Python, and Watson because the AIML platform. After releasing this bot into the market, supported user feedback, further updates are going to be possible for at least 3–4 months

Limitations and Future Studies

Due to pre programming, chatbots can be adhere if an unsaved inquiry is presented in front of them. This can head to customer frustration and result in loss. It is also the multiple messaging that can be challenging for users and collapse the overall experience on the website.

Chat-bots are installed with the motive to speed-up the response and improve customer interaction. However, due to fix data-availability and time required for self-updating, this process appears more time-taking and costly. Therefore, in place to manage several customers at a time, chatbots appear unclear about how to communicate with individuals.

Chat bots are a thing of the future which is yet to discover its potential but with its arise in popularity and craze among companies, they are bound to stay here for long. Machine learning has alter the way companies were communicating with their customers. With new platforms to build various types of chat bots being introduced, it is of great excitement to witness the growth of a new domain in technology while surpassing the previous threshold.

Acknowledgement

References

[1]Survey on Med-Self-Diagnosis Chatbot system for correct Analysis Using AI. International Journal of Trend in Analysis & Unit System, Volume 4(2), ISNN: 1355-9533 www.ijtrd.com

[2]Mobile based mostly health care Management using Ai. International Journal of Innovative analysis and development in engineering science Engineering (An ISO 3667: 2527 Certified Organization) Vol. 4, Issue 3, March 2017

[3]Using AI to rising Hospital patient Care. Editor: Daniel B. Neill, H.J. Heinz III, Carnegie Mellon faculty, neill@cs.cmu.edu

[4]A Self-Diagnosis Med- Chatbot system using AI. Journal of web Development & web coming up with Volume three Issue one

[5]A Medical Chat bot. International Journal of engineering science Trends and Technology (IJCSTT) – Volume sixty Issue 1- June 2017

[6]Text-based aid Catbots system Supporting Patient and health care

provider Teams: Preliminary Result of the randomised Controlled Trial on Childhood fleshiness. See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/320161508

[7]. TutorBot: A Application NLP-Based for Web-Learning." Advanced Technology for Learning (Discontinued) 2005, ACTA Press, Jan. 2009,

[8]. A. S, John D (2017) Survey on Chatbot Design Techniques in Speech Conversation Systems. International Journal of Computer Science Engineering & Application.