

Survey: Chatbot for Medical Assistance

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Abstract— Customer satisfaction is the major concern for developing web based platform which analyze customer's sentiments along with the relationship of the customer with the company and helps to generate priority levels to resolve the complaint depending upon the negation. The real benefit of this application is the ability to provide advice and information's for a healthy life because some groups of people don't have a good basic knowledge of health. Some people live for years with debilitating but they do not pay attention to symptoms simply because they think they don't require a doctor.

Key words: Medical Chatbot API, Sentiment Analysis, Natural Language Processing (NLP), Medicine API

I. INTRODUCTION

A Chatbot (also known as a talkbot, chatterbot, Bot, IM bot or Artificial Conversational Entity) is a computer program that mimics human conversations in its natural format including text or spoken language using artificial intelligence techniques such as Natural Language Processing (NLP), image and video processing, and audio analysis. A chat-bots aims to make a conversation between both human and machine. The machine has been embedded knowledge to identify the sentences and making a decision itself as response to answer a question. Chat-bots will be completely based on a text-based user interface, allowing the user to type commands and receive text as well as text to speech response. Chat-bots are usually stateful services, remembering previous commands in order to provide functionality. . The chat-bots consists of core and interface that is accessing the core in (MySQL). Natural language processing technologies are used for parsing, tokenizing, stemming and filtering the content of complaint. The conversation with the chat-bots would be crosschecked back to the basic pattern. It is done so that it can add some knowledge to the database as it has not been modelled before.

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. Selection of Software

Eclipse software is used for programming in java. Because it contains basic workspace and it is mostly used for java applications.

C. Creating a Chatbot

For creating a Chatbot, a program has to be written. Java 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.

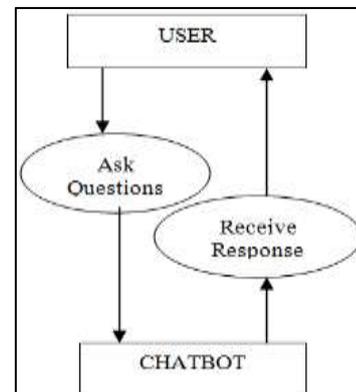


Fig. 1: Use Case Diagram of Chatbot Design

D. Creating a Chat

The chat is created using a pattern that is known to the user and could be easy to understand. Chat dialog box show up to create conversation. This dialog box is created using java applets.

E. Pattern Matching

It is a technique of artificial intelligence used in the design of a Chatbot. The input is matched with the inputs saved in the database and corresponding response is returned.

F. 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.

G. 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.

H. What are Medical Chatbots?

Chatbots are services that people interact with through a messenger. Instead of having a conversation with another person, the user talks with a bot that's either powered by basic rules or machine learning.

Health chatbots could potentially provide many different services. They might give the user health-related information. They can help set up appointments and later send reminders for them. While they can't make official diagnoses, if you tell them your symptoms, they can give you a likely diagnosis.

Every chatbot serves a specific purpose — medical bots are designed to help with health-related issues.

II. CHATBOT: HISTORY

- 1950: Alan Turing Proposes the Turing Test to determine the intelligence of computer programs.
- 1965: Development of ELIZA, one of the first chatbots.

- 1972: PARRY was launched. It was a chatbot that stimulated a patient with paranoid schizophrenia.
- 1990: The Loebner Prize, a competition that judge's chatbots based on their human likeness, is launched.
- 1995: Alice was launched. It was one of the most successful chatbots at that time.
- 2013: Mitsuku wins the Loebner Prize. It is one of the most human-like chatbots publicly available.

III. LITERATURE REVIEW

“Divya Madhu” et al The idea is to create a system with artificial intelligence that can meet the requirements. The AI can predict the diseases based on the symptoms and give the list of available treatments. The System can also give the composition of the medicines and their prescribed uses. It helps them to take the correct treatment. Hence the people can have an idea about their health and can have the right protection.

“Shafquat Hussain” et al this introduces the knowledge base of a conventional chatbot beyond its local knowledge base to external knowledge source Wikipedia. This has been achieved by using Media Wiki API to retrieve information from Wikipedia when the chatbot's local knowledge base does not contain the answer to user query. To make the conversation with chatbot more meaningful with regards to the users previous chat sessions, user specific session ability has been added to the chatbot architecture. An open source AIML web based chatbot has been modified and programmed for the use in health informatics domain. The chatbot has been named VDMS - Virtual Diabetes Management System.

“Kyo-Joong Oh” et al they have suggested a conversational service for psychiatric counseling that is adapted methodologies to understand counseling contents

based on of high-level natural language understanding (NLU), and emotion recognition based on multi-modal approach. The methodologies enable continuous observation of emotional changes sensitively. In addition, the case-based counseling response model that combines ethical judgment model provides a suitable response to clinical psychiatric counseling.

“Ahmed Fadhil” This paper describes current research in integrating chatbot application in telemedicine systems and addresses some areas where these can be applied to health care assistance for both at home and hospitalized patient care. We will highlight the benefit of such system to patients after hospital discharge and will discuss the current technology, behavior change theories and linguistic requirements to build such architecture and integrate it into the healthcare services. In addition, we will discuss sentiment analysis from patient conversation and the role of human actor represented by healthcare provider in providing emotional support. This is because humans are not machines, and providing health support is complicated. Many psychological factors are influencing diseases, and hence patients need human contact in the loop. This work is a preliminary attempt at what we believe to be a large application area that can be applied towards assisted healthcare for elderly and people in rural areas.

“Tobias Kowatsch” et al focuses on an open source THCB system and how the THCP was designed for a childhood obesity intervention. Preliminary results with 15 patients indicate promising results with respect to intervention adherence (ca. 13.000 conversational turns over the course of 4 months or ca. 8 per day and patient), scalability of the THCB approach (ca. 99.5% of all conversational turns were THCB-driven) and over-average scores on perceived enjoyment and attachment bond between patient and THCB. Future work is discussed.

IV. COMPARATIVE STUDY

Chatbot	Advantage	Disadvantage	Features
A Novel Approach for Medical Assistance Using Trained Chatbot. IEEE-(2017)	<ol style="list-style-type: none"> 1) Reduces time of query resolution. 2) Can be easily integrated and upgradable. 3) Effective Symptom based disease prediction. 	<ol style="list-style-type: none"> 1) It needs network connection continuously 	<ol style="list-style-type: none"> 1) simple and interactive real time chat system 2) Disease Prediction 3) Age based Medicine dosage details.
Extending a conventional chatbot knowledge base to external knowledge source and introducing user based sessions for diabetes education. IEEE- (2018)	<ol style="list-style-type: none"> 1) Allow the user to interact with the system in his or her own words. 2) Chatbot remember and recall the previous conversation sessions of user during the current conversation session. 	<ol style="list-style-type: none"> 1) Weak pattern matching ability. 2) limit on the amount of context that can be added to the conversation 	<ol style="list-style-type: none"> 1) Conversational Agent. 2) User specific session ability.
A Chatbot for Psychiatric Counseling in Mental Healthcare Service Based on Emotional Dialogue Analysis and Sentence Generation IEEE-(2017)	<ol style="list-style-type: none"> 1) Ethical Response and Behavior. 2) Chatbot assists psychiatric effectiveness of counseling 	<ol style="list-style-type: none"> 1) Continuous observation as user's Emotions can change sensitively. 	<ol style="list-style-type: none"> 1) Psychiatric counseling 2) Mental healthcare 3) Emotion recognition

<p>Text-based Healthcare Chatbots Supporting Patient and Health Professional Teams: Preliminary Results of a Randomized Controlled Trial on Childhood Obesity. Conference on Intelligent Virtual Agents (IVA 2017)</p>	<ol style="list-style-type: none"> 1) Personalized diagnoses based on symptoms. 2) Support patients and health professionals likewise. 3) Engaged patients over four months to a remarkable extent 	<ol style="list-style-type: none"> 1) Patients that need personal, face to-face care and where likely to fail. 	<ol style="list-style-type: none"> 1) Interpersonal Closeness 2) Attachment Bond 3) Counseling Psychology
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Table 1:

V. CONCLUSION

From this survey, it can be analyzed that the development and improvement of chatbot design grow at an unpredictable rate due to different methods and approaches used to design a chatbot. Chatbot is an important tool for quick interaction with the user. They help us by saving time and providing entertainment to answer the questions that are difficult to find. The Chatbot are simple and conversational. Since there are many different designs and approaches for creating a chatbot, it can be at odds with commercial considerations. Researchers need to interact and must agree on a common approach for designing a Chatbot and utilizing it in various fields.

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