"ChatBot for Cancer Patient"

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Abstract— Normally Users are not aware about all the treatment or symptoms regarding the particular disease. For small problem user have to go personally to the hospital for check-up which is more time consuming. Also handling the telephonic calls for the complaints is quite hectic. Such a problem can be solved by using medical Chat Bot by giving proper guidance regarding healthy living. The medical chat-bots functioning depends on Natural language processing that helps users to submit their problem about the health. The User can ask any personal query related to health care through the chat-Bot without physically available to the hospital. By Using Google API for voice-text and text voice conversion. Query is sent to Chat Bot and gets related answer and display answer on android app.

Index Terms— Chat Bot, Cancer Patient, Android App, NLP.

I. INTRODUCTION

Secure Input data is provided as relevant questions with their answers. This data can be converted into structured form that a Chat-bots can learn from. The bot can train itself using Natural Language Processing (NLP), Natural Language Understanding (NLU) and other Machine Learning skills. Natural Language Processing is "ability of machines to understand human language the way it is written or spoken". The objective of NLP is to make computer/machines as intelligent as human beings in understanding language. The main purpose of the scheme is to build the language gap between the user and health providers by giving immediate replies to the Questions asked by the user. Todays 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. Many of the existing systems have some limitation such as There is no instant response given to the patients they have to wait for experts acknowledgement for a long time. Some of the processes may charge amount to perform live chat or telephony communication with doctors online[7]. This system allows computer to communication between human to computer by using natural language processing (NLP). There are three analyses which understand natural language i.e. identification of main linguistic relations is completed to parse subject into object of the sentences. After that description of the texts is done. The semantic interpretation uses knowledge of word meaning Chat bot is an Entity which imitate human discussion in its particular accepted set-up together with a text or vocal language with techniques such as Natural Language Processing (NLP). The aim of this system is to replicate a persons discussion. The development of chat bot application can be done with making a user interface to send input and receive response. It is a system that interact with user by keeping the track of the state of interaction and recollecting the preceding commands to give functionality. The medical chat bots can be developed by using artificial algorithms that scrutinize user's queries and recognize it and give reply to related query. A big disease can start from small problems such as headache which feels normal but it may beginning of big disease such as brain tumor .most of the disease can be identified by common symptoms so the disease can be predicted if the patient body is analyzed periodically[6].

II. REVIEW OF LITERATURE

1. H. N. Io, C. B. Lee, "Chat bots and Conversational Agents: A Bibliometric Analysis"

This paper used bibliometric analysis to examine past research on chatbot and CA. The results are helpful in identifying the research agenda for the future. The publication information and citation report in the literature databases shows a potential opportunity on chatbot research with the emergence of deep learning technology. There are also research opportunities on applications of chat bot and CA in areas other than education, psychology, and linguistics. The results of the analyses using Cite Space and Bibliometrix indicate that past research on chat bot and CA is highly fragmented and there is a large space of research opportunity to explore. This study proposed several suggestions for future research, which could help to understand chat bot and CA not only from the technical point of view, but also from the business and users point of view. The results of this study would hope fully help to encourage future research on chat bot and CA.

2. Honghao WEI, Yiwei Zhao, "Building Chatbot with Emotions"

In this paper, we test three mechanisms for generating responses with specific sentiment. Due to time constraints, we have not finished training phase for Deep Reinforcement Learning model. We compare the performance of vanilla Seq2Seq model and both static and dynamic Emotion Chatting Machine. Automatica evaluation shows that the emotion embedding, internal memory and exteral memory in ECM help to generated reasonable responses on both content and emotion level. In the future work, we would continue the training phase of Deep Reinforcement Learning and report the results as soon as we can. In addition, we notice the emotion tag for dataset has influential effects on the performance. We would collect more samples on live journal and train better multi-category classifiers with different neural network architecture for sake of better emotion tag results.

3. Sameera A. Abdul-Kader, Dr. John Woods, "Survey on Chatbot Design Techniques in Speech Conversation Systems"

In this paper, the literature review has covered a number of selected papers that have focused specifically on Chat bot design techniques in the last decade. A survey of nine selected studies that affect Chat bot design has been presented, and the contribution of each study has been identified. In addition, a comparison has been made between Chat bot design techniques in the selected studies and then with the Loebner Prize winning Chatbot techniques. From the survey above, it can be said that the development and improvement of Chat bot design is not grow at a predictable rate due to the variety of methods and approaches used to design a Chat bot. The techniques of Chat bot design are still a matter for debate and no common approach has yet been identified. Researchers have so far worked in isolated environments with reluctance to divulge any improved techniques they have found, consequently, slowing down the improvements to Chat bots. Moreover, the Chat bots designed for dialogue systems in the selected studies are, in general, limited to particular applications. General-purpose Chat bots need improvements by designing more comprehensive knowledge bases.

4. S. J. du Preez, "An Intelligent Web-Based Voice ChatBot

This paper presents the design and development of an intelligent voice recognition chat bot. The paper presents a technology demonstrator to verify a proposed framework required to support such a bot (a web service). While a black box approach is used, by controlling the communication structure, to and from the web-service, the web- service allows all types of clients to communicate to the server from any platform. The service provided is accessible through a generated interface which allows for seamless XML processing; whereby the extensibility improves the lifespan of such a service. By introducing an artificial brain, the web-based bot generates customized user responses, aligned to the desired character. Questions asked to the bot, which is not understood is further processed using a third-party expert system (an online intelligent research assistant), and the response is archived, improving the artificial brain capabilities for future generation of responses.

5. Bayu Setiaji, "Chatbot Using a Knowledge in Database"

The development of chatbot application in various programming language had been done with making a user interface to send input and receive response. Designing and building tables as representation of knowledge in the data base had been started from entity-relationship diagram resulting 11 entities and its cardinalities. Making use of structured query language (SQL) for pattern matching had been done within stored program. The stored program consists of 4 stored procedures and 21 stored functions employed as pattern matching and supporting processes. Bigram method can be used not only for Indonesian language words, but also other languages with some boundaries.

III. EXISTING SYSTEM

In the existing system the user dialogue is a linear design that proceeds from symptom extraction, to symptom mapping, where it identifies the corresponding symptom, then diagnosis the patient whether it's a major or minor disease and if it's a major one an appropriate doctor will be referred to the patient, the doctor details will be extracted from the database, the user will be identified by the login details which is stored in the database.
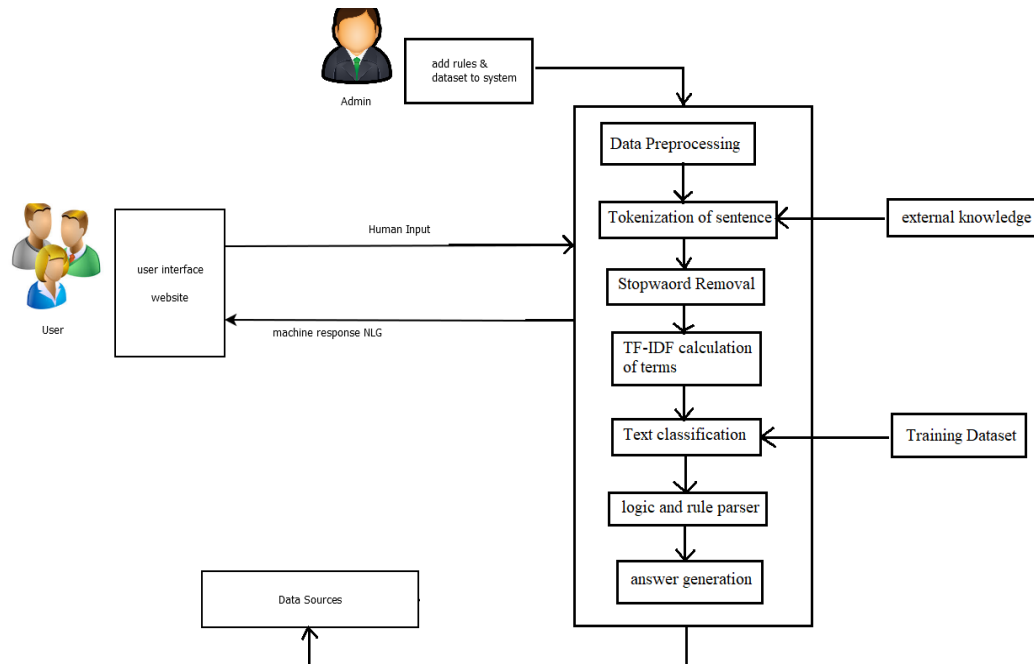
IV. SYSTEM ARCHITECTURE

Fig. 1. Propose System Architecture

Users are not aware about all the treatment or symptoms regarding the particular cancer disease. For small problem user have to go personally to the hospital for check-up which is more time consuming. Also handling the telephonic calls for the complaints is quite hectic. Such a problem can be solved by using medical Chat Bot by giving proper guidance regarding healthy living. The medical chat-bots functioning depends on Natural language processing that helps users to submit their problem about the health. The User can ask any personal query related to cancer through the chat-Bot without physically available to the hospital. By Using Google API for voice-text and text voice conversion. Query is sent to Chat Bot and gets related answer and display answer on android app.

V. ALGORITHM

Random Forest Algorithm

Random Forest algorithm developed from trees algorithm and Bagging algorithm is modelled. The developed the algorithm found that it can potentially improve classification accuracy. It is also work well with a data set with large number of input variables. The algorithm is started by creating a combination of trees which each will vote for a class as shown in Fig. The figure presents how to model the Random Forest. Suppose that there are N data and M input variables in a data set where the real data used in this paper compose of data and input variables. Let k be the number of sampling groups, ni and mi be number of data and variables in group i where i is equal to 1, 2, ... and k. Each sampling group is as followed

1. ni data where ni is not greater than N are selected randomly from N.

2. mi variables where mi is not greater M are selected randomly from M.

3. A tree is grown and gives a prediction class.

After Step 1 to 3 was repeated for k times, these trees become a forest. Then the classification will be selected by a majority vote of all trees in the forest. Note that all data have to be returned to the data set before selecting a new sampling group. Therefore, there are thirteen models that will be evaluated in this process as shown in following Fig.
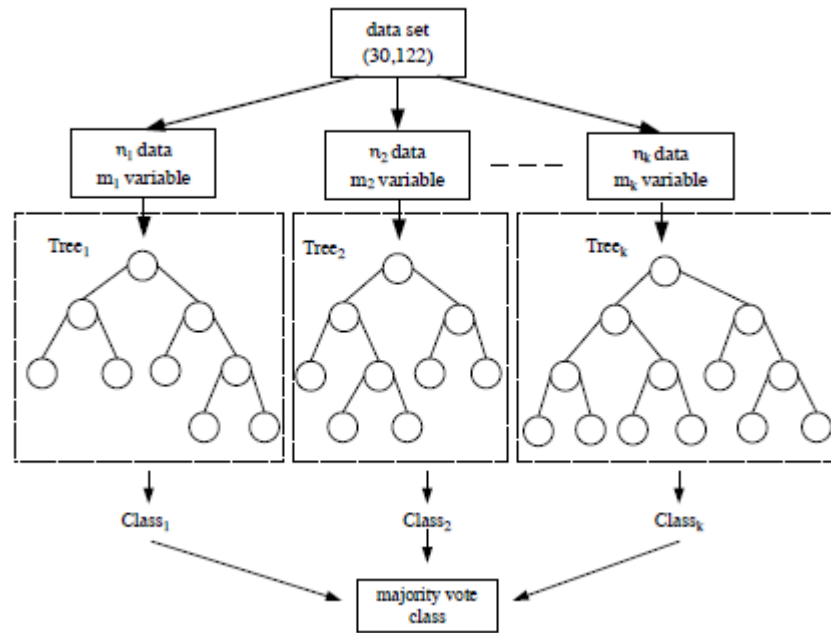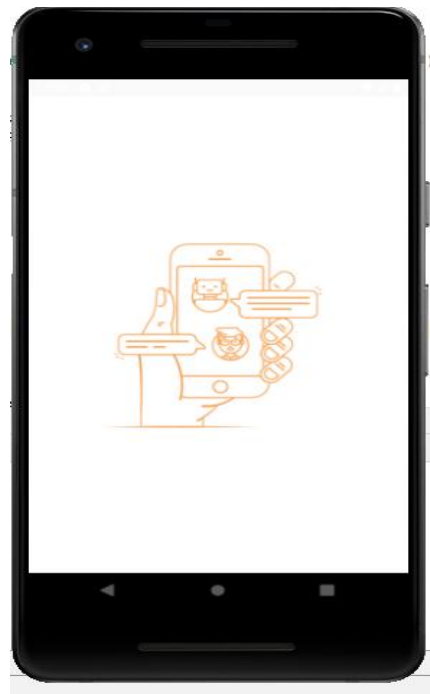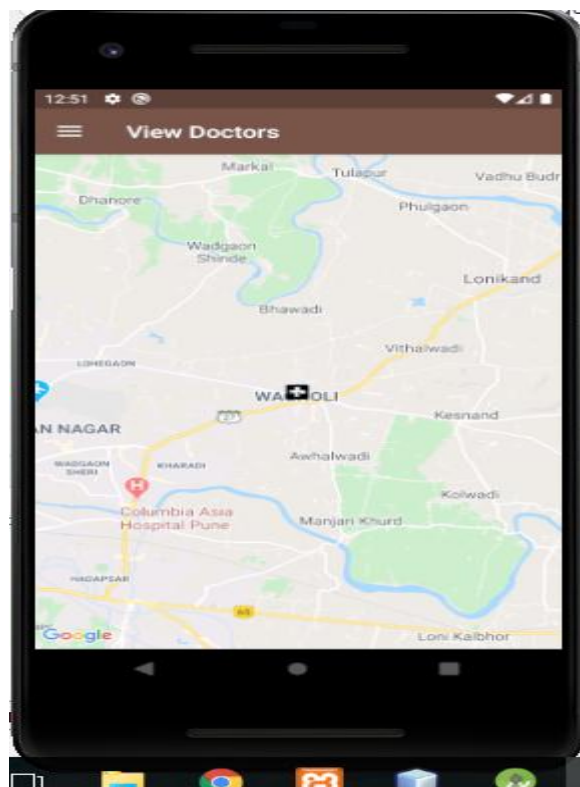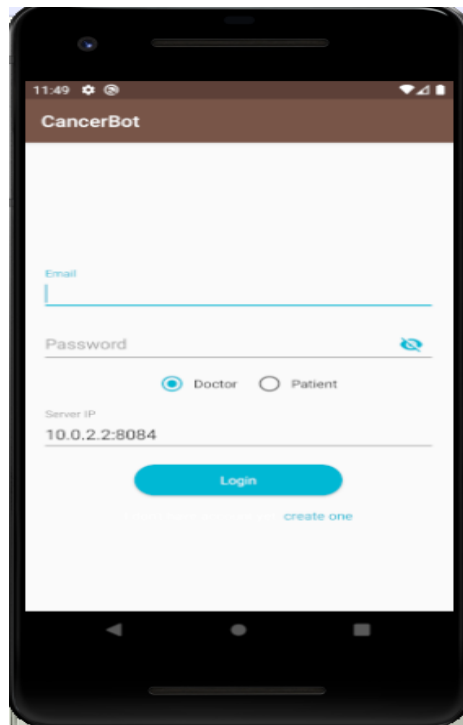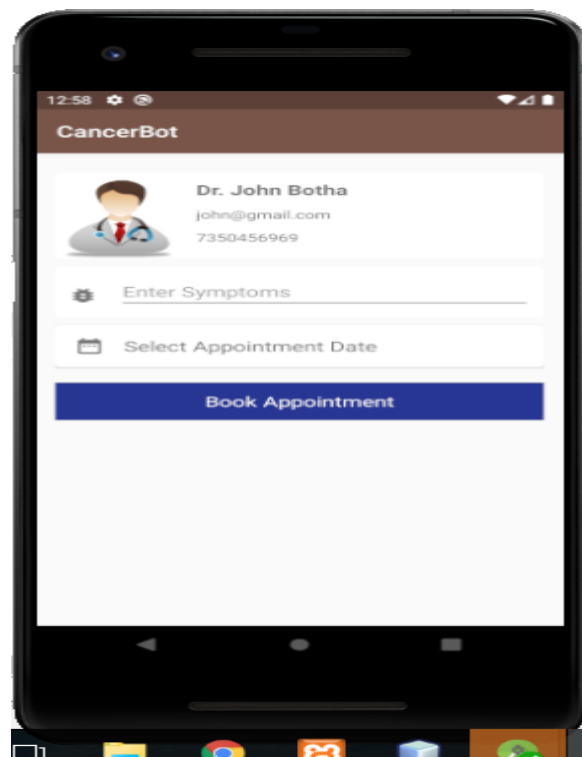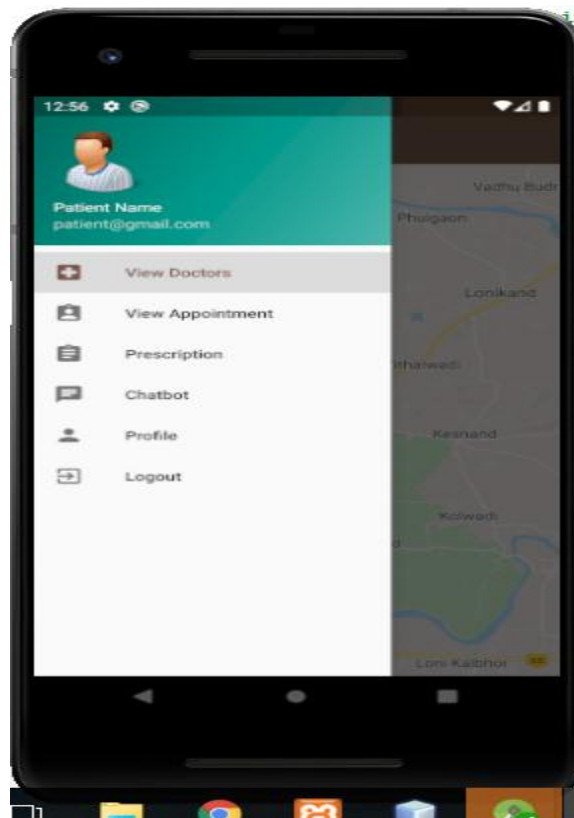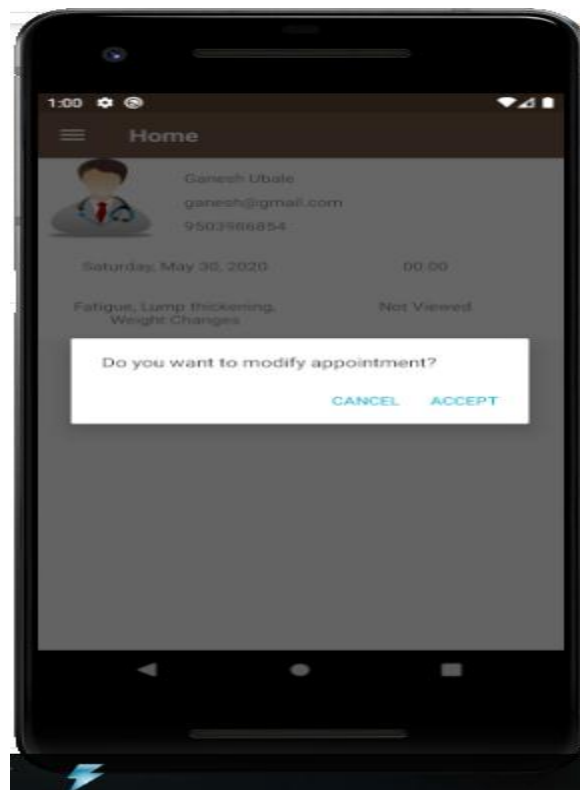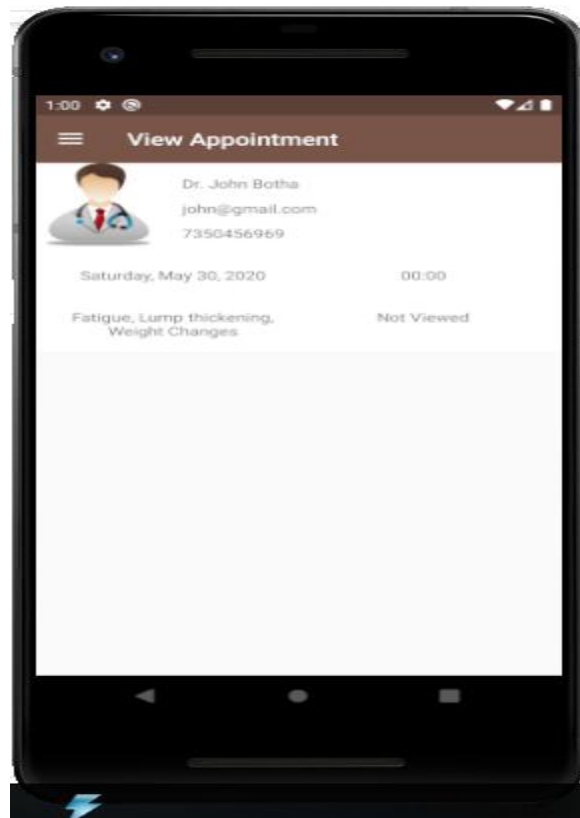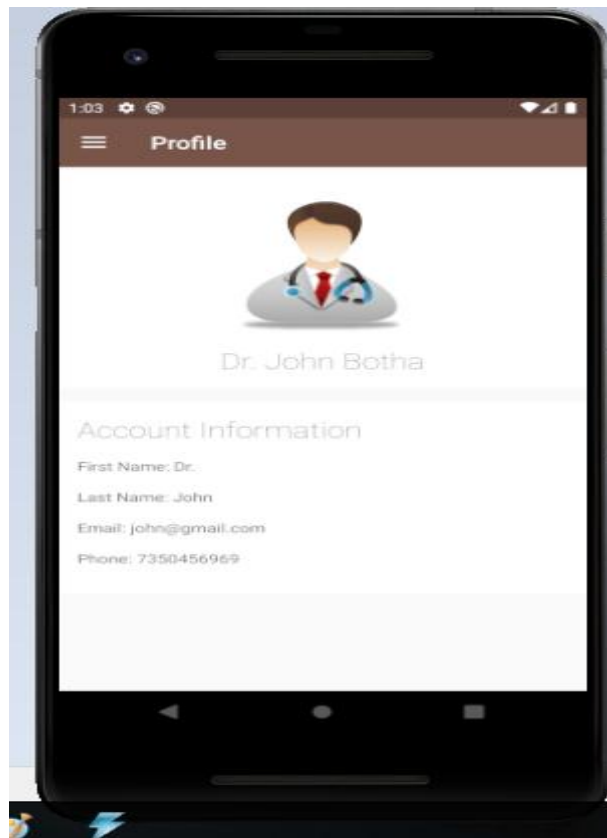
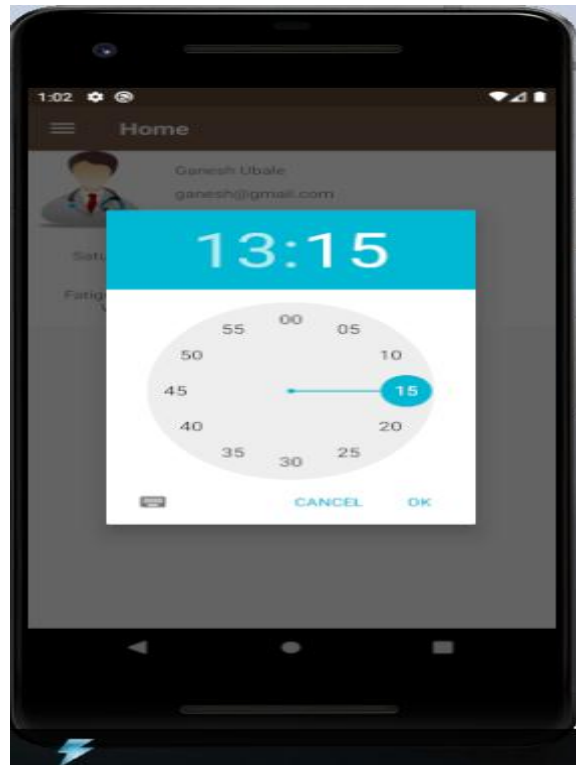Figure: Random Forest Mode

VI. Result

VII. APPLICATIONS

- Hospital
- College
- Medical

VIII. BENEFITS

- To reduce the cost associated with hospital visit and doctor check.
- To provide continuous medical care to the patients in rural/remote areas after hospital discharge and facilitate the work of healthcare professionals.

XI. CONCLUSION

This proposed system is android application which will provide answers to the analyzed queries of the user. We are using large dataset which will ensures the better performance compared as earlier. Thus we build up a system which is useful for medical institute or hospitals to help the users to freely ask medical dosage related queries by voice. The system gets output for medicine API and speaks out and display all medicine alert and food alert. We are using NLP because we want to a computer to communicate with users in their terms. User can get related answer displayed on android app. and refer this answer for analysis.

REFERENCES

1. H. N. Io, C. B. Lee, "Chatbots and Conversational Agents: A Bibliometric Analysis"

2. Honghao WEI, Yiwei Zhao, "Building Chatbot with Emotions"

3. Sameera A. Abdul-Kader, Dr. John Woods, "Survey on Chatbot Design Techniques in Speech Conversation Systems"

4. S. J. du Preez, "An Intelligent Web-Based Voice Chat Bot"

5. B. A. Shawar, and E. Atwell, "Different measurements metrics to evaluate a chatbot system,Proceedings of the Work shopon Bridging the Gap: Academic and Industrial Research in Dialog Technologies, 2007.

6. J.Weizenbaum,"ELIZA A Computer Program For the Study of Natural Language Communication Between Man And Machine, Commun. ACM, vol. 9, no. 1, pp. 3645, 1966.

7. 7. B. A. Shawar and E. Atwell, "A comparison between ALICE and Elizabeth chatbot systems, Raport instytutowy, University of Leeds, 2002.

8. 8. S. Khalaf, On Their Tenth Anniversary, Mobile Apps Start Eating Their Own, FlurryAnalytics, 2016. [Online]. Available: http://flurrymobile.tumblr.com/post/ 155761509355/ontheir-tenth-anniversary-mobile-apps-start. [Accessed: May 23, 2017].

9. 9. C. Yin and Z. Jinran, Seniors prove WeChat is not just for young, CHINA CHANNEL, 2017. [Online]. Available: http://chinachannel.co/1017-wechatreportusers/. [Accessed: May 18, 2017].

10. 10. S.Deveau, LiKa-Shing Buys Canadas Reliance Home for $2.1 Billion, Bloomberg, 2017. [Online]. Available: https: //www.bloomberg.com/news/articles/201703-31 /lika-shing- s-ckp- buys-canada-s- reliance- home-for -c-2-82-billion. [Accessed: May 18, 2017].