MedBot: Named Data Networking based Chatbot

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Abstract: The chatbot is used to establish a communication between human and machine. In this scenario the chatbot is a medical consultant between the patients and the doctors. We design a system which uses Artificial Intelligence Markup Language (AIML) and Natural Language Processing (NLP). And to establish a communication we use Named Data Networking instead of TCP/IP protocol. NDN's Architecture is similar to today's IP Architecture but there is a small difference. NDN uses named data instead of IP addresses to establish a communication. Motivation behind the idea is to provide a platform which solve minor problems of patients so that they can save their time and efforts. In case, the problems are not solved chatbot itself ask patient for appointment. Our aim is to provide friendly environment and fill the communication gap between doctor and patient.

Keywords: CHATBOT

I. INTRODUCTION

Advanced Medical Chatbot is a technology that makes interactions between humans and machine using natural language possible. It basically establishes a relationship between patient and doctor. Chabot can give different responses for the input health queries given by patient according to the current conversation issue. In day to day life people have to go to the doctor for simple problems which can be solved at home itself. Also, if there are any aged person in need of medication, they have to travel some distance and then wait for their scheduled appointment. This can be quite tough for them and in case of travelling problems doctor cannot come to visit the patient during working hours. To solve these problems, we decided to design a bot which can help these peoples without doing this hectic job and saving their time, money and energy.

The module such as following: -
Modules:
• Registration
• Login
• Question
• Appointment
• Video streaming

II. LITERATURE SURVEY

I. **"A BRIEF INTRODUCTION TO NAMED DATA NETWORKING"**

Alex Afanasyev, Jeff Burke, Tamer Refaei, Lan Wang, Beichuan Zhang, Lixia Zhang
The aim of the paper is to study the development of an intelligent system that supports Human-Computer Interaction (HCI) process of web applications. The review starts from system architecture which is much improved as well as its main modules. We assume that such intelligent systems are able to maintain the level of usability of web applications, improve it by providing a list of recommendations and extend the knowledge related to HCI processing. To all other the proposed system may keep results of each project, allowing to
measure the level of improvement of web usability

"NDN-RTC: Real-Time Videoconferencing over Named Data Networking"
By Peter Gusev, Jeff Burke.
2nd International Conference on Information-Centric Networking (ACM ICN), San Francisco, CA, September 2015

DN-RTC is a videoconferencing library that implements Named Data Networking (NDN). NDN is a proposed future Internet architecture. DN-RTC was designed to provide a platform for experimental research in lowlatency, real-time multimedia communication over NDN. It can be used to provide an end-user experience similar to Skype or Google

Hangouts. As implemented, NDN-RTC uses widely used open source components, such as WebRTC library, VP9 codec, and OpenFEC for forward error correction. This paper presents the design, implementation in C++. The testing of NDN-RTC on the NDN testbed using a demonstration GUI conferencing application, ndncon, which provides HD videoconferencing over NDN to end-users.

"An overview of artificial intelligence based chatbots and an example chatbot application" Naz Albayrak ; Aydeniz Özdemir ; Engin Zeydan

Chatbot is a computer program used to establish a communication between machine and human. Chatbot uses natural language processing to understand human language. A chatbot is used to perform task such as quickly responding them, informing them and providing better service to users. Chatbot can be used in various sectors such as banking, health, telecommunication, ecommerce etc.

III. EXISTING SYSTEM

In the existing system the patients can only know what disease they have by explaining the symptoms to the system. but these existing systems cannot connect patients to the doctors. These systems do not fill the communication gap between patients and doctor. They do not provide video calling and file sharing features which helps doctors to treat their patients effectively.

IV. PROPOSED SYSTEM

In the Proposed system, we are developing an Advanced Medical chatbot using named data networking. This system is built in web and android module. The patients can ask their question or can schedule an appointment. In case of emergency they can directly talk to doctors through video calling. Also they can ask doctors for proper medication by posting reports like blood test report etc.

In that web module we include sub module such as a Respective Answer, appointment, Video Streaming. Android Module we include the sub module such as a
Questions, appointment, Notification, Video Streaming. The module such as following: -

Registration: - In the user register module the user has to fill application for registration where user have to enter correct things like as Name, Password, Etc.
Login: - In this section after registration user must log in the android application. This information is saved in the database.
Questions: - A set of question is asked by chatbot so that it can detect the disease. Or it will connect you to doctor.
Appointment: - In this section User take appointment from doctor. If doctor is available, then schedule the time and date.
Video Streaming: - In that section we are using video streaming which will make a stream confrontation with the doctor.
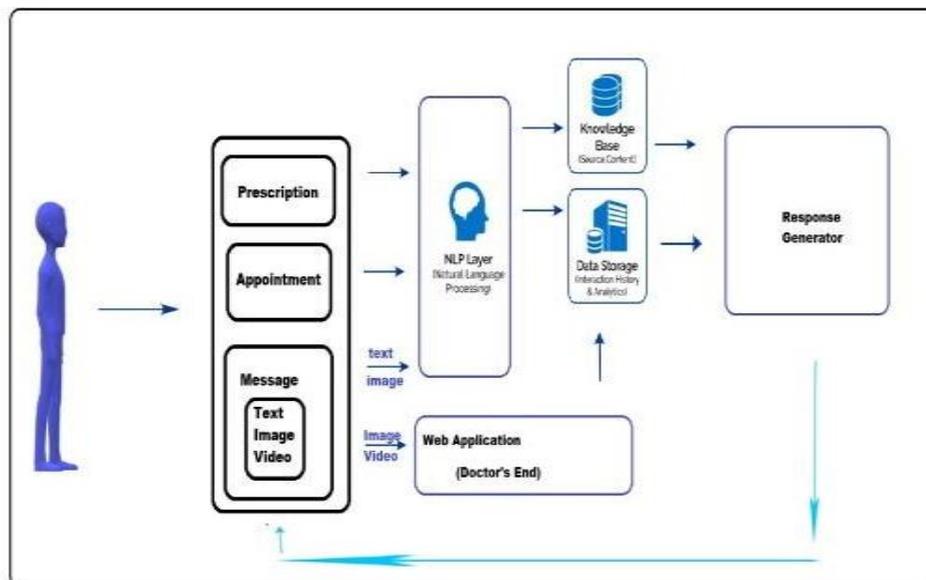Notification: -In that section we receive notification of message, text files.
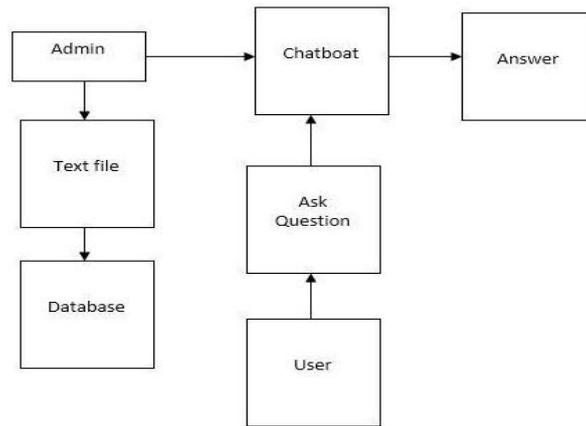

Fig. System architecture

Fig. 2. Data Flow Diagram of Working

V. MATHEMATICAL MODEL

S = {s, e, i, o, functions, DD, NDD, Success, Failure}
s = Initial State: Authentication. After authentication get input from user.
e = End step: Prescription, appointment, live video stream as per user's need.
i= Input: text, image, video call.
o = Prescription, appointment, live video stream
DD = Deterministic Data: Same output from a given starting condition return the same result any time.
NDD = Non-Deterministic Data: Result will vary every time for given input.

• Functions: Functions = {f1, f2, f3, f4, f5, f6}
f1 = Registration
f2 = Login
f3 = Prescription
f4 = Appointment
f5 = Messaging (text, image)
f6 = Video call (live video stream)
☐   Natural Language Processing (NLP)
☐ Success Conditions: Chat-Bot will tell the prescription for disease and inform the Pharmacy centre to send the medicine to the user.
☐ Failure Condition: Chat-Bot will be failed to recognize the input from user and will not return anything with result in app crash.

VI. METHOD DESCRIPTION

Chatbot: A chatbot is a computer program that simulates human conversation through voice commands or text chats or both. Chatbot, short for chatterbot, is an Artificial Intelligence (AI) feature that can be embedded and used through any major messaging applications. There are a number of synonyms for chatbot, including "talkbot," "bot," "IM bot," "interactive agent" or "artificial conversation entity."
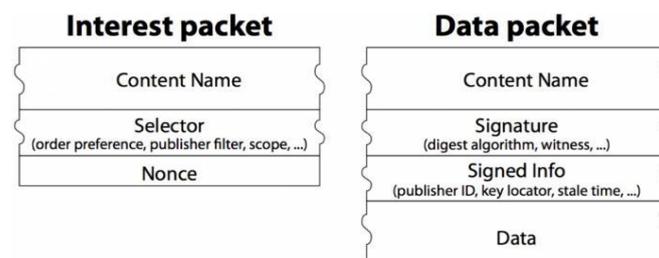

Fig. Packets in the NDN architecture

NDN: NDN is a new technology which is derived from success of today's internet. NDN's Architecture is similar to today's IP Architecture but there is a small difference. NDN uses named data instead of IP addresses to establish a communication.

Although NDN represents a brand new architecture proposal, its hourglass shape makes it compatible with today's Internet and leads to a clear, simple evolutionary strategy. Like IP, NDN is a "universal overlay": NDN can run over anything, including IP, and anything can run over NDN, including IP.
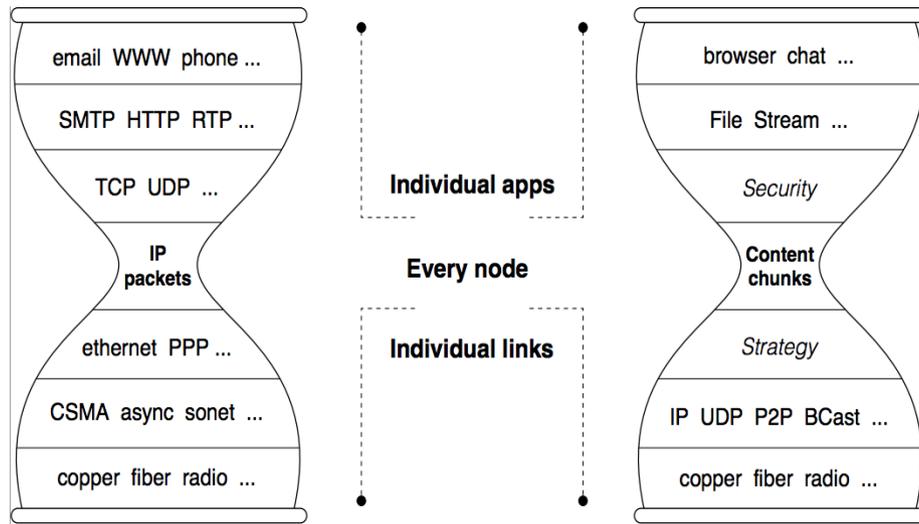

Fig: Internet and NDN Hourglass Architectures

VII. CONCLUSION

The proposed system is helps to reduce communication gap between doctors and patients. Minor health problems can be treated at home by taking doctors suggestions and if needed appointment can be scheduled.

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