Advanced Medical Chatbot based on named data networking

Anup Lengure
anuplengureavl@gmail.com
Trinity College of Engineering and Research, Pune, Maharashtra

Pratik Gaikwad
Gaikwadpratik50@gmail.com
Trinity College of Engineering and Research, Pune, Maharashtra

Ashutosh Chaudhari
Cashutosh312@gmail.com
Trinity College of Engineering and Research, Pune, Maharashtra

Aditya Deshpande
Adityadeshpande91@gmail.com
Trinity College of Engineering and Research, Pune, Maharashtra

ABSTRACT

The aim of a chatbot is to make human and machine interaction possible. In this scenario the chatbot is a medical consultant between the patients and the doctors. For this purpose, there is a need of the Human Computer Interaction (HCI) research which includes study and implementation intended for human use. So, we design a system which uses Artificial Intelligence Markup Language (AIML) and Natural Language Processing (NLP). And for the purpose of communication needs we use Name Data Networking (NDN) instead of the typical IP protocol. NDN provides two essential properties which are its Consumer Driven Nature in Communication and the privacy it provides. Motivation behind the idea is that much of the needed answers are available on the internet about the medication which the chatbot provides in a friendly manner and if there are serious issues provides consultations as well as appointments with the Doctor as early as possible.

Keywords— *Chatbot, Named Data Networking*

1. INTRODUCTION

Intelligent technology advancements in today's era are not only "an extension to human hand", but also "an extension to human brain". One of the important goals of Human Computer Interaction is to make computer more proactive, more hard-working and doing more work. So, human can do jobs as few as possible, more easily and conveniently. Today's people are more likely addicted to internet but they are not concerned about their personal health. They avoid to go to hospital for small problems 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.

We are here to develop the Medical chat-bot using machine learning and NDN and also can develop the Android application for multiple people. So, in that application people ask the major disease question to the doctor. So, this question is reflected on the web sites. After that doctor give the answer respectively. The main modules are such as following describing in details.

Web module: In that we are developing web application with help of domain machine learning using language Python. In that multiple users ask questions to that bot. Also, we are to develop defining sub categories such as following:

(a) Minor Question: In that section we are describing the question is related to the health and this category we will be appeared in android site such as fever, cold headache, etc. and give the answer respectively.

(b) Major Question: In that section we are describing the major question related to the health and this answer is reflected to the bot on doctor site. As asking question they will give the answer respectively.

(c) Video Streaming: In that section we are using video streaming which will make a stream confrontation with the doctor.

(d) Android Module: In that section we are developing android application with the help of IDE android studio using language Java. It will be describing the user site need. 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.
- Appointment: In this section User take appointment from doctor. If doctor is available, then schedule the time and date.
- Notification: In that section we receive notification of message, text files.

2. LITERATURE SURVEY

"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.

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.

3. 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. After doctor's prescription, they can find pharmacy's in their location on the application.

In that web module we include sub module such as a Respective Answer, Medical store, Video Streaming. Android Module we include the sub module such as a Questions, Prescription, appointment, Notification, Video Streaming. The module such as following:
- **Registration**
- **Login**
- **Question**
- **Answer**
- **Video streaming**
- **Prescription**
- **Appointment**
- **.txt file**
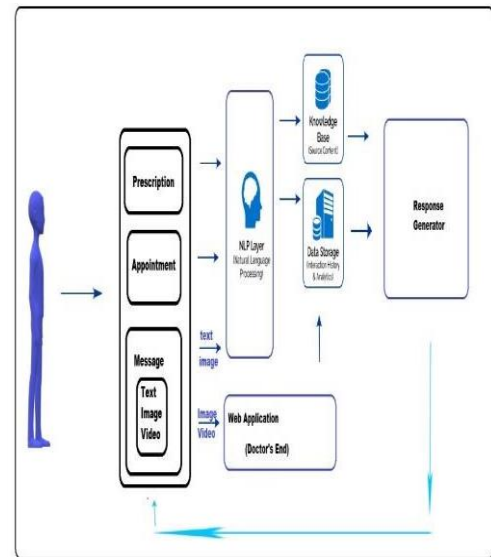- **Notification**

4. SYSTEM ARCHITECTURE
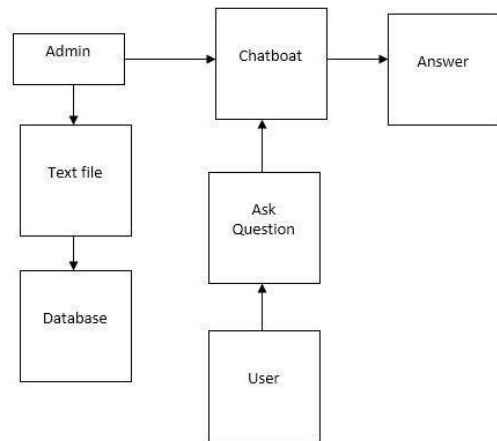

Fig. 1: System Architecture

Fig. 2: Flow of the system

5. NDN ARCHITECTURE

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.
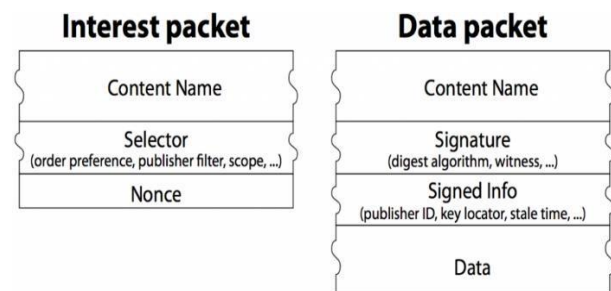

Fig. 3: Packets in the NDN Architecture

6. CONCLUSION

The aim of the proposed system is 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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