

Oral Health Monitoring System using Smart Phone & Applying Prediction on Oral Health Care Data Set

Pooja R. Oza, Deepak C. Mehetre

Abstract: Nowadays, our country is facing major problem of oral health. Oral hygiene plays an important role in keeping the people healthy. Most of the people who live in rural area are not aware about their oral hygiene. So, to educate the people about their oral health, we developed a system that helps doctor and patient to predict the oral diseases. In this paper, we are applying prediction on oral health care data set to provide knowledge about Oral Health Care in the absence of caring facilities.

Keywords: ODPS (Oral Disease Prediction System), ANN (Artificial Neural Network), BPNN (back Propagation Neural Network)

I. INTRODUCTION

For the development of the country, the health care of people plays an important role. The health of the country is assessed from the health of the people of the country. Our proposed system, is an Android based system which helps both the doctor and the patient to get the updated information of patients health. At the doctor's end, he can send his guidance and prescriptions to the patient through mobile phones. [3]

At the remotest part of the country and rural areas people are illiterate. So to help them, one expert is there who helps the patient to use the oral health check-up system. We can also use intraoral cameras and caries detection devices at that particular location to carry out the study of patient's mouth internally. All the reports are sent to the doctor by using android phones.

Data mining is the process of extracting information from a database and data warehouse is a storage space where information is stored. Data mining in healthcare medicine deals with learning models to predict patient's disease. In this system, we store the registered patient's health information and static data set of oral health diseases. Each patient can find out their predicted oral disease and also get guidance from the doctor.

II. LITERATURE SURVEY

Android is open source and custom applications for users can be developed and deployed easily. It is a hugely popular operating system for mobiles. By using these features of Android, doctors can easily access patient data anywhere and anytime.[3] A case Study Deloitte eHealth Programme suggest the architecture of ehealth monitoring system.[4]

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As per oral health white paper "A significant number of our patients don't receive basic oral health services, so we are the starting point for good oral health." They describe various flow diagrams and technologies for developing the health care program for remote area patients. [8] An intraoral camera is designed to be used in the mouth for taking video or performing photography. The camera which looks like a large pen, is moved inside the mouth. It provides tooth-by-tooth video exam of the teeth. Simultaneously, we can see the teeth enlarged in color on flat screen monitor in the treatment room. We can also store the pictures for record.. [7]

Doctor-Patient Interaction System introduced mHealth and Android platform. This system achieves Android based doctor-patient interaction system. This system provides method to achieve the doctor-patient interaction system module using limited hardware resources of mobile terminals, confirmed the feasibility of platform development based on Android [7].

III. MOTIVATION

In developing countries like India, 60% to 65% of the population lives in rural areas, where agriculture is the main occupation, illiteracy prevails, and people often neglect their oral health simply through lack of knowledge. In addition, infrastructure and other facilities are inadequate, and overall quality of life is poor.

In remote areas majority of the people are poor, they can't afford the cost of medical treatment. As a result, in rural areas, dental clinics are rarely available. As well, at primary health centres facilities for high-quality oral health care are not available. Furthermore, most doctors are not ready to work in remote places because of the poor infrastructure and low pay scales. Poor people are therefore deprived of basic and essential oral health care facilities.

So, to overcome all above problems, we need to develop system that can detect the patients oral health problems in the absence of doctors and to send the reports to the doctor. Further, Doctors should check the reports and give suggestions, advices and prescriptions through the mobile phones, emails or other communication channels.

IV. PROPOSED SYSTEM

In proposed system, we are connecting doctor and patient through the Android phone. Doctor and patient can exchange the information through WiFi connection. Information can also be stored in the database for future references.

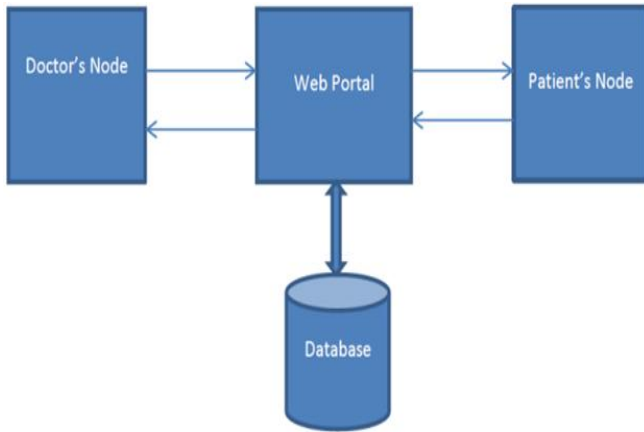


Fig 1. Architecture of system

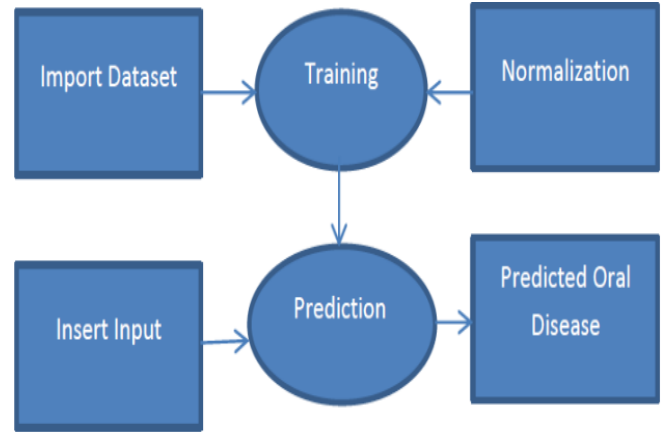


Fig.3 BPNN Data flow

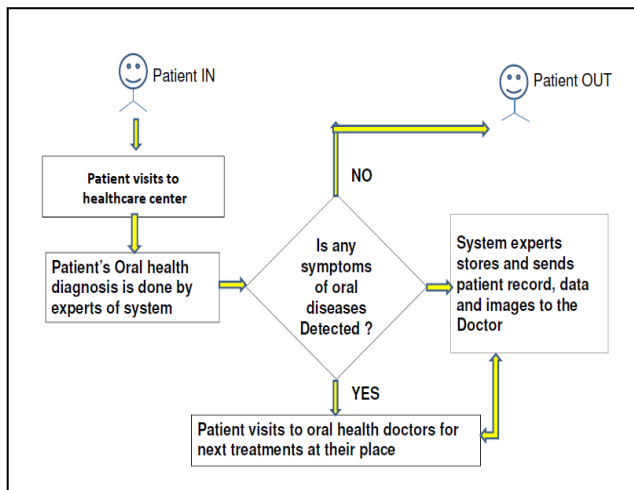


Fig.2. Flow diagram of proposed system

Fig.2 show the flow of the proposed system. In this system, the patients visit the healthcare center. At this place, the experts perform the primary check of the patient by using caries detector and intraoral cameras for taking the photographs of internal mouth and taking the status of the teeth caries. This information is to be stored into the patients records and same data is transferred to the doctor if some oral disease symptoms are found. The doctors available at the hospital study the oral health records of the patients and reply back to the health care centre.

Algorithms:

For the prediction of oral diseases, we are using ANN based BPNN algorithm. There are mainly three layers - input layer, hidden layer and output layer. In back propagation neural network algorithm input as a features of the oral diseases is given to the system at input layer, the input data traverse to through the system upto the output layer. Actual output is compared with expected output. If there is difference between actual output and expected output, it is called as error. To remove the error, the system sends the error back to hidden layer, regenerate the output and send the result to output layer. This process is continued until we get the expected oral disease as a result at output layer. Fig 3 shows the dataflow diagram for BPNN. We need to train the system first and then we apply the input for the prediction of oral diseases.

V. CONCLUSION

Oral health predicted data set system helps us to make people, especially from rural area, aware about their oral health in the absence of doctor. They can also get doctors guidance and prescriptions at their own place at low cost. It also assists us to increase awareness and attention towards Oral Health Care in early stages before the disease becomes malign and expensive to treat.

The best result is generated by using Artificial Neural Network. ANN gives us better results as compared to other data mining methods. Use of back propagation algorithm makes oral health prediction system more accurate and a user friendly application.

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