

**MediCare - Bridging the gap between the rural people and healthcare facilities**S. Sathish Kumar¹R. Vignesh²S. Saravanan³T.Vignesh⁴M.E.

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Abstract- Rural Health care is one of the biggest challenges faced by the Health Ministry of India. With more than 70 percent people living in rural side integrated with low level health facilities, mortality rates due to diseases are on a high. The main cause for this augmented mortality rate is mainly due to the lack of finding a resource for medical facilities. Hence, the core idea of 'Medicare' is to overcome this problem by facilitating the rural people with an Android Application which will be made available in a Kiosk. The key feature of this Android application will be to get the symptoms of a person and predict the possible diseases with the respective criticality level, fetch the location of the user & show the nearby doctor's location on Google Maps[1], Provide the location of specialist doctors for a critical disease. The patient's details will be made available on the Doctor's Login.

Keywords- Prediction of diseases, Criticality Level, Kiosk, Google Maps, Specialised Doctor's location, Patient details on Doctor's Login.

1. Introduction

Among 121 crore Indians, Rural areas were occupied by 83.3 crore people and urban areas by 37.7 crore people, stated by Provisional Population Totals of Rural-Urban Distribution in the year 2011, published by Union Home Secretary R.K. Singh. The need for medical attention is high in rural areas. Thus the idea of this application is facilitating the rural people with an Android Application which will be made available in a Kiosk.

The application will be connected to an Application programming interface[15] which will analyse the entered data and provide the possible diseases to the user. It'll also tell that person about the specialist doctors[13]. Thus, it ensures that the people in the rural areas will know the exact location of the doctors by which they can be diagnosed.

2. LITERATURE SURVEY

The paper presented by CemTekin, (Member, IEEE), OnurAtan, and Mihaela Van Der Schaar, (Fellow, IEEE) provision an expert selection system that learns online the best expert to assign to each patient depending on the context of the patient[13]. In general, the context can include an enormous number and variety of information related to the patient's health condition, age, gender, previous drug doses.

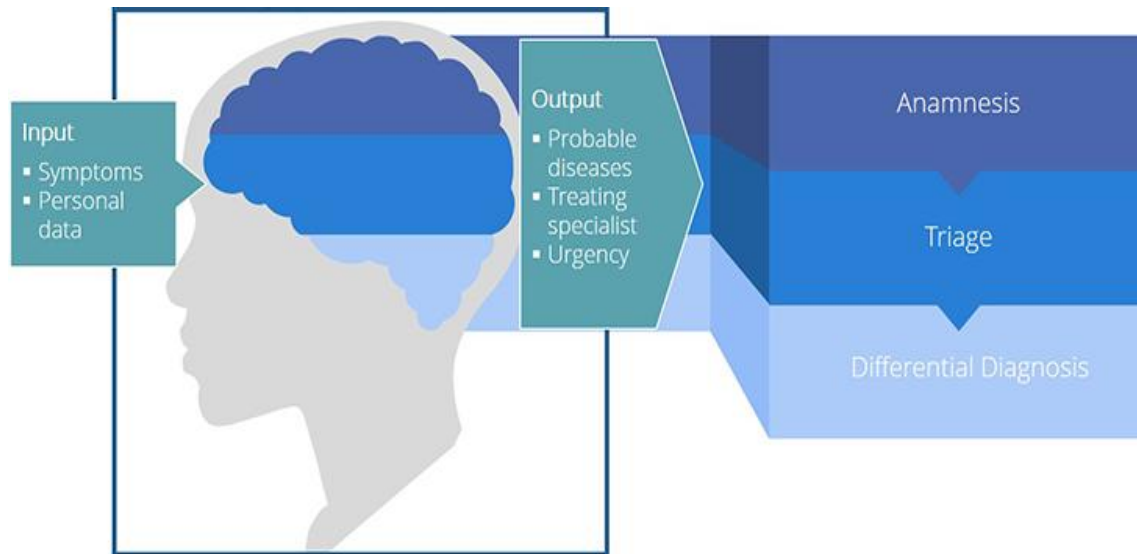
Dr. Mahboob Khan (PHD) submitted the paper on good Health Prediction system using Data-Mining [2]. Data processing could be a technology that uses already existing knowledge within the info to govern results. The massive set of informations are processed by extracting and processing data sets. The informations are loaded with various diseases, their symptoms and medicines. The symptoms are predicted by the user dealt with it. All the symptoms are processed by the system and the output is generated for most probable one.

Naive Thomas Bayes Model for likelihood estimation[3], was created by Daniel lowd and Pedro Domingos pointed at large datasets, Accuracy and learning time is efficient in Naive Thomas when compared with other Theorem Networks. The size and extent of Naive Thomas Bayes illation is greater than Theorem Network illation.

A recent Survey on Health Care Prediction portrays that data processing is the motivational unit for any data Health Care Organization. The extraction of data is handled by automatic or semi-automatic means that, totally different areas of mining embody clump, prediction, path analysis.

3. Proposed Methodology

Medicare is an application which will have a patient login and a doctor login. After registering the required informations login entry is created for every patients. The specification of various symptoms are recorded and the application will take a survey relating his/her illness. Thus, it will analyse the data gathered to provide the possible diseases with the specialist details. After viewing the list of specialist doctors, a user can fix his appointment.



Now, the doctor can login into his account with his login credentials and view the patient's location with his details about the patient and the appointment.

4. Implementation

There will be a kiosk present in the village which will have the 'Medicare' Application installed in a Smart device. The patient will need to register by giving his details. After registration, the patient can login into his account. Initially, the symptoms will be fetched from a remote server[6] which will have the API[11] (Application programming interface) for analysing the symptoms that are fed by the patients which will also be linked with a database[12].

At first, the list of all symptoms will be retrieved as a JSON (JavaScript Object Notation) [5] data which will then be rendered into the android application.

```
[
  {
    "ID": 10,
    "Name": "Abdominal pain"
  },
  {
    "ID": 238,
    "Name": "Anxiety"
  }
]
```

Symptoms as JSON data retrieved from server

After rendering, the user can enter his symptoms using a list of select boxes. After submitting the symptoms, the application will prompt with a survey to collect the metadata about the symptoms. Based on the survey, an additional set of symptoms can be retrieved from the server by which it is related to the already collected symptoms in order to refine the diagnosis.

```
[
  {
    "ID": 28,
    "Name": "Stuffy nose"
  },
  {
    "ID": 203,
    "Name": "Pain on swallowing"
  }
]
```

Additional symptom data based on the survey

The data that was collected from the patient is then sent to the server[7] for analysing. The data will be analysed into a set of decision tree[8][9] which will then send a possible disease[10] to the client. The analysing of the symptoms include decision tree analysis to get the most probable disease that might have occurred based on the symptoms. The decision tree induction is to create a decision tree that corresponds to the collected data[16].

JSON data will be retrieved which will be rendered to the Android application by which the user can view the details of the diseases.

```
"ID": 44,
"Name": "Inflammation of the nose and throat",
"Accuracy": 90,
"Icd": "J02;J31.2",
"IcdName": "Acute pharyngitis;Chronic pharyngitis",
"ProfName": "Nasopharyngitis",
"Ranking": 1
```

Possible diseases with its details

After predicting the possible diseases by using the list of symptoms' data and metadata collected using the survey, the app will receive a list of suggested specialisations for calculated diseases.

```
"ID": 15,
"Name": "General practice",
"Accuracy": 90,
```

specialisations for calculated diseases

The application also has a Red flag feature. Red flag texts are recommendations to the patient for a higher urgency or severeness of the possible symptoms. As an example a patient with pain in the breast might have a heart attack and therefore the patient should be warned about the urgency and severeness of the matter.

```
"You have selected a symptom which requires a prompt check with a medical doctor."
```

Red flag data

The patient will now view the real-time location of the doctor who are nearby to the patient's current location (i.e.) The Kiosk location. Here's where the paper 'Discover the Expert: Context-Adaptive Expert Selection for Medical Diagnosis' [13][14] can be used to facilitate the patient with the most suitable specialist. Now, he can book an appointment.

After the appointment is booked, the doctor can login into the application with his credentials by which he will be able to see the details of the patient and the fixed appointment.



5. Conclusion

In this paper, we have discussed about bridging the gap between the rural people and the health care facility by using an Android application which will be made available in the Smartphone in a Kiosk. The app can prove helpful in imperative cases wherever patient is unable to find a doctor, for emergency cases that don't have doctors in the region, throughout late night emergencies and additionally for test of patients.

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