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# A Survey on Automated Health Care System for Rural Areas

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**Abstract:** Earlier as well as nowadays also, the doctors are using trial and error approach for predicting the diseases based on clinical investigations available. To predict the diseases is one of the major challenges in past years and today also. There is great need of some system that predicts the diseases early on the basis of available symptoms and patients health. Because of this it will become possible to cure the people from diseases which may lead the humans to death for e.g. Cancer, AIDS etc. We are proposing a system which is based on combination of different locations, doctor's details, disease symptoms and disease treatment that are useful to predict the patient's disease. The patient's disease states can be found out by formalizing the disease based on symptoms of the patient before recommending treatments for the prevailing diseases by using Support Vector Machine (SVM) and Naïve Bays Classification techniques respectively. The basic aim of our system is to assist doctors in diagnosing the patient by analyzing disease symptoms and relevant information. As our project's main focus is providing medical assistance to people living in rural areas to provide them with free treatment for general diseases which they tend to neglect.

**KEYWORDS:** - Diseases, Disease Prediction, Symptoms, Treatment, Support Vector Machine, Naïve Bays Classification.

## I. INTRODUCTION

As we know there are numerous kinds of diseases there in environment. Some diseases can be easily get cured but some are there which have bad impact on human body and may lead to death. Diseases like Bulimia Nervosa (BN), Diabetes, Chronic Kidney Disease (CKD), Skin Cancer (SC), Leukemia, Colds-Flu-Gripe (CFG), Dengue (De), Malaria (M), Cholera (Cl), Leptospirosis (L), Chikungunya (CG), Chicken pox (CP), Diarrhea (Di) have similar characteristics at early stage which makes clinician job difficult in diagnosing such life-threatening disease. Similarly, in 2009, H1N1 was spreading fast around the world. It is contagious type of disease and it spreads same as seasonal flu. Its symptoms are same as seasonal flu like cough, fever, sore throat, body ache, and headache. So at early stages it seems like a seasonal flu to Doctors but later on when these symptoms lead to more serious complications, including pneumonia and respiratory failure Doctors came to know this is not seasonal flu and something else. Similarly consider Dengue fever. It is transmitted by the bite of an Aedes mosquito infected with a dengue virus. The mosquito becomes infected when it bites a person with dengue virus in their blood. It can't be spread directly from one person to another person. Sometimes, symptoms are mild and can be mistaken for those of the flu or another viral infection by the victims or patients. However serious problems develop if this cannot be treated early like damage to lymph and blood vessels, bleeding from nose and gums. Many of these diseases are preventable if detected at early stages. It may be difficult for clinician as well as the person who is suffering to distinguish between these prevailing diseases due to medical symptom similarity at early stages. Today's such variety of diseases makes us to feel the need of implementing the system which can predict the diseases as early as possible based on patient health status. If it is possible to predict the

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disease at early stage based on available symptoms we can provide respective medicinal treatment to patient who is suffering.

## II. RELATED WORK

In this work, an effective heart disease prediction system (EHDPS) is developed using neural network for predicting the risk level of heart disease. The system uses 15 medical parameters such as age, sex, blood pressure, cholesterol, and obesity for prediction. The EHDPS predicts the likelihood of patients getting heart disease. It enables significant knowledge, eg, relationships between medical factors related to heart disease and patterns, to be established [1].

The medical environment is still information rich but knowledge weak. There is a wealth of data possible within the medical systems. However, there is a lack of powerful analysis tools to identify hidden relationships and trends in data. Disease is a term that assigns to a large number of health care conditions related to the body. These medical conditions describe the unexpected health conditions that directly control all the body parts. Medical data mining techniques like association rule mining, classification, clustering is implemented to analyze the different kinds of general body based problems [2].

This work supports an end user and online consultation. Here author propose a framework that enables clients to getmoment direction on their medical problems through an astute social intelligent health care system online. The framework isbolstered with different symptoms and the disease or illness associated with those systems. Also the system allows user to sharetheir symptoms and issues. Data Mining as a field of research has already well proven capabilities of identifying hidden patterns,analysis and knowledge applied on different research domains, now gaining popularity day by day among researchers andscientist towards generating novel and deep insights of these large biomedical datasets also. Uncovering new biomedical andhealthcare related knowledge to support clinical decision making, is another dimension of data mining [3].

In this research work, authors havecomprehensively compared different data classificationtechniques and their prediction accuracy for chronic kidneydisease. Authors have compared J48, Naïve Bayes, and RandomForest, SVM and k-NN classifiers using performance measureslike ROC, kappa statistics, RMSE and MAE using WEKA tool.Authors have also compared these classifiers on various accuracymeasures like TP rate, FP rate, precision, recall and f-measure byimplementing on WEKA. Experimental result shows thatrandom forest classifier has better classification accuracy overothers for chronic kidney disease dataset [4].

Author proposing a system which is based on combination of different data mining techniques such as clustering, classification etc. that are useful to predict the patient's disease state. The patient's disease states can be finding out by formalizing the hypothesis based on test results and symptoms of the patient before recommending treatments for the prevailing diseases. The basic aim of our system is to assist doctors in diagnosing the patient by analyzing his available data and relevant information [5].

Data mining techniques are used for a variety of applications. In healthcare industry, data mining plays an important role in predicting diseases. For detecting a disease number of tests should be required from the patient. But using data mining technique the number of tests can be reduced. This reduced test plays an important role in time and performance. This work analyzes data mining techniques which can be used for predicting different types of diseases. This work reviewed the research papers which mainly concentrate on predicting heart disease, Diabetes and Breast cancer etc [6].

Medical data mining techniques like association rule mining, classification, clustering is implemented to analyze the different kinds of heart based problems. Classification is an important problem in data mining. This work given a database contain collection of records, each with a single class label, a classifier performs a brief and clear definition for each class that can be used to classify successive records. A number of popular classifiers construct decision trees to generate class models. The data classification is based on MAFIA algorithms which result in accuracy, the data is estimated using entropy based cross validations and partition techniques and the results are compared [7].

Chronic Kidney Disease (CKD) is a gradual decrease in renal function over a period of several monthsor years. Diabetes and high blood pressure are the most common causes of chronic kidney disease. The main objectiveof this work is to determine the kidney function failure by applying the classification algorithm on the test resultobtained from the patient medical report. The aim of this work is to reduce the diagnosis time and to improve thediagnosis accuracy

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using classification algorithms. The proposed work deals with classification of different stages in chronic kidney disease according to its severity. The experiment is performed on different algorithms like Back-Propagation Neural Network, Radial Basis Function and Random Forest [8].

### III. PROPOSED SYSTEM

In this proposed system which is based on combination of different locations, doctor's details, disease symptoms and disease treatment that are useful to predict the patient's disease. The patient's disease states can be finding out by formalizing the disease based on symptoms of the patient before recommending treatments for the prevailing diseases. We have collected the different disease dataset. In this dataset include multiple disease lists with multiple symptoms of each disease. Also we have collected the doctor's location dataset which include multiple locations and doctors names and contact no. We used association rule with Support Vector Machine (SVM) and Naïve Bays classification techniques to predict the exact disease name. As our project's main focus is providing medical assistance to people living in rural areas to provide them with free treatment for general diseases which they tend to neglect. This proposed system also recommends the treatment according to particular disease name.

#### Proposed System Architecture

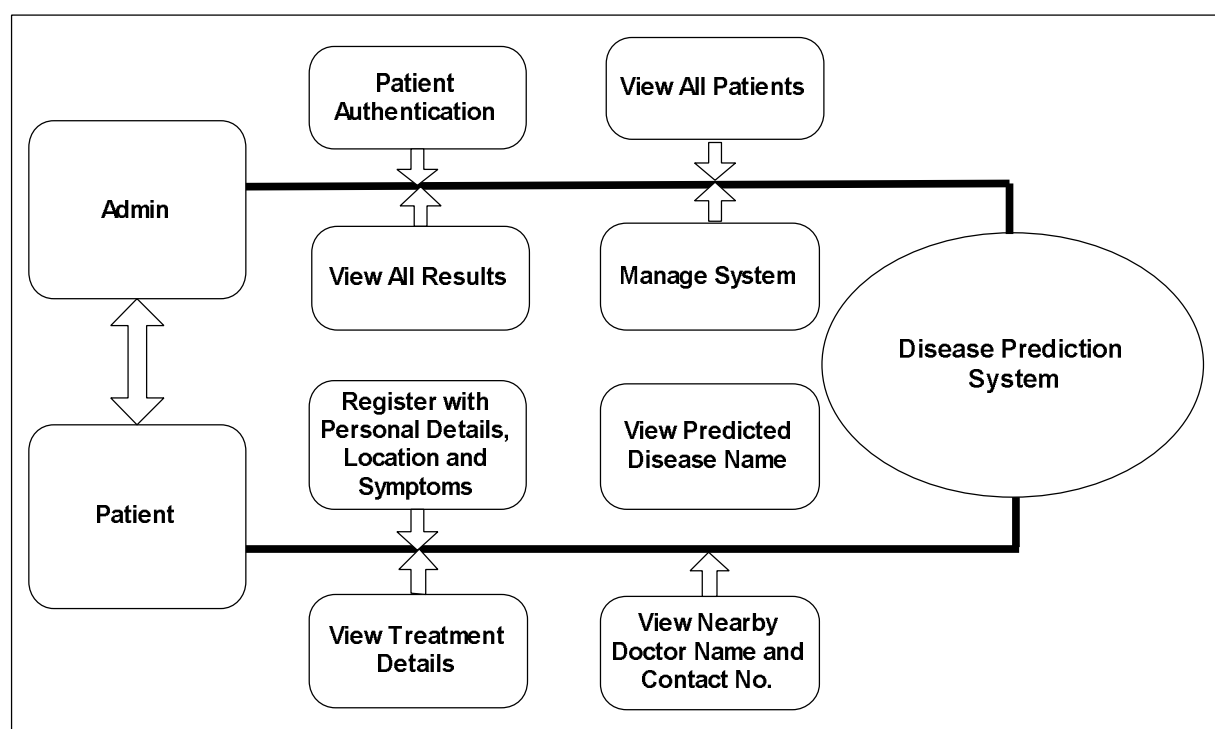


Fig: Proposed System Architecture

### IV. CONCLUSION

Prediction of accurate human disease based on patient's basic symptoms is one of the essential topics in medical diagnosis. The proposed work is to classify the different disease according on symptoms of the patient before

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recommending treatments for the prevailing general diseases. This will also provide remedy for calculated particular diseases. People can self-analyze their health state and can take precautions as per the results. It would help the practitioners / Doctors to analyze the health state of the patient and based on that the manual diagnosis of the disease can also be possible by using the disease prediction system. We used Support Vector Machine (SVM) and Naïve Bays classification techniques to predict the exact disease name. As our project's main focus is providing medical assistance to people living in rural areas to provide them with free treatment for general diseases which they tend to neglect. This will provide early diagnosis of the disease which is not possible with the help of manual diagnosis.

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