



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 8, August 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.569

9940 572 462

6381 907 438

ijrset@gmail.com

www.ijrset.com



Efficient Remote Clinical Decision Services using Machine Learning in Cloud Computing

Miss.Manisha Gawade, Dr.Mininath Nighot

Department of Computer Engineering, D. Y. Patil College of Engineering, Ambi, Talegaon, Pune, India

ABSTRACT: the techniques of classification of the recurrent neural network (RNN) for constructing models for clinical decision making were widely adopted. A healthcare centre offers a clinical decision model to cloud-based remote clinical decision-making services, whereby remote clinical decision-making services are offered to end-users. In this paper, we suggest a realistic and stable clinical decision-making system (SCDMS). Then we exploit symmetric coding to secure patient data secrecy and prohibit the supplier of cloud services from abusing clinical model intellectual property. Finally, to achieve effective classification, we create encrypted indexes. We define a leakage feature, define a security description and provide SCDMS with a simulation-based security proof. The performance analysis reveals that when the RNN classification method has been prepared, SSVMC achieves linear computing complexity. The simulations analyse the effect on time costs of several parameters. The experimental assessments indicate that SCDMS is computing effective with high decision-making accuracy and shows output disparities between SCDMS and many existing schemes in terms of time, cost of storage, connectivity and precision in a real-world clinical data kit.

KEYWORDS: Cloud computing, data privacy, medical services, Machine Learning, encryption.

I. INTRODUCTION

The position of computer science in medicine and health sciences is increasingly involved over a few days. In many countries, healthcare is a growing economic field. This system regularly collects a large amount of data. Analytics offers methods and strategies for the extraction and conversion of information from these diverse and voluminous data in order to assist in health care decision-making. In analytics, insights are built through efficient data use and quantitative and qualitative analysis. It can produce "management, calculation and learning" fact-based decisions. The use of analytics such as data mining, text mining and large-scale data analytics allows health workers to predict and diagnoses the disease. One significant point is that patients access health care and programmes that are safer and more accessible. Several issues impact the health information system, such as lack of data collection, data redundancy, lack of information or inadequate report production and compilation tools.

Machine Learning is the key phase, leading to the discovery of secret and predictive data from massive databases. Machine Learning technology offers a user-oriented approach to fresh and secret data. Comparatively advanced, effective algorithm and a broad range of applications are data mining technology. Quality improvement; cost reduction; usage of resources; care of patients; and others are related to data mining technologies. Data mining has also been applied in healthcare administrative decision-making. The vast volumes of data produced by healthcare transactions or the health industry are too complex and voluminous for conventional methods and techniques to be processed and analysed. Data mining offers the methods and technologies for transforming these vast quantities of data into useful decisions and forecasts. But the physical wellbeing of community is the main concern, which collects knowledge related to health. Today technology offers a forum for the remote monitoring of any information, so that adequate information cannot be obtained thoroughly during the doctor's consultation process.

In this paper, the system recommended by analysing health-related data using data mining and machine learning algorithms is suggested. The system is recommended. In the public sector, this advice is useful in organising health services and in delivering health facilities, as well as in providing medical policy for insurance firms. The RNN algorithm is used so that recommendation can be made to predict the region of disease. It will build a system which maintains and analyses all civil health information and helps the government to efficiently plan health care and take decisions on health care. Insurance companies can use this to advertise the appropriate mediclaim policy. In this region, we will perform wise analyses to enable the government to implement different schemes in various areas according to diseases in the area.



A. Objectives

1. To automate the existing system, in healthcare domain.
2. To decrease the paperwork and enable the process with efficient, reliable record maintenance by using centralized database, thereby reducing chances of data loss.
3. To bridge the gap between individual users and doctors through online web facility.

II. LITERATURE SURVEY

This work uses a neural network to create an effectively regulated cardiac disease prevention system (EHDPS). The device uses age, sex, blood pressure, cholesterol and obesity for prediction with 15 medical parameters. The EHDPS anticipates the probability of heart attack in patients. It allows for the establishment of meaningful information, including connections between cardiovascular factors and patterns [1].

The medical environment remains rich in information but lacking in expertise. The medical systems have an abundance of data possible. There are no effective analytical instruments available to detect secret connections and data patterns. Disease is a concept which assigns a wide variety of body-related health conditions. These medical conditions define the unexpected conditions of health that control all parts of the body directly. The analysis of various types of general body-based issues is done using medical data mining techniques such as association rule mining, grouping, clusters [2].

This work facilitates an on-line consultation and end-user. The author proposes a mechanism that allows customers to receive information about their medical conditions online through a clever social, intelligent healthcare system. The frame is supported by the various symptoms and related diseases or diseases. The framework also enables users to share symptoms and problems. Data mining has already been proved as a field of study to find secret trends, analyses and information used in various fields, making it prominent among researchers and researchers every day, so that they will be able to gain new and profound insights into these important biomedical datasets as well. Another aspect of data mining is the uncovering of new insights relevant to biomedicine and healthcare to support clinical decision-making [3].

The authors have compared various methods for data classification and their precision for prediction of chronic renal disease comprehensively in this study. Author's performance metrics such as ROC, kappa statistics, RMSE and MAE have been compared by the writers in J48, Naïf Bayes and Random Forest, SVM and k-NN classifiers using WEKA. Authors also compared these ratings with various measurements of accuracy such as TP rate, FP rate, accuracy, reminder and F-measurement via WEKA implementation. Experiments show that a random forest classifier is more accurate in classification than other classifications for the dataset of chronic renal disease [4].

Author suggest a method that uses various techniques of data mining like clustering, ranking, etc. to predict the disease of a patient. The disease conditions of the patient can be determined by formalising the hypothesis based on test results and patient symptoms prior to prescribing therapies for the disease prevailing. Our system's main objective is to help physicians diagnose patients by analysing their data and information [5].

For a range of applications data mining techniques is used. Data mining plays a significant role in the healthcare industry in disease prediction. The patient needs to diagnose a disease number of tests. However, the number of tests can be decreased using data mining technology. In time and efficiency, this reduced test plays a major role. These study analyses techniques for data mining that can be used to predict various disease forms. This thesis analysed papers based primarily on cardiovascular, diabetes and breast cancer prediction [6].

Techniques of medical data mining such as association rules, grouping, clustering are used to analyse heart problems of various kinds. Classification is a major data mining issue. This work contains a set of records, each with a single class mark, and the classifier gives a simple and brief description of the following records for each class. A range of common classifiers build decision-making bodies for class models. The data specification is based on the precise MAFIA algorithms that produce the data, entropy cross-checks and partitioning techniques are used to estimate the data and compare the results [7].

A progressive decline in renal function for several months or years is Chronic Kidney Disease (CKD). The most common cause of chronic kidney disease are diabetes and high blood pressure. The main aim of the work is to assess the impairment of kidney function by using the classification algorithm in the patient's medical report test results. The



objective of this work is to reduce the diagnosis period by using classification algorithms and to improve diagnostic accuracy. The work is intended to assess the magnitude of the various phases of chronic kidney disease. The test is conducted in various algorithms, including the Neural Radial Basic Network, Back-Propagation Network, and Random Forest[8].

Present Health Assistant Bot, an intelligent virtual assistant able to talk with patients in order to understand their symptomatology, suggest doctors, and monitor treatments and health parameters. In a simple way, by exploiting a natural language-based interaction, the system allows the user to create her health profile, to describe her symptoms, to search for doctors or to simply remember a treatment to follow [9].

This paper intends to use healthcare big data analysis combined with deep learning technology to provide patients with potential diseases which is usually neglected for lacking of professional knowledge, so that patients can do targeted medical examinations to prevent health condition from getting worse. Inspired by the existing recommendation methods, this paper proposes a novel deep-learning-based hybrid recommendation algorithm, which is called medical-history-based potential disease prediction algorithm [10].

In this paper, author proposes a method to predict the similarity of diseases by node representation learning. We first integrate the semantic score and topological score between diseases by combining multiple data sources [11].

III. PROPOSED SYSTEM

A. Architecture

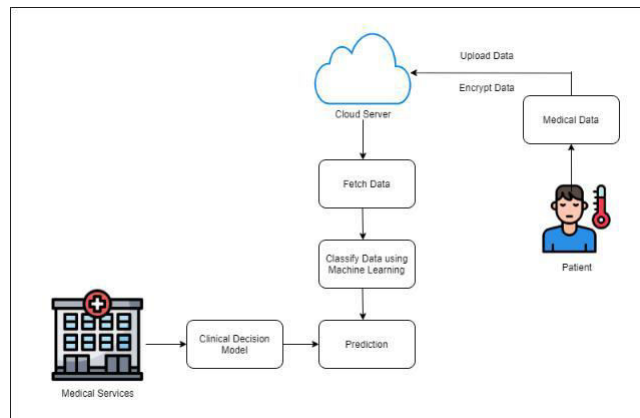


Fig. 1. Proposed System Architecture

The Main Concept to determine medical diseases according to given symptoms & daily Routine when User searches the hospital then given the nearest hospital of their current location. The system provides a user-friendly interface for examinees and doctors. Examinees can know their symptoms which accrued in body which set as the while doctors can get a set of examinees with potential risk. A feedback mechanism could save manpower and improve performance of system automatically. The doctor could fix prediction result through an interface, which will collect doctors' input as new training data. An extra training process will be triggered everyday using these data. Thus, our system could improve the performance of prediction model automatically.

B. Algorithm

Recurrent Neural Network(RNN)

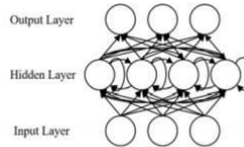


Fig. 2. Recurrent Neural Network

As shown in Fig. , for a RNN, let our input x be a sequence whose length is T , $x = x_1, x_2, \dots, x_T$, and each item x_t is a feature vector. At time step t , given the previous hidden layer state h_{t-1} , the current hidden layer state h_t and the output layer state y_t can be calculated by,

$$h_t = \sigma_h(w_h x_t + U_h h_{t-1} + b_h)$$

$$y_t = \sigma_y(w_y h_t + b_y)$$

Where W_h and W_y denote the input-to-hidden and hidden-to-output weight matrices, respectively, U_h is the matrix of the recurrent weights between the hidden layer and itself at two adjacent time steps, b_h and b_y are the biases, and σ_h and σ_y denote the activation functions.

At each time step, the input is propagated in a standard feed forward fashion, and then, a learning rule is applied. The back connections lead to the result that the context units always maintain a copy of the previous values of the hidden units (since they propagate over the connections before the learning rule is applied). Thus, the network can maintain a state, allowing it to perform such tasks as sequence prediction that is beyond the power of standard multilayer perception.

Formula for calculating current state:

$$h_t = \sigma_h(w_h x_t + U_h h_{t-1} + b_h)$$

Where,

h_t =current state

h_{t-1} =Previous state

x_t = Input state

Formula for applying Activation function:

$$h_t = \text{activation}(w_h h_{t-1} + w_x x_t + b_h)$$

Where,

w_h = Weight at recurrent neuron w_x = Weight at input neuron

Formula for calculating output:

$$y_t = w_y h_t + b_y$$



Where,

yt=Output

Why=Weight at output layer

IV. RESULTS AND ANALYSIS

Experimental evaluation is done to compare the proposed system with the existing system for evaluating the performance. The simulation platform used is built using Java framework (version jdk 8) on Windows platform. The system does not require any specific hardware to run; any standard machine is capable of running the application.

Let TP be the number of correctly classified phishing pages, TN be the number of correctly classified legitimate pages, FP be the number of wrongly classified legitimate pages and FN be the number of wrongly classified phishing pages. The performance metrics used in our approach are:

TPR is the rate of correctly classified phishing pages. It is calculated as:

$$TPR = \frac{TP}{TP + FN}$$

TNR is the rate of correctly classified legitimate pages. It is calculated as:

$$TNR = \frac{TN}{FP + TN}$$

FPR is the rate of wrongly classified phishing pages. It is calculated as:

$$FPR = \frac{FP}{FP + TP}$$

FNR is the rate of wrongly classified legitimate pages. It is calculated as:

$$FNR = \frac{FN}{FN + TP}$$

Accuracy is the rate of correctly classified web pages. It is calculated as:

$$accuracy = \frac{TP + TN}{FP + TN + FN + TP}$$

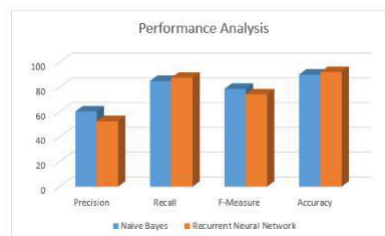


Fig. 3. Recurrent Neural Network

	Naive Bayes	Recurrent neural Network
Precision	50.02	61.10
Recall	75.11	79.04
F-Measure	68.08	77.51
Accuracy	83.21	90.98



V. CONCLUSION

One of the essential topics of medical diagnosis is predicting the exact human condition based on the specific symptoms of the patient. The idea is for the treatment of prevalent general diseases to be categorised according to patient's symptoms before prescribing treatment. This also remedies such diseases calculated. People should evaluate themselves and take precautions according to the results. The physicians and doctors will help to assess the patient's wellbeing and, by using the disease prediction machine, can also diagnose the disease manually. In order to predict exactly the name of the disease, we employed Recurrent neural network (RNN) and Naive Bayes techniques. The key goal of our project is to provide medical assistance in rural areas to people who appear to ignore general diseases. This diagnoses the disease early and cannot be achieved by manual diagnosis.

Future Enhancement: Thus, our future work would be to extend the analysis of major and minor diseases according to the prediction of diseases over a year.

REFERENCES

- [1] Poornima Singh, Sanjay Singh, Gayatri S Pandi-Jain, "Effective heart disease prediction system using data mining techniques". International Journal of Nanomedicine March 2019
- [2] Shratik J. Mishra, Albar M. Vasi, Vinay S. Menon, Prof. K. Jayamalini, "GDPS - General Disease Prediction System". International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 Volume: 05 Issue: 03 — Mar-2018
- [3] Puja Sarage, Trupti Sudrik, Kalyani Zodge, "Health Prediction System by using Data Mining", International Journal for Research in Applied Science Engineering Technology (IJRASET) ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor:6.887 Volume 5 Issue XII December 2017
- [4] Narander Kumar, Sabita Khatri, "Implementing WEKA for medical data classification and early disease prediction", 3rd IEEE International Conference on "Computational Intelligence and Communication Technology" (IEEE-CICT 2017)
- [5] Rahul Patil, Pavan Chopade, Abhishek Mishra, Bhushan Sane, Yuvraj Sargar, "Disease Prediction System using Data Mining Hybrid Approach". Communications on Applied Electronics (CAE) – ISSN: 2394-4714 Foundation of Computer Science FCS, New York, USA Volume 4– No.9, April 2016 – www.caeaccess.org
- [6] K.Gomathi, Dr. D. Shanmuga Priyaa, "Multi Disease Prediction using Data Mining Techniques". 17 September 2017.
- [7] M.A.Nishara Banu, B Gomathy, "DISEASE PREDICTING SYSTEM USING DATA MINING TECHNIQUES". International Journal of Technical Research and Applications e-ISSN: 2320-8163, www.ijtra.com Volume 1, Issue 5 (Nov-Dec 2013), PP. 41-45
- [8] Shivane Pandey et al., "Diagnosis and Classification of Hypothyroid Disease using Data Mining Techniques", Vol. 2 Issue 6, pp. 3188-3192, ISSN: 2278-0181 ISSN: 2278-0181, 2013
- [9] MARCO POLIGNANO 1, FEDELUCIO NARDUCCI2, ANDREA IOVINE1, (Graduate Student Member, IEEE), CATALDO MUSTO 1, MARCO DE GEMMIS1, AND GIOVANNI SEMERARO1 "HealthAssistantBot: A Personal Health Assistant for the Italian Language" IEEE ACCESS 2020
- [10] WENXING HONG 1, ZIANG XIONG1, NANNAN ZHENG1, AND YANG WENG "A Medical-History-Based Potential Disease Prediction Algorithm" IEEE ACCESS 2019
- [11] Jianliang Gao, Ling Tian, Jianxin Wang, Yibo Chen* Bo Song, Xiaohua Hu "Similar Disease Prediction with Heterogeneous Disease Information Networks" IEEE 2020



**Impact Factor:
7.569**



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details