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Virtual Smart Health Card

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ABSTRACT:- Managing health card information using information technology (IT) is an important part of the changing health-care system. A health-care information management system is defined as application consisting of a collection of procedures and programs with the requirements for entering, storing, retrieving, updating and manipulating data having adequate capacity to maintain the integrity, security and confidentiality with fulfilling management, legal and accounting requirements. Proper implementation of information technology makes it easy for healthcare providers to store, share and access the health information. With an increase in access to larger computers and new advances in information technology resulted the development of more efficient data management system. However, all these developments are within the network of a particular hospital or within the network of a limited number of hospitals. The patient cannot utilize their medical data outside the network as patient wishes. Now-a-days, people face various diseases due to the environmental condition and their living habits. So the correlation of disease at earlier stage becomes important task.But the accurate correlation on the basis of symptoms becomes too difficult for doctor. To detect the Various Diseases through the examining Symptoms of patient'using different techniques of android application for generating the health card.Accurate patient identification across organizational and geographic boundaries .Integration with health information exchange Enterprise Master Patient Index (EMPI) and record locator systems. Prevention of the issuance of duplicate IDs and ID cards Ability to identify all locations (at the healthcare information exchange level) where a patient identifier has been used. Support for reporting, quality assurance, and education .Mitigation of legal and financial liabilities. Ability to securely store patient identifiers and support deactivation of lost identifiers. Recording and updating patient demographic data and data copying, data reporting, and interface with other healthcare information systems. Health card system is using the modern technology to give a better solution that the health sector is facing in the day to day operations, the use of the technology has been increased in the recent and it will give financial advantages and less interaction of the human resource.

KEYWORDS: Health Card, Mobile application, classification

I.INTRODUCTION

Health care is one of the fundamental human rights, and it is the responsibility of any government to provide its people with improved health care. However, because of rising medical costs, many rural residents are unable to receive adequate medical care. In order to combat this, the government has invested in a health card system that enables patients to go straight to the doctor's office and discuss their problems with the physician. This study seeks to determine whether Bangladesh's current health card system is superior to the country's out-dated one while also examining the effect of health cards on rural residents' quality of life.Medical assistant decision support, intelligent consultation, illness diagnosis, and question-answering doctors have all benefited from the use of big data analytics in the healthcare industry. In this study, deep learning technology and healthcare big data analysis are used to inform patients about probable ailments and enable them to undergo focused medical examinations to stop health concerns from getting worse.Due to environmental factors and lifestyle choices, people are subject to a variety of ailments, making it challenging for doctors to precisely correlate symptoms. An Android application that analyses patient symptoms and generates a health card has been created to make it simpler for end users to identify ailments. End consumers will find it simpler to diagnose illnesses without seeing a doctor thanks to this method.Due to environmental factors and lifestyle

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choices, people are subject to a variety of ailments, making it challenging for doctors to precisely correlate symptoms. An Android application that analyses patient symptoms and generates a health card has been created to make it simpler for end users to identify ailments. End consumers will find it simpler to diagnose illnesses without seeing a doctor thanks to this method.The goal of the initiative is to offer company data and hospital statistics for online viewing. Only the Administrator, Directors, and other authorised or registered users will have access to this data. Health Card Schemes are being implemented by hospital management, and patients must register their information with the organisation. To maintain a global informational database, this information is distributed to all Hospital group branches.EMPI and record locator integration, counterfeit resistance, risk reduction for identity theft, data breaches, and fraudulent use, assistance with reporting, quality assurance, and education, reduction of legal and financial liabilities, secure storage of patient identifiers, recording and updating patient demographic data, and interface with other healthcare information systems.

II. LITERATURE SURVEY

Chunzhi Yi et.al [1] publised on 3rd May 2020. The increasing demand for fast and accurate gait-impaired disease diagnosis requires a real-time prediction of gait information inorder to enable online information access to determining the disease progression. In addition, the wearable sensor-based information acquisition meets the new trend of take-home healthcare, the access to the great amount of data enables applying data-driven method in this scenario. In this paper, we propose to use wearable Electromyography (EMG) and inertial measurement unit (IMU) sensors to make an ahead-of-motion prediction of basic gait information, including lower-limb kinematics and kinetics. Particularly, a novel long short term memory (LSTM) -based algorithm is trained to extract features and continuously predict lower-limb angles. Based on the predicted kinematics, the kinetics of lower limbs are calculated by a dynamic model of human segments. EMG signals recorded from nine lower limb muscles and IMU signals from each lower limb segment were collected for training the regressor. The experimental results with cross-validation among ten subjects have demonstrated the accuracy of the angle prediction and kinetics calculation. In addition, the optimal prediction time was exploited by testing the different sets of prediction time. The implication of this research work highlights the potential of continuous prediction of kinematics and kinetics, which provides fast and accurate access to basic gaitinformation for smart healthcare applications.

DhirajDahiwade et.al [2] publised in the year 2019. People face various diseases due to the environmental condition and their living habits. So the prediction of disease at earlier stage becomes important task. But the accurate prediction on the basis of symptoms becomes too difficult for doctor.The correct prediction of disease is the most challenging task.Toovercome this problem data mining plays an important role to predict the disease. Medical science has large amount of data growth per year. Due to increase amount of data growth in medical and healthcare field the accurate analysis on medical data which has been benefits from early patient care.With the help of disease data, data mining finds hidden pattern information in the huge amount of medical data. They proposed general disease prediction based on symptoms of the patient.For the disease prediction, they use K-Nearest Neighbor (KNN) and Convolutional neural network (CNN) machine learning algorithm for accurate prediction of disease. For disease prediction required disease symptoms dataset. In this general disease prediction the living habits of person and checkupinformation consider for the accurate prediction. The accuracy of general disease prediction by using CNN is 84.5lower risk of general disease or higher.

Domenico Formica et.al[3] publised in the year 2021 . This special issue on “Smart Sensors for Healthcare and Medical Applications” focuses on new sensing technologies, measurement techniques, and their applications in medicine and healthcare. We proposed this topic, being aware of the pivotal role that smart sensors can play for the improvement of healthcare services in both acute and chronic conditions as well as for prevention towards a healthy life and active aging. In this editorial we shortly describe the potential of smart sensors in the aforementioned applications, before moving on providing a general overview of the 24 articles selected and published in this special issue.

Anjan Nikhil Repaka et.al [4] publised in the year 2019. Data mining, a great developing technique that revolves around exploring and digging out significant information from massive collection of data which can be further beneficial in examining and drawing out patterns for making business related decisions. Talking about the Medical domain, implementation of data mining in this field can yield in discovering and withdrawing valuable patterns and information which can prove beneficial in performing clinical diagnosis. The research focuses on heart disease diagnosis by considering previous data and information. To achieve this SHDP (Smart Heart Disease Prediction) is built via Navies Bayesian in order to predict risk factors concerning heart disease. The speedy advancement of technology has led to remarkable rise in mobile health technology that being one of the webapplications. The required

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data is assembled in a standardized form. For predicting the chances of heart disease in a patient, the following attributes are being fetched from the medical profiles, these include: age, BP, cholesterol, sex, blood sugar etc.

JianliangGao et.al [5] July 2020,Studying the similarity of diseases can help us to explore the pathological characteristics of complex diseases, and help provide reliable reference information for inferring the relationship between new diseases and known diseases, so as to develop effective treatment plans. To obtain the similarity of the disease, most previous methods either use a single similarity metric such as semantic score, functional score from single data source, or utilize weighting coefficients to simply combine multiple metrics with different dimensions.
Ping Xuan et.al [6] 1019-1031, 1 May-June 2020,Identification of disease-associated microRNAs (disease miRNAs) is an essential step towards discovering causal miRNAs and understanding disease pathogenesis. Two sources of information can be exploited forpredicting disease miRNAs: one includes the connections between miRNAs, between diseases, and between miRNAs and diseases, and the other has the attributes of miRNAnodes. The former contains information of miRNA similarities, disease similarities, and miRNA-disease associations. The latter includes the information of the families and clusters that miRNAs belong to. Similar diseases are usually associated with miRNAs that have similar functions and common attributes. However, most of the existing methods

for disease miRNA prediction focus only on the connections of miRNAs and diseases. It remains challenging to adequately integrate the connections and miRNA node attributes to identify more reliable candidate disease miRNAs.
Pengyao Ping et.al [7] 1 March-April 2019, an increasing number of studies have indicated that long-non-coding RNAs (lncRNAs) play critical roles in many important biological processes. Predicting potential lncRNA disease associations can improve our understanding of the molecular mechanisms of human diseases and aid in finding biomarkers for disease diagnosis, treatment, and prevention. In this paper, they constructed a bipartite network based on known lncRNA-disease associations; based on this work, they proposed a novel model for inferring potential lncRNA-disease associations. Specifically, they 1067nalysed the properties of the bipartite network and found that it closely followed a power-law distribution. Moreover, to evaluate the performance of our model, a leave one-out crossvalidation (LOOCV) framework was implemented, and the simulation results showed that our computational model significantly outperformed previous state-of-the-art models, with AUCs of 0.8825, 0.9004 and 0.9292 for known lncRNAdisease associations obtained from the LncRNADisease database, Lnc2Cancer database, and MNDR database, respectively. Thus, our approach may be an excellent addition to the biomedical research field in the future.

YI ZHANG et.al [8] 2021, Long non-coding RNAs (lncRNAs) exert impacts on multiple fundamental and important biological processes. ManylncRNAs have been functionally associated with cancers. Utilizing experimental and bioinformatics approaches to identify and annotate lncRNAs with cancer-associated roles is laborious and time-consuming. Therefore, more and more researchers have focused on computational methods as an alternative candidate to find out unknown associations between lncRNAs and diseases, in particular, cancers. In this study, under the situation that there were few known lncRNAdisease associations out of huge unknown associations, they explored a novel two-stage prediction model (namely DRW-BNSP) for inferring lncRNA-disease associations: In the first stage, they designed a Dual Random Walk (DRW) model to obtain the primary prediction scores by walking on two combined similarity networks which were reconstructed; In the second stage, they used a Bipartite Network Space Projection (BNSP) model tomake the primary prediction scores to be more accurate fatherly. Compared with other state-of-the-art methods in similar type, our DRW-BNSP could not only function on new lncRNAs and isolated diseases, but also achieve higher AUC value of 0.9344 and 0.9432 on the first dataset (namely Dataset1) and second dataset (namely Dataset2) built by us. Furthermore, case study further confirmed the predictive dependability of our DRWBNSP for inferring potential lncRNA-disease associations.

Ji-Ren Zhou et.al [9] 2021. Uncovering additional long non-coding RNA (lncRNA)-disease associations has become increasingly important for developing treatments for complex humandiseases. Identification of lncRNA biomarkers andlncRNA-disease associations is central to diagnoses and treatment. However, traditional experimental methods are expensive and time consuming. Enormous amounts of data present in public biological databases are available for computational methods used to predictlncRNAdisease associations. In this study, they propose a novel computational method to predict lncRNA-disease associations. More specifically, a heterogeneous network is first constructed by integrating the associations among microRNA (miRNA), lncRNA, protein, drug, and disease, Second, high-order proximity preserved embedding (HOPE) was used to embed nodes into anetwork. Finally, the rotation forest classifier was adopted to train the prediction model. In the 5-fold cross-validation experiment, the area under the curve (AUC) of our methodachieved 0.8328 ± 0.0236. They compare it with the other four classifiers, in which the proposed method remarkably outperformed other comparison methods. Otherwise, they constructed three case studies for three excess death rate cancers, respectively. The results show that 9 (lung cancer, gastric cancer, and hepatocellular carcinomas)

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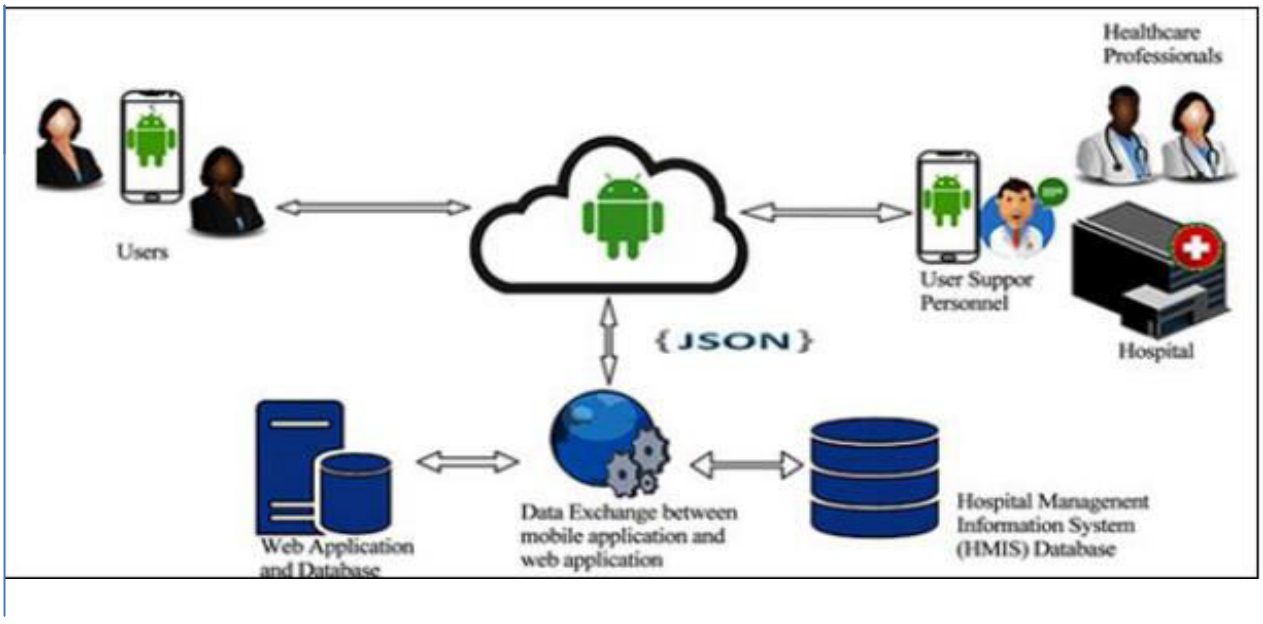
out of the top 15 predicted disease-related lncRNAs were confirmed by our method. In conclusion, our method could predict the unknown lncRNAdisease associations effectively.

MengjiaXu et.al [10] May 2021, characterizing the subtle changes of functional brain networks associated with the pathological cascade of Alzheimer's disease (AD) is important for early diagnosis and prediction of disease progression prior to clinical symptoms. These latent distribution-based embedding enable a quantitative characterization of subtle and heterogeneous brain connectivity patterns at different regions, and can be used as input to traditional classifiers for various downstream graph analytic tasks, such as AD early stage prediction, and statistical evaluation of between-group significant alterations across brain regions. They used MG2G to detect the intrinsic latent dimensionality of MEG brain networks, predict the progression of patients with mild cognitive impairment (MCI) to AD, and identify brain regions with network alterations related to MCI.

III. PROPOSED SYSTEM

Data mining is crucial in resolving this issue and preventing the spread of the current illness. Each year, there is significant data increase in the medical sciences. The proper analysis of medical data which has been growing due to the amount of data expansion in the medical and healthcare area early patient treatment has had advantages. Using symptoms as a guide, this technique is utilised to prevent disease. As seen in the graphic below, a database holding information on the symptoms of various diseases is sent into the system together with the user's current symptoms and their medical background. (Android-based system used to treat patient's present ailment.). Processing: The transformation of raw data into a comprehensible format is known as data pre-processing. Given that we cannot work with raw data, it is also a crucial stage in data mining. Before using machine learning or data mining methods, the data's quality should be examined. Cleaning, instance selection, normalisation, one hot encoding, transformation, feature extraction and selection are a few examples of data pre-processing.



There are seven significant steps in data pre-processing in Machine Learning:

- Acquire the data set.
- Import all the crucial libraries.
- Import the data set.
- Identifying and handling the missing values.
- Encoding the categorical data.
- Splitting the data set.
- Feature scaling.

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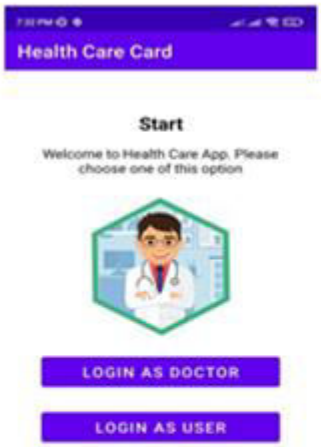
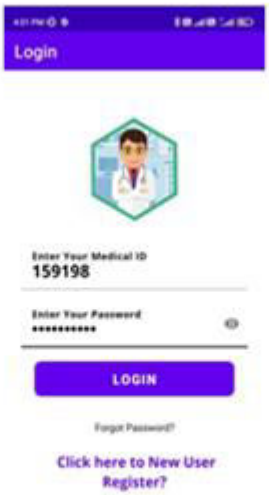
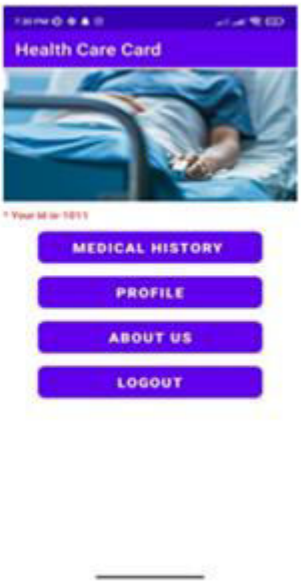
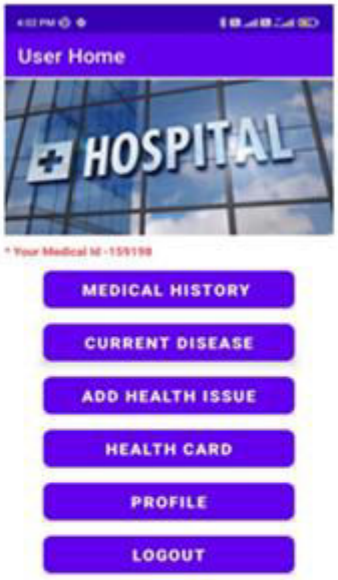
IV. RESULT AND DISCUSSION









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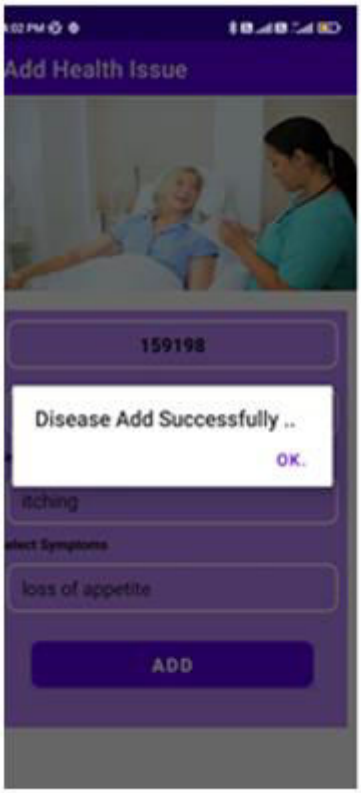

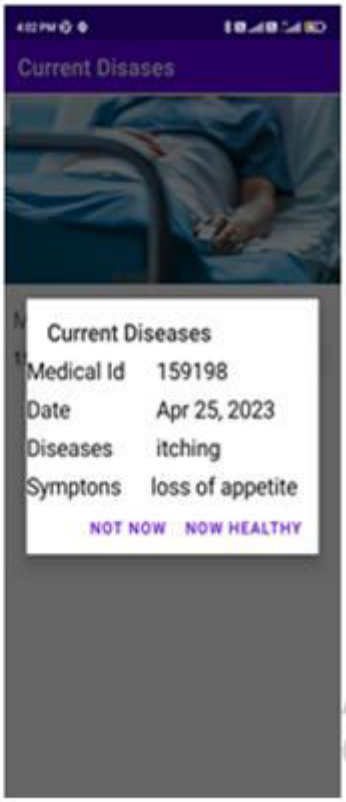

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V. CONCLUSION

Utilising contemporary technology, the health card system offers a better answer for the healthcare industry. Online Personal Health Records (PHR), E-health, and M-Health are examples of this, which carry out activities using wireless technology and mobile devices. These systems offer a more productive, economical, and trustworthy method of managing patient data and medical records. While M-Health conducts activities using mobile phones and wireless technology, e-health employs internet-based orders to fulfil medical criteria. The management of patient data and medical records is made more effective, affordable, and dependable through the health card system. The health card system is a useful addition to the healthcare sector since it allows for precise patient identification, safe data storage, and quick access to medical records. Mobile technology has improved the system's usability and accessibility, lowering healthcare costs and enhancing patient convenience. It has lowered healthcare expenses, raised healthcare delivery efficiency, and enhanced the quality of treatment given to patients. We may anticipate seeing more cutting-edge solutions, like the health card system, as technology advances, which will further improve the healthcare sector. Mobile technology has improved the system's usability and accessibility, lowering healthcare costs and enhancing patient convenience. It has lowered healthcare expenses, raised healthcare delivery efficiency, and enhanced the quality of treatment given to patients. We may anticipate seeing more cutting-edge solutions, like the health card system, as technology advances, which will further improve the healthcare sector.

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