Healthcare Predictive Analytics for Diseases Diagnosis

Submitted in partial fulfillment of the requirements of the

degree of Bachelor of Artificial Intelligence & Machine

Learning

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CERTIFICATE

This is to certify that the project entitled "**Healthcare Predictive Analytics for Diseases Diagnosis**" is Bonafide work of "**Ms. Arhama Ansari" (3), "Mr. Shreyash Narvekar" (71), "Mr. Brijesh Pal" (73) and "Mr. Shivam Kumar Yadav" (134) submitted** to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of **"Undergraduate"** in **"Artificial Intelligence and Machine Learning".**

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Project Report Approval for B.E.

This project report entitled **Healthcare Predictive Analytics for Diseases Diagnosis** by Ms. Arhama Ansari, Mr. Shreyash Narvekar, Mr. Brijesh Pal and Mr. Shivam Kumar Yadav is approved for degree of **Bachelor of Artificial Intelligence & Machine Learning.**

Internal Examiner

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Date:

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ABSTRACT

Healthcare prediction has been a significant factor in saving lives in recent years. In the domain of health care, there is a rapid development of intelligent systems for analyzing complicated data relationships and transforming them into real information for use in the prediction process. Healthcare predictive analytics has become an indispensable tool in modern medicine, offering a proactive approach to disease detection and management. Algorithms for effective prediction of various disease occurrences in disease-frequent societies. Therefore, diseases must be accurately predicted and estimated. Hence, reliable and efficient methods for healthcare predictive analysis are essential. The extensive growth in data for monitoring and analyzing the patient's outcomes in predicting and diagnosis of chronic diseases lacks in traditional methods and are replaced by technologies to gather the most relevant insights from the medical data by using predictive analytics with very useful tool of machine learning. Healthcare predictive analytics for disease diagnosis has emerged as a transformative approach in modern medicine, facilitating early detection, accurate prognosis, and personalized treatment strategies.

Keywords - Predictive Analytics; Machine Learning; Health Care; Prediction Algorithms and Techniques.

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List of Abbreviations

1. NGO – Non-Government Organization
2. KNN – K-nearest neighbor
3. UI – User Interface
4. FIR – First Incident Report
5. IEEE - Institute of Electrical and Electronics Engineers
6. RAM – Random Access Memory
7. IDE – Integrated Development Environment
8. DFD – Data Flow Diagram
9. UML – Unified Modelling Language

Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of aca- demic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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(Ms. Arhama Ansari 03)

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Chapter 1

INTRODUCTION

Project Overview

The Earth is going through a purplish patch of technology where the demand of intelligence and accuracy is behind it. Today's people are likely addicted to internet, but they are not concerned about their physical ignore the small problem and don't visit to visit hospital which turn into serious disease with time of this growing technology, our basis aim is to develop such a system that will predict the multiple accordance with symptoms put down by the patients without visiting the hospitals / physicians.

Machine Learning is a subset of AI that mainly deals with the study of algorithms which improve with use of data and experience. Machine Learning has two phases i.e. Training and Testing. Machine Learning provides an efficient platform in the medical field to solve various healthcare issues. There are two kinds of Machine Learning – Supervised Learning and Unsupervised Learning.

Supervised learning we frame a model with the help of data that is well labeled.

Unsupervised learning model learns from unlabeled data.

The intent is to deduce a satisfactory Machine Learning algorithm which is efficient and accurate for the prediction of disease. In this paper, the supervised Machine Learning concept is used for predicting. The main feature will be Machine Learning in which we will be using machine learning algorithms which will help in early prediction of diseases accurately and better patient care.

Scope

In this work, our goal is to provide a tool to assist professionals and consumers in finding and choosing disease. To achieve this goal, we develop an approach that allows a user to query for disease that satisfies a set of conditions based on disease properties, such as disease indications and also takes into account patient profiles.

PROBLEM DEFINITION

Healthcare predictive analytics for disease diagnosis involves the use of advanced statistical algorithms and machine learning techniques to analyze historical and real-time healthcare data to make predictions about future events and trends. This approach can aid in identifying potential health risks, optimizing treatment plans, and improving patient outcomes. Predictive analytics can be applied in various healthcare scenarios, such as predicting patient readmission rates, identifying individuals at risk of chronic diseases, and optimizing hospital resource allocation based on anticipated patient influx.

Machine learning algorithms, such as Random Forest Classifier, Logistic Regression, Decision Trees, and Neural Networks, are essential for building predictive models for disease detection. These algorithms can analyze patient data, identify patterns associated with specific diseases, and assist in early diagnosis. Real-world examples of successful disease detection using predictive analytics include identifying individuals at risk of developing Type 2 diabetes and detecting potential sepsis patients.

The use of predictive analytics in healthcare has the potential to revolutionize patient care and improve operational efficiency. By leveraging AI-powered predictive analytics algorithms, healthcare professionals can analyze large volumes of patient data, including genomic information, wearable device data, and real-time monitoring, to identify patterns, detect early warning signs, and predict disease progression. However, several challenges need to be addressed to fully harness the potential of predictive analytics in healthcare, including establishing human intervention points and ensuring fairness and eliminating bias in the application of predictive analytics.

Chapter 2

REVIEW OF LITERATURE

Existing System

The existing system in Healthcare Predictive Analytics for Diseases Diagnosis involves leveraging advanced statistical algorithms and machine learning techniques to analyze patient data, identify patterns associated with specific diseases, and make predictions about future health outcomes. By incorporating factors such as genetic markers, lifestyle choices, and environmental variables, predictive models can assist in early disease detection and personalized treatment plans. This system aims to improve patient care, predict disease outbreaks, reduce treatment costs, and enhance operational efficiency in healthcare settings.

The current system utilizes predictive analytics to identify potential health risks, optimize treatment plans, and improve patient outcomes. It finds applications in predicting patient readmission rates, identifying individuals at risk of chronic diseases, and optimizing hospital resource allocation based on anticipated patient influx. By analyzing vast datasets and historical healthcare data, healthcare professionals can make informed decisions, predict trends, and manage the spread of diseases effectively.

Overall, the existing system in Healthcare Predictive Analytics for Diseases Diagnosis is revolutionizing the healthcare industry by providing real-time, accurate insights that impact patient care significantly. It enables healthcare organizations to access, analyze, and process patient data to deliver data-driven quality care, accurate diagnosis, and personalized treatments, ultimately leading to improved patient outcomes.

Literature Review

The literature review reveals that healthcare predictive analytics is an emerging field that utilizes machine learning and deep learning techniques to improve disease diagnosis and patient outcomes. The reviewed studies highlight the potential of AI techniques in accurately diagnosing diseases and helping to anticipate and analyze healthcare data.

The literature review also highlights the challenges faced by medical personnel in accurately diagnosing diseases, including the dynamism and scalability of the healthcare system, limited time available, and the complexity of clinical interpretation of medical data.

The review also discusses the importance of predictive analytics in healthcare, including its potential to change the way traditional healthcare services are delivered, and its role in population health management, such as identifying patients at risk of developing chronic diseases and predicting hospital readmissions.

The literature review also highlights the importance of high-quality data, advanced technology, and human oversight in successfully implementing predictive analytics in healthcare.

the literature review suggests that healthcare predictive analytics using machine learning and deep learning techniques has the potential to significantly improve disease diagnosis and patient outcomes. However, it also highlights the challenges faced by medical personnel in accurately diagnosing diseases and the importance of high-quality data, advanced technology, and human oversight in successfully implementing predictive analytics in healthcare.

Table 2.2 – Literature Survey table

Sr. No	Paper Name	Year of Publication	Author	Publication	Proposed Work	Research Gap
1	Implementation of a Chatbot System using AI and NLP	2020	Dr. Kavita Sharma & Dr. Shilpa Sharma	SSRN Electronic Journal	This paper presents a college inquiry chat bot, a fast, standard and informative widget to enhance college website's user experience and provide effective information to the user.	The paper does not identify any specific research gap or propose any new work.
2	Future directions for chatbot research: An interdisciplinary research agenda	2021	Asbjørn Følstad, Theo Araujo, Effie Lai-Chong Law, Petter Bae Brandtzaeg	Computing	This paper proposes a research agenda in the form of future directions and challenges to be addressed by chatbot research. It consolidates years of discussions at the conversations workshop series on chatbot research	Limited knowledge concerning the impact of chatbots at the individual, group, and societal level. Furthermore, a number of challenges remain to be resolved before the potential of chatbots can be fully realized.
3	Conversational AI: Chatbots	2021	Dr. Ruchi Sharma & Dr. Ritu Sibal	IEEE Xplore	This paper discusses the growth of technologies like AI & Big Data Analytics	The paper does not propose any new work or research gap.

4	Predictive Analytics in Health Care Using Machine Learning Tools and Techniques	2023	B. Nithya Dr. V. Ilango	ICICCS	The aim of Machine Learning is to develop algorithms which can learn and progress over time and can be used for predictions. Machine Learning practices are widely used in various fields and primarily health care industry hasbeen benefitted a lot through machine learning prediction techniques.	The ethical implications of using AI systems and chatbots in the academic field are not well understood.
5	Improving Healthcare Prediction of Diabetic Patients Using KNN Imputed Features and Tri-Ensemble Model IEEE	2024	Dr.Khaled Alnowaiser	IEEE	The aim of this study is to propose an automated method for predicting diabetes, with a focus on appropriately dealing with missing data and improving accuracy	The paper does propose any new work or research gap

Chapter 3

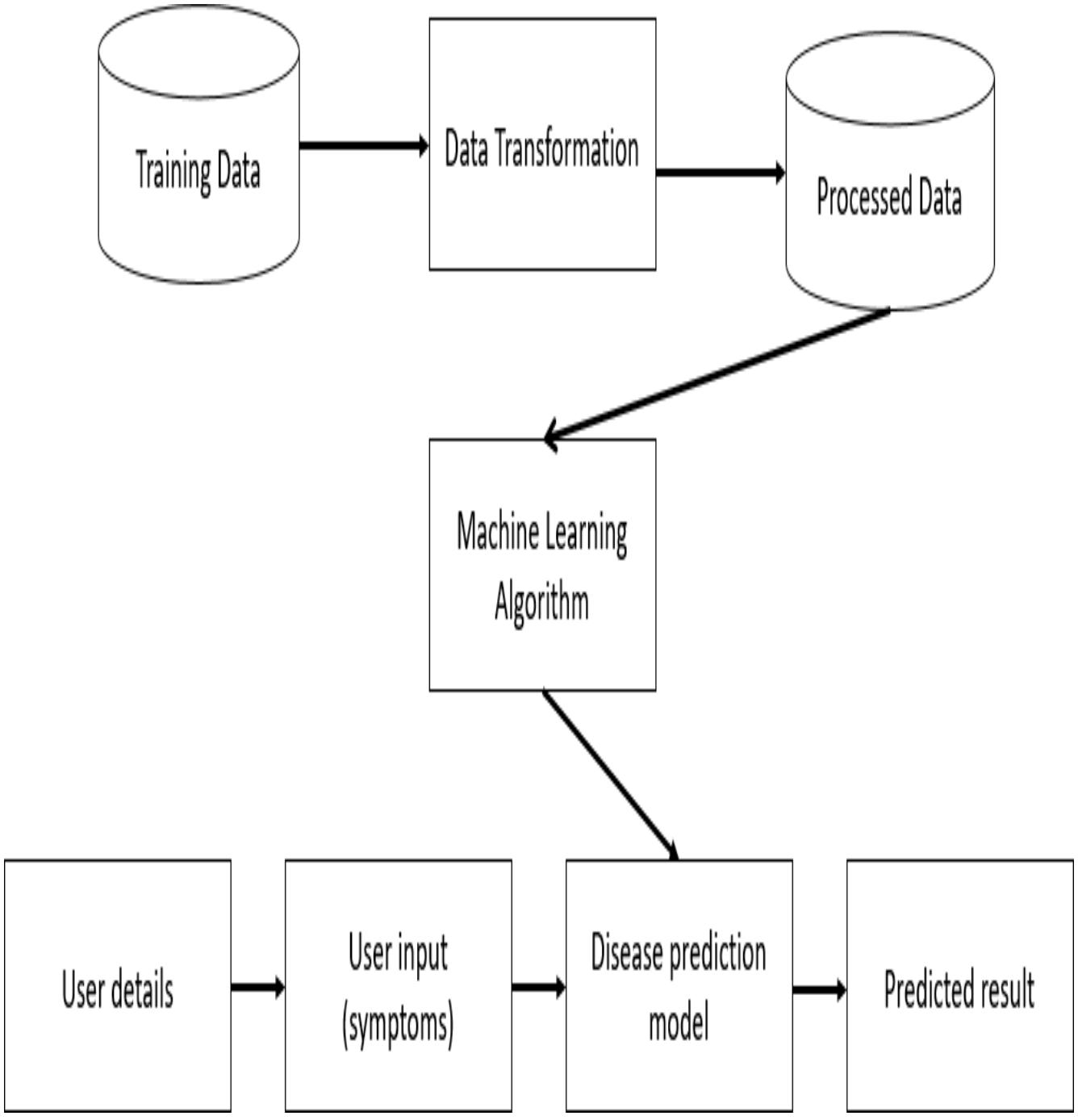
PROPOSED SYSTEM

3.1 Modules

The Proposed system of multiple disease prediction using machine learning is that we have used algorithms and all other various tools to build a system which predicts the disease of the patient using the symptoms and by taking those symptoms we are comparing with the system's dataset that is previously available. By taking those datasets and comparing with the patient's disease we will predict the accurate percentage disease of the patient. The dataset and symptoms go to the prediction model of the system where the data is pre-processed for the future references and then the feature selection is done by the user where he will enter/select the various symptoms. Then the classification of those data is done with the help of machine learning algorithms such as Logistic regression. Then the data goes in the recommendation model, there it shows the risk analysis that is involved in the system and it also provides the probability estimation of the system such that it shows the various probability like how the system behaves when there are n number of predictions are done and it also does the recommendations for the patients from their final result and also from their symptoms like it can show what to use and what not to use from the given datasets and the final results. It predicts probable diseases by mining data sets such as Covid-19, chronic kidney disease and heart disease. To the best of our knowledge in the area of medical big data analytics none of the existing work focused on both data types.

ARCHITECTURE DIAGRAM:

Figure 3.1



SYSTEM REQUIREMENT

This section will provide the user the required specification of the hardware and software components on which the proposed system is to be implemented.

Hardware Requirements

This subsection will provide the minimum requirements that must be fulfilled by the hardware components. The hardware requirements are as follows: -

1) Internet Connection
2) RAM – minimum 4 gigabytes
3) Storage – minimum 100 gigabytes
4) Processor – minimum quad core or hexa core

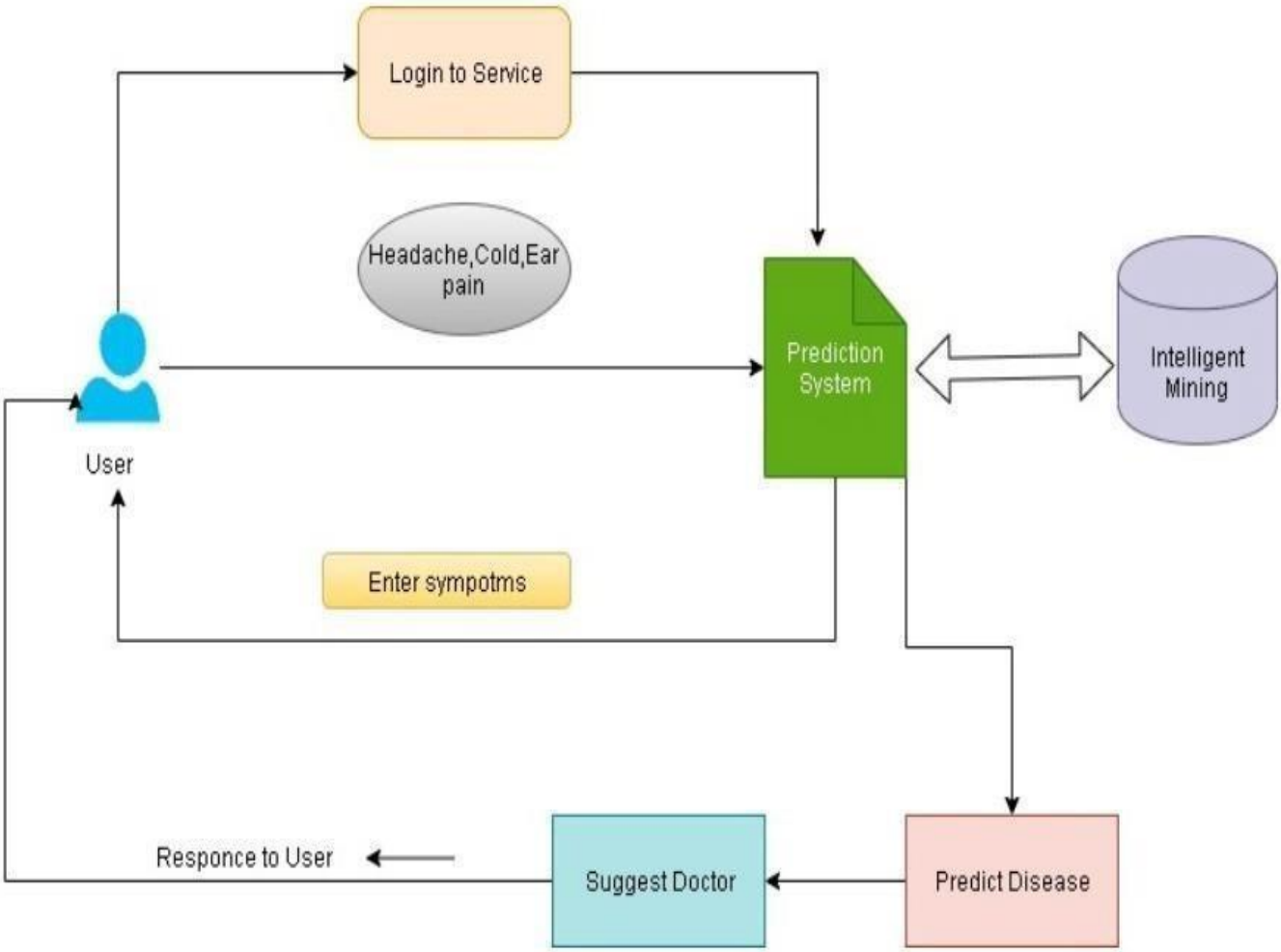
Software Requirement

This subsection will provide the versions of software applications that must be installed.

1) Database Management System (DBMS): Flask-SQLAlchemy to store and manage healthcare data.
2) ETL (Extract, Transform, Load) Tools: Tools like Apache Nifi,libraries to extract and preprocess data from various sources.
3) Data Cleaning and Wrangling Tools: Software such as Python's pandas, Open for transformation, and feature engineering.
4) Programming Languages: Python
5) Machine Learning Libraries: Libraries like Scikit-Learn
6) More Libraries: Click, Flask, Gunicorn, Importlib-Metadata, Itsdangerous, Jinja2,Joblib, MarkupSafe, Numpy, Python-Dateutil, Pytz, Scipy, Six, Threadpoolct1, Werkzeug, Zipp.

SYSTEM ARCHITECTURE

Figure 3.3



METHODOLOGY

The methodology of healthcare predictive analytics for disease diagnosis involves the use of machine learning and deep learning techniques to process real-time and historical patient data, enabling medical professionals to predict disease progression, identify high-risk patients, and optimize treatment plans. The process involves using algorithms to analyze large amounts of patient data, including electronic health records, genomic information, and medical imaging, to identify trends and patterns that can help predict patient conditions and outcomes. The use of predictive analytics in healthcare can significantly impact the field by enhancing cyber security, predicting disease outbreaks, improving patient engagement, streamlining inventory management, and accelerating insurance reimbursements. However, it is essential to ensure transparency in the development and implementation of predictive algorithms, including making the algorithm behind any prediction publicly available, to allow for independent external validation, assessment of performance heterogeneity across settings and over time, and algorithm refinement or updating.

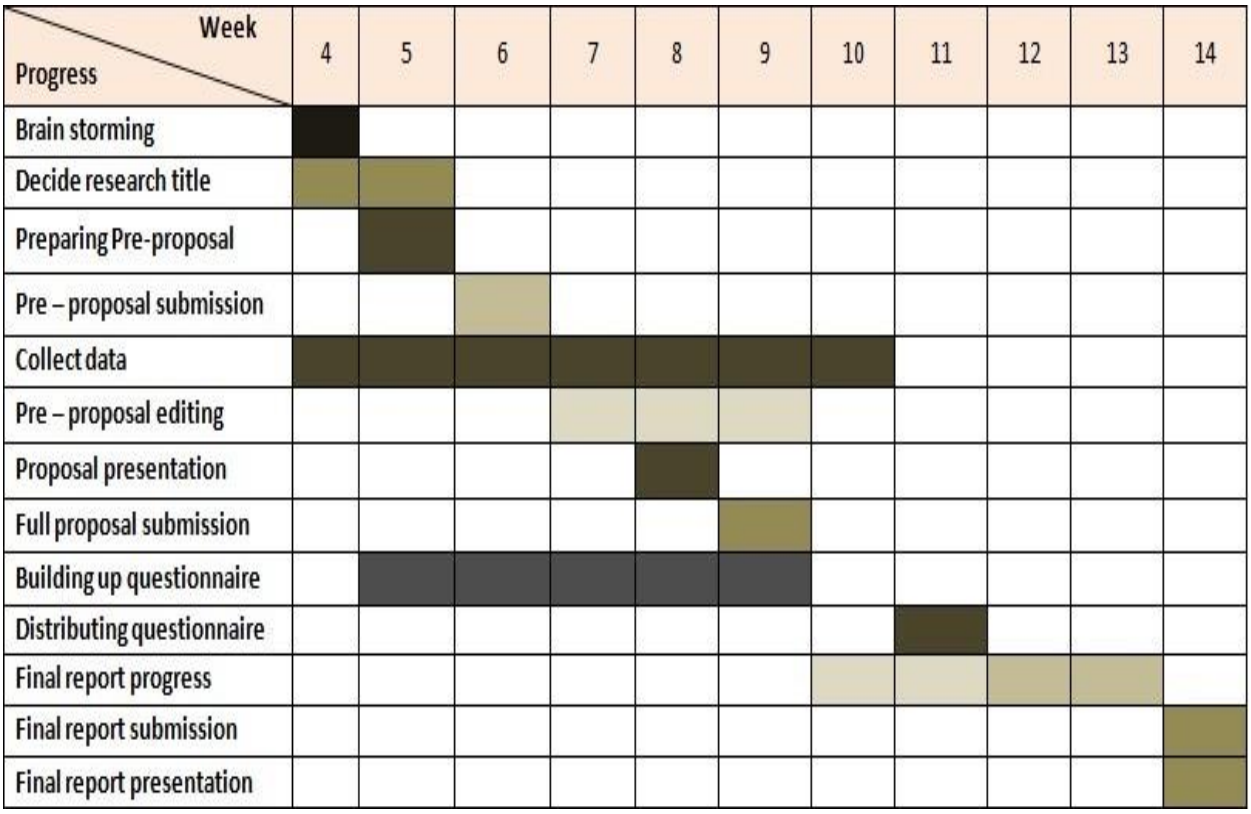
The accuracy of predictive analytics in healthcare is critical, as inaccurate risk predictions can lead to inappropriate decisions or expectations, and algorithms are likely to perform differently across centers, settings, and time due to differences in patient populations and operational heterogeneity.

Therefore, algorithms should undergo extensive external validation on different data sets, monitored over time, and independently evaluated by independent investigators. In summary, healthcare predictive analytics for disease diagnosis involves the use of machine learning and deep learning techniques to analyze large amounts of patient data, enabling medical professionals to predict disease progression, identify high-risk patients, and optimize treatment plans. However, it is essential to ensure transparency and accuracy in the development and implementation of predictive algorithms to ensure their clinical utility for decision-making.

GANTT CHART

A number of activities need to be scheduled and followed to complete the project smoothly. The Gantt chart at a glance provides information regarding the activities and their schedule and visually needs to drop irrelevant data and the outliers to make sure the dataset is clean and precise.

Figure 3.4



The Gantt chart at a glance provides information regarding the activities and their schedule visually. need to drop irrelevant data and outliers to make sure the dataset is clean and precise. After a brief break period, focus was done on designing modules and coding. The next few months have been given for the User interface (UI) designing and collection of static data for the application, along with the appropriate minor changes to the code. After that, we began the testing of our model with the help of various test cases and making changes to overcome the problems occure. Next, we worked on publishing a paper and in a few weeks, it was achieved. Final working prototype was ready by the end of March.

DATA MODEL AND DESCRIPTION

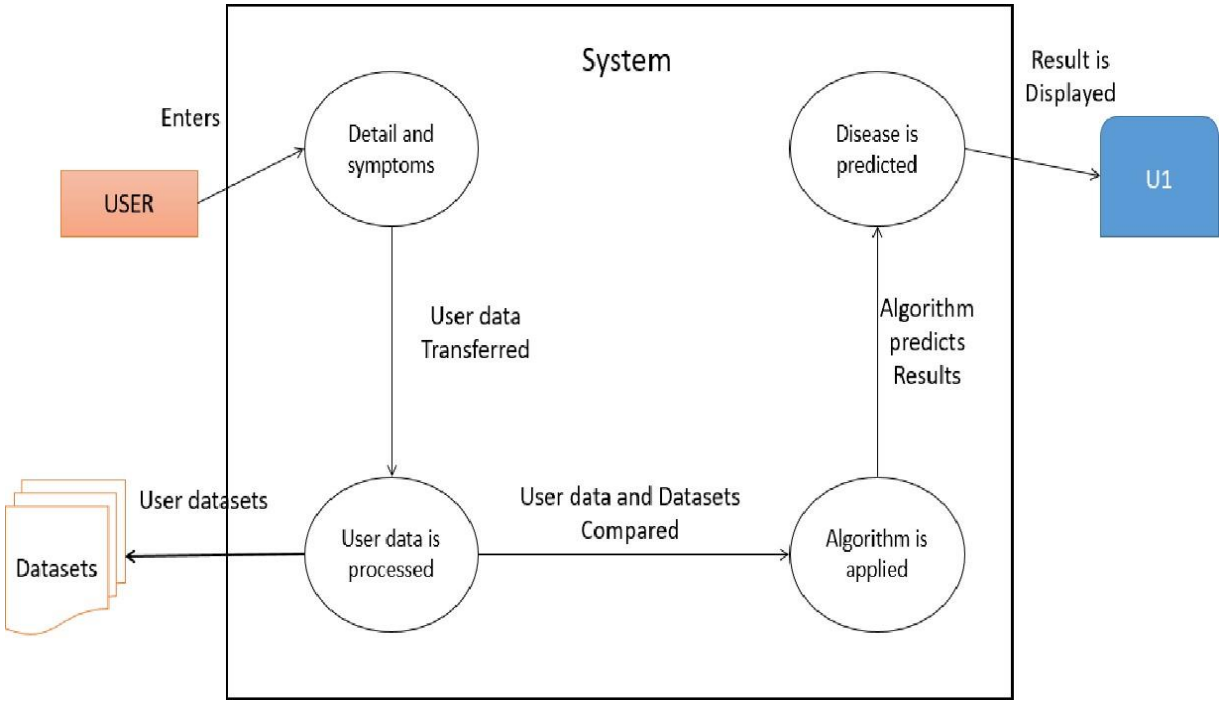
The DFD is also called a bubble chart. It is a simple graphical formalism that can be used to represent a system in terms of input data to the system, various processing carried out on this data, and the output data is generated by this system.

The data flow diagram (DFD) is one of the most important modeling tools. It is used to model the system components. These components are the system process, the data used by the process, an external entity that interacts with the system and the information flows in the system.

DFD shows how the information moves through the system and how it is modified by a series of transformations. It is a graphical technique that depicts information flow and the transformations that are applied as data moves from input to output.

DFD is also known as bubble chart. A DFD may be used to represent a system at any level of abstraction. DFD may be partitioned into levels that represent increasing information flow and functional detail.

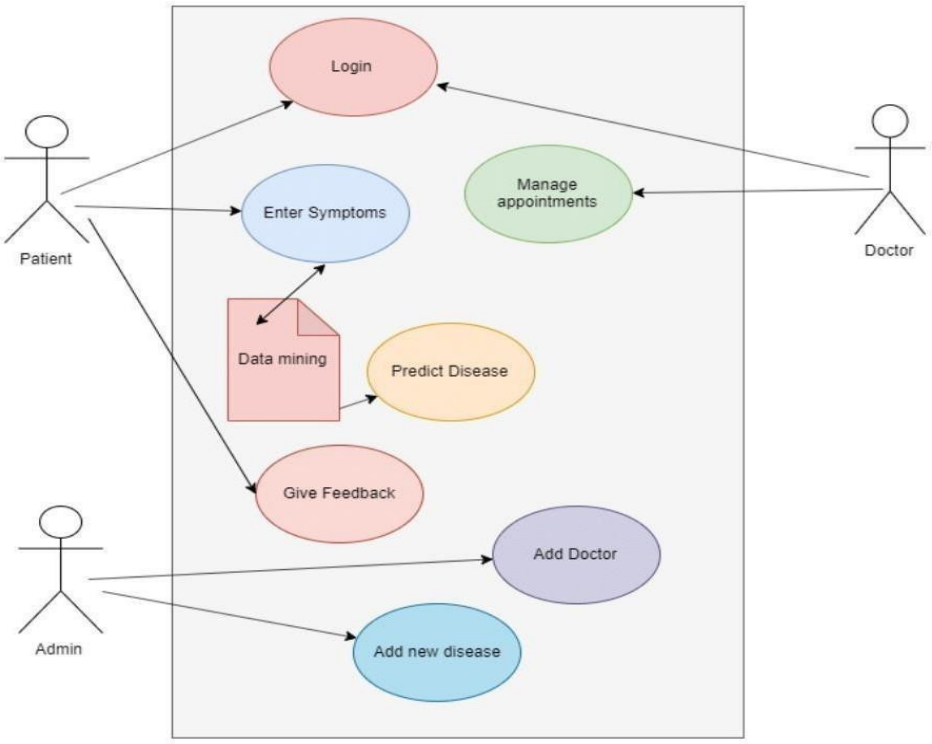
Figure: 3.5



ENTITY RELATIONSHIP MODEL

The proposed system can be represented using an entity-relationship model (ER model) that describes the data entities and their relationships. The main entities in the system are users, Web Application, Custom tools and Agents.

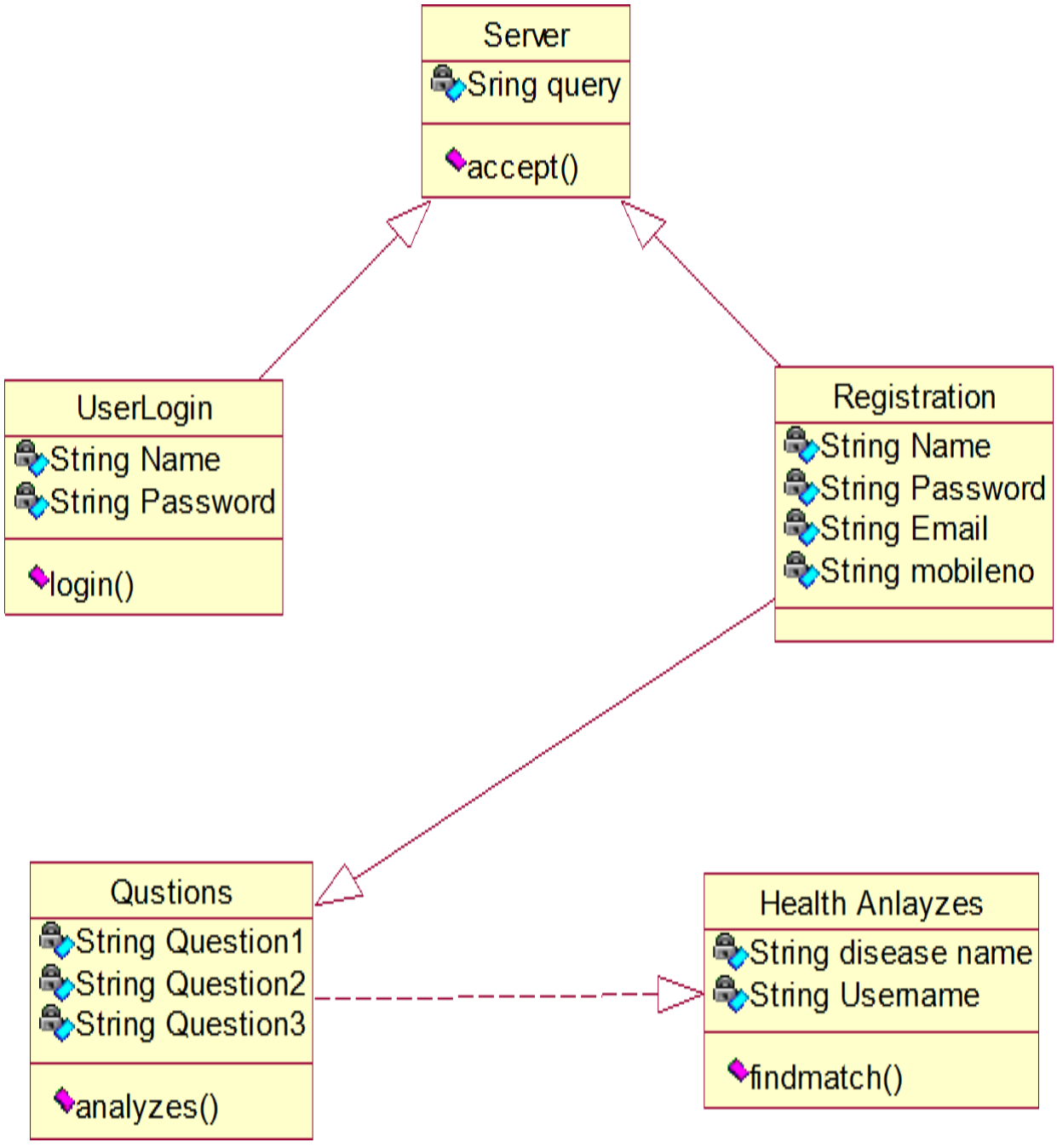
Figure 3.5.1



UML (Unified Modelling Language) DIAGRAM

UML is a method for describing the system architecture in detail using the blueprint. UML represents a collection of best engineering practices that have proven successful in the modeling of large and complex systems. UML is a very important part of developing objects-oriented software and the software development process. UML uses mostly graphical notations to express the design of software projects. Using the UML helps project teams communicate, explore potential designs, and validate the architectural design of the software diagram.

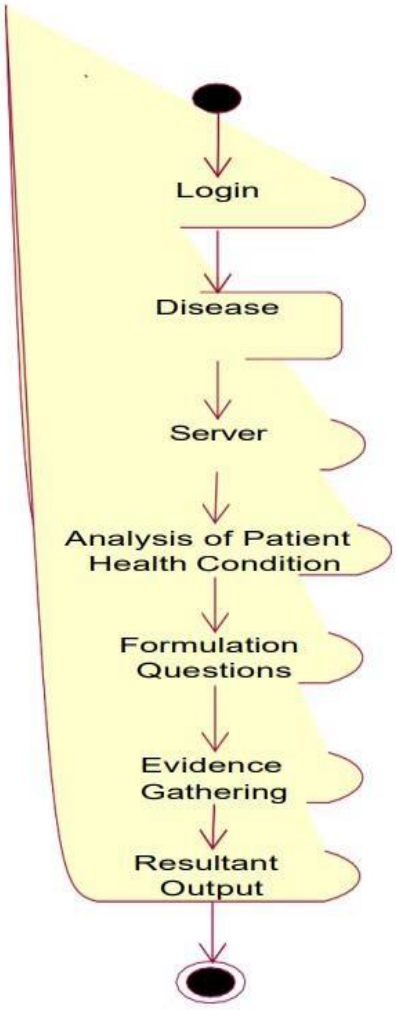
Figure 3.5.2


Server
Sring query
accept()
UserLogin
String Name
String Password
login()
Registration
String Name
String Password
String Email
String mobileno
Qustions
String Question1
String Question2
String Question3
analyzes()
Health Anlayzes
String disease name
String Usemame
findmatch()

ACTIVITY DIAGRAM

Activity diagrams describe the workflow behavior of a system. Activity diagrams are similar to state diagrams because activities are the state of doing something. The diagrams describe the state of activities by showing the sequence of activities performed. Activity diagrams can show activities that are conditional or parallel.

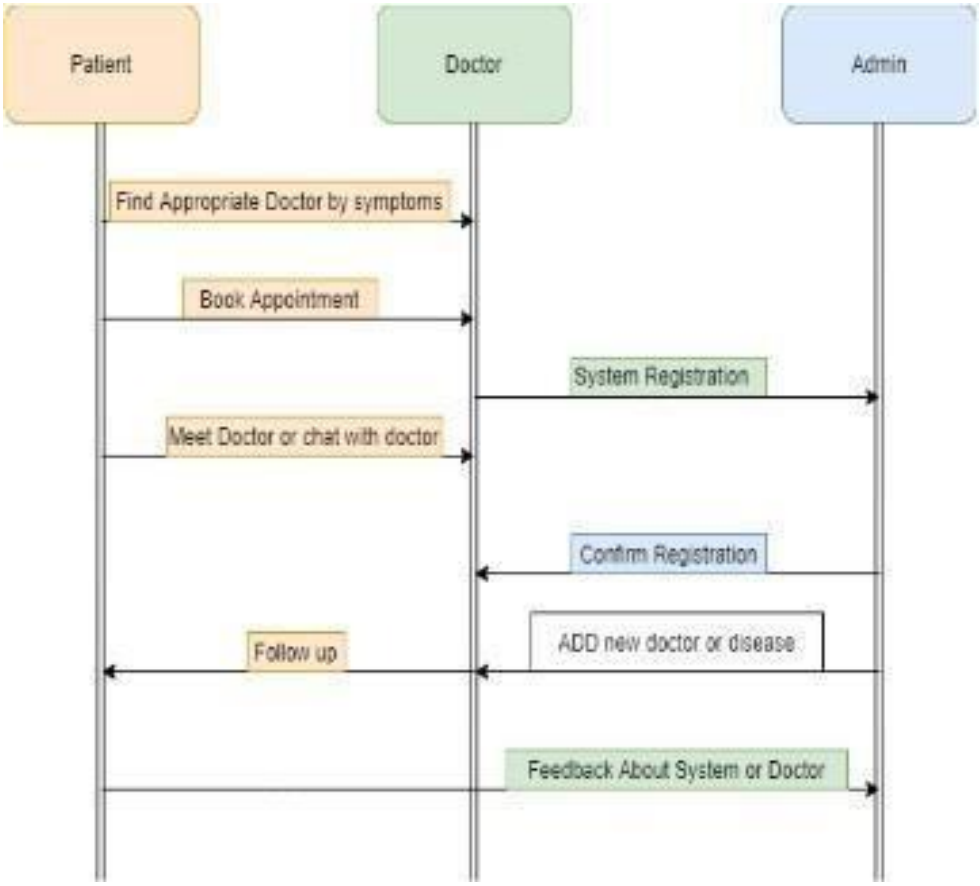
Figure 3.5.3



SEQUENCE DIAGRAM

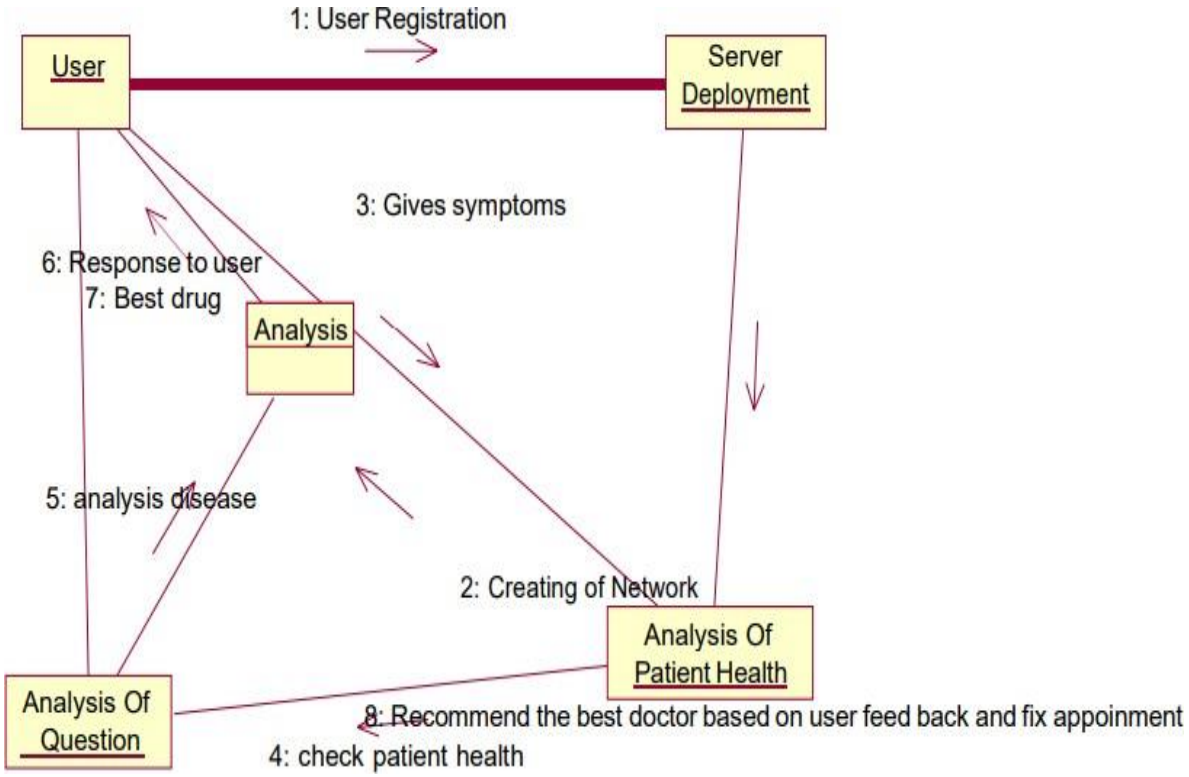
Sequence diagrams in UML shows how object interact with each other and the order those interactions occur. It's important to note that they show the interactions for a particular scenario.

Figure 3.5.4



COLLABORATION DIAGRAM

Figure 3.5.5



Chapter 4

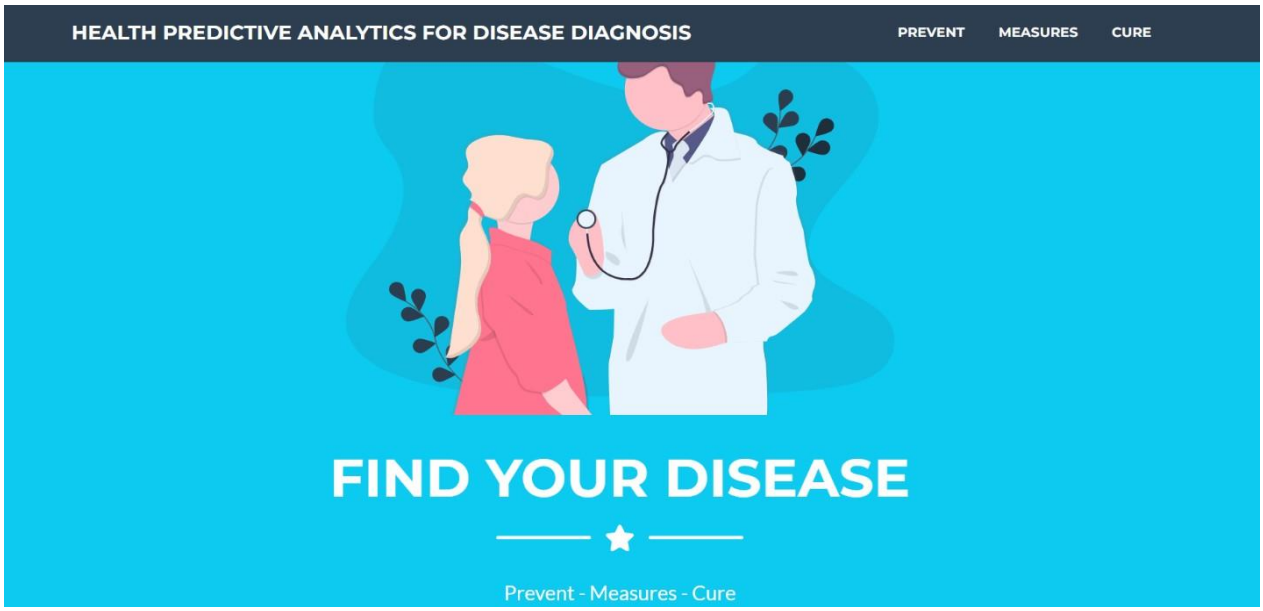
RESULT AND DISCUSSION

This chapter includes the snapshots of the actual outputs that were seen by the user and this chapter also contains the results of the proposed system.

Snapshots of Project

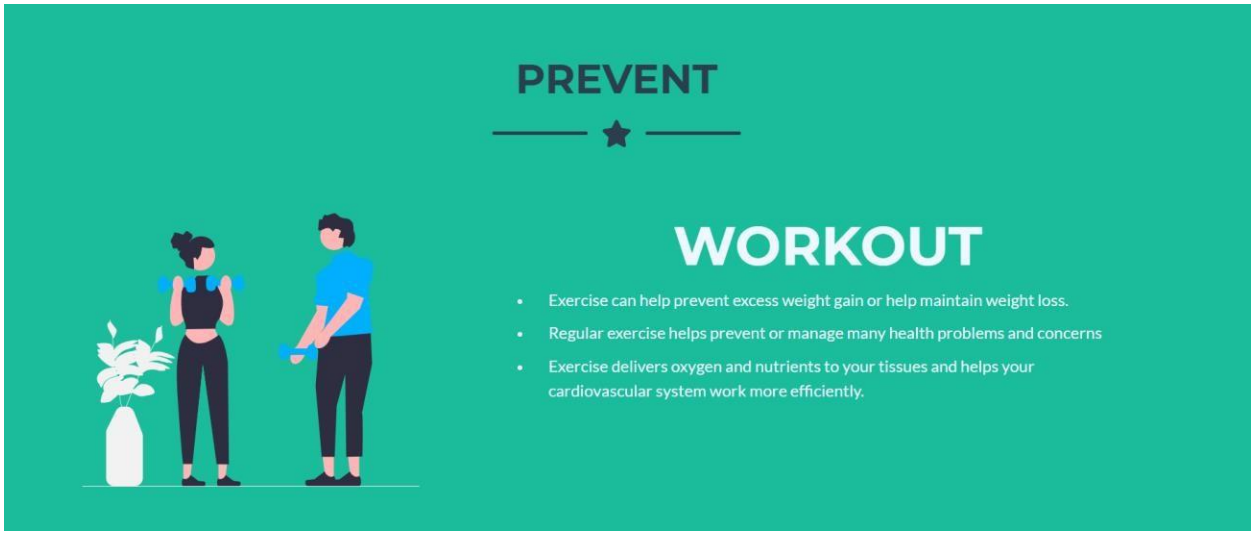
In the proposed system, we anticipate significant improvements and enhancements compared to the existing system. Users will benefit from a more interactive and feature-rich web application. The Agent, with its advanced capabilities, is expected to provide more accurate and comprehensive answers to user queries.

Figure 4.1.1



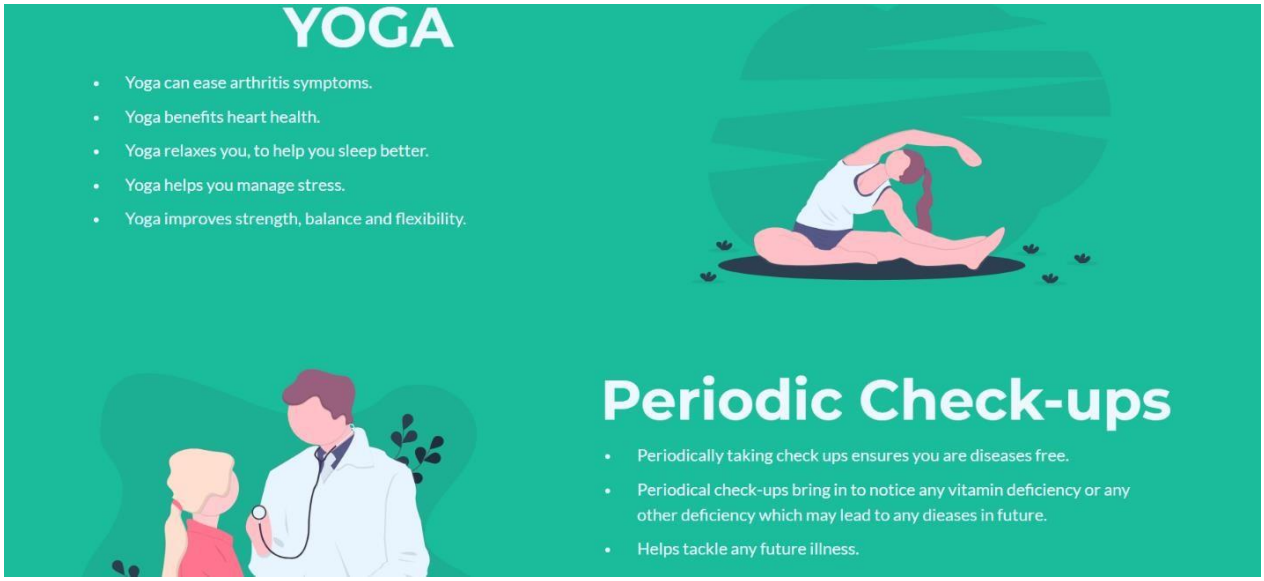
Homepage: Find Your Disease

Figure 4.1.2



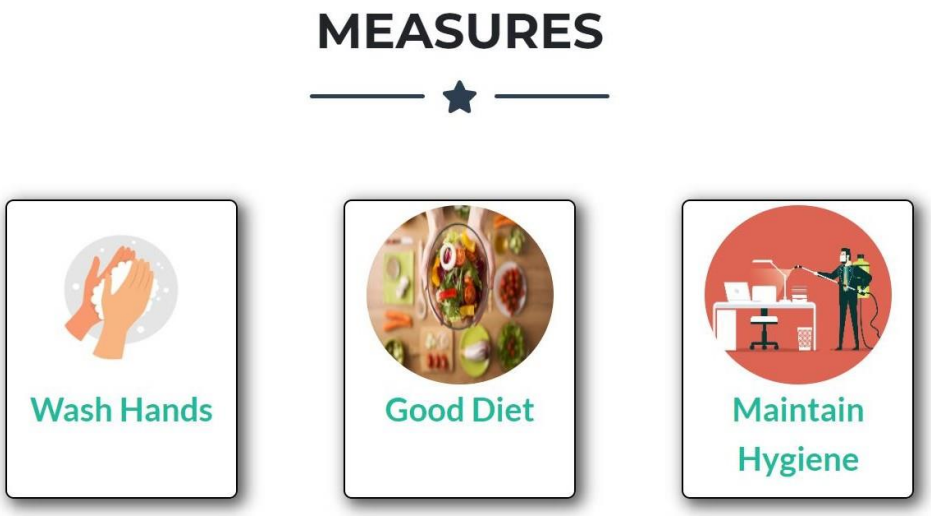
Prevent: An advice and benefits of Workout / Exercise

Figure 4.1.3



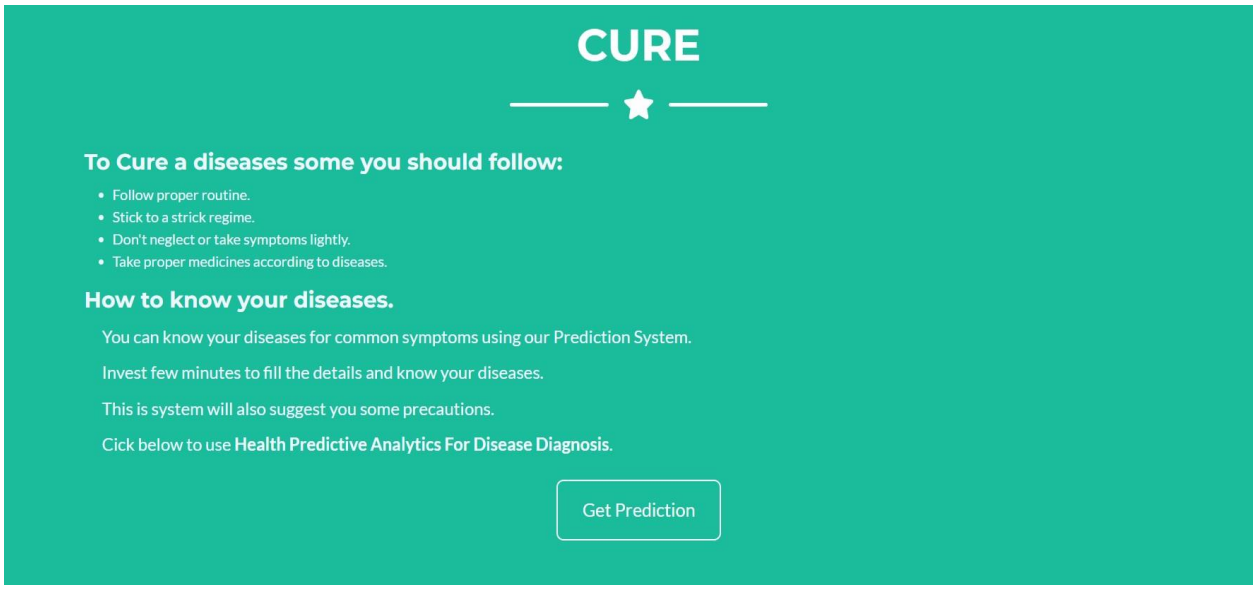
Yoga and Periodic Checkups

Figure 4.1.4



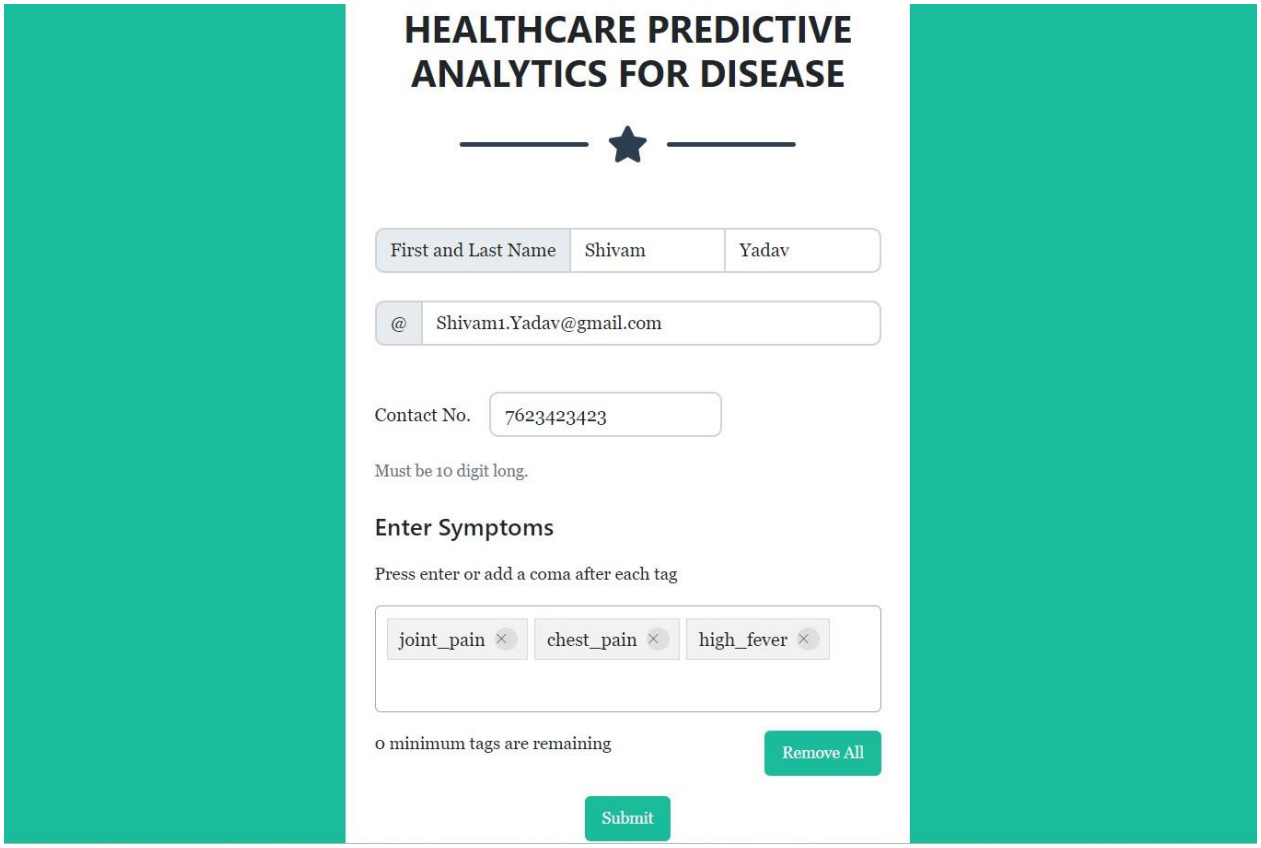
Measures: Wash hand before eating food, keep healthy diet and maintain hygiene

Figure 4.1.5



Cure : How to know your diseases and to cure a diseases some you should follow

Figure 4.1.6

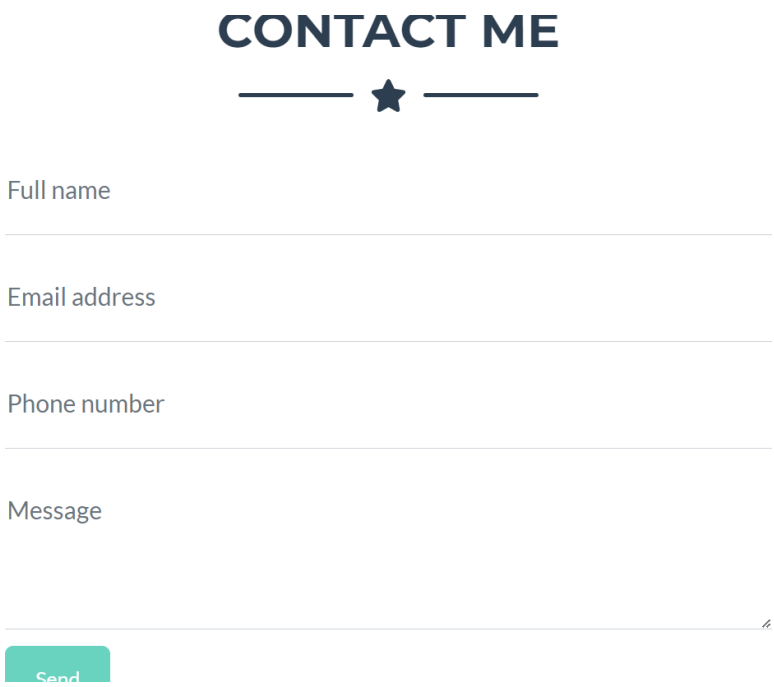


Get Prediction (Form) : Enter your details and Symptoms your suffering

Figure 4.1.7

Recommendation: Disease you are suffering, Medicines and Precautions

Figure 4.1.8



Contact: You can send us a message using contact form

Figure 4.1.9

About Us

Result in Graph

This section provides a Tabular representation of the difference between the existing system and proposed system.

Figure 4.2.1

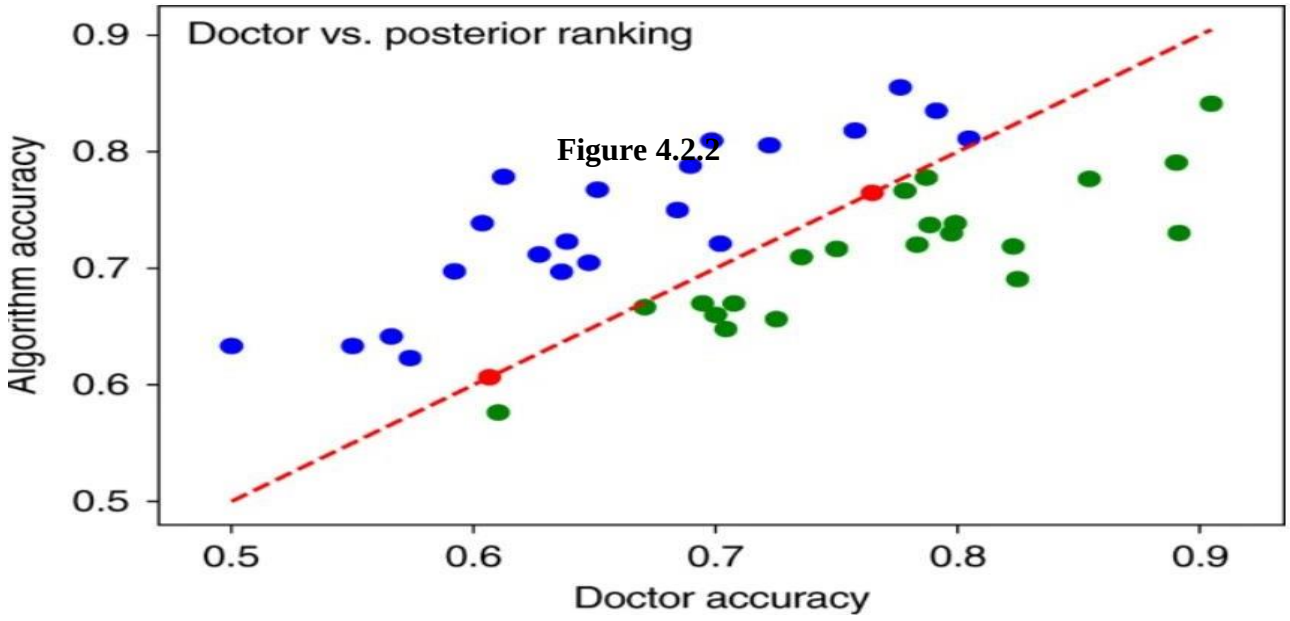
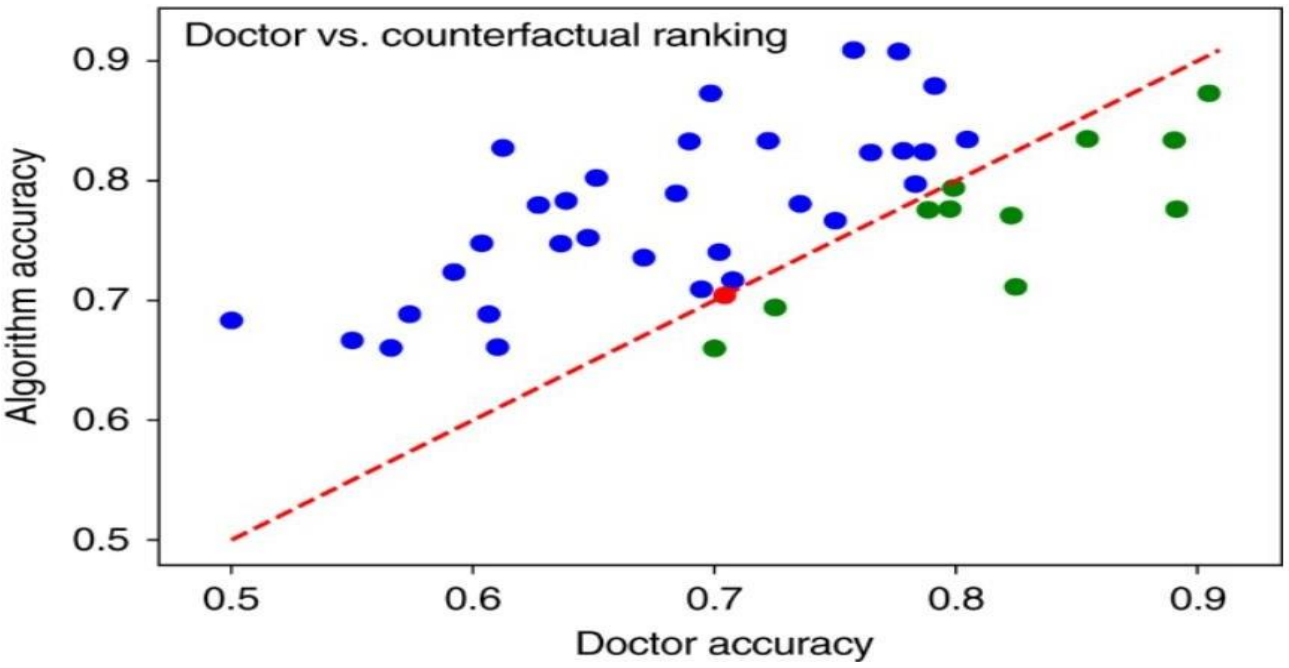


Figure 4.2.2



Conclusion

Predictive analytics in healthcare sometimes referred to as just “predictive analytics healthcare” is a process of analyzing historical healthcare data to identify patterns and trends that may be predictive of future events. Predictive analytics in healthcare can be used to predict the likelihood of particular health conditions, clinical decisions, trends, and even spread of disease. In conclusion, this paper aimed to develop machine learning models for predicting diseases - pneumonia, skin cancer, brain tumors, lung cancer, tuberculosis, and breast cancer. The models were developed using two popular convolutional neural network architectures - Inception v3 and VGG-16 - and were evaluated using accuracy, precision, recall, and F1 score metrics. that Machine Learning has given medical providers new tools to work with, novel ways to practice medicine. It also confirms that machine learning tools and techniques are decisive in health care province and exclusively used in the diagnosis and predictions of various types of disease. In conclusion, the use of convolutional neural network and machine learning models in early prediction of diseases has the potential to revolutionize the healthcare industry and improve patient outcomes. This paper provides a solid foundation for future research in the development of accurate and reliable predictive models, which can aid in early detection and treatment of diseases. The diagnosis of the disease is necessary as it can only be treated with proper medications but not cured. This paper presents a review of predicting the chronic disease with different feature selection method and classification algorithm using various dataset.

Appendix

1. **Logistic Regression:** This algorithm is used for binary classification problems, where the goal is to predict whether a patient has a certain disease or not. It is widely used in healthcare predictive analytics due to its simplicity and interpretability.
2. **Decision Trees:** Decision trees are used for both classification and regression problems. They are particularly useful in healthcare predictive analytics because they can handle both categorical and continuous data.
3. **Random Forest:** This is an ensemble learning method that combines multiple decision trees to improve the accuracy of the predictions. It is particularly useful when dealing with complex datasets with many features.
4. **Support Vector Machines (SVM):** SVM is a popular algorithm for classification problems. It is particularly useful when dealing with high-dimensional datasets, as it can handle a large number of features.
5. **Neural Networks:** Neural networks are a type of deep learning algorithm that can learn complex patterns in data. They are particularly useful in healthcare predictive analytics when dealing with large and complex datasets.
6. **Gradient Boosting:** This is another ensemble learning method that combines multiple weak learners to improve the accuracy of the predictions. It is particularly useful when dealing with complex datasets with many features.
7. **K-Nearest Neighbors (KNN):** KNN is a simple algorithm for classification problems. It is particularly useful when dealing with small datasets, as it does not require a large amount of training data.
8. **Naive Bayes:** This is a probabilistic algorithm that is particularly useful for classification problems. It is based on Bayes' theorem and is particularly useful when dealing with large datasets with many features.

Literature Cited

[1] Prof. Dr.Khaled Alnowziser "Improving Healthcare Prediction of Diabetic Patients Using KNN Imputed Features and Tri Ensemble Model" January 2024.

[2] Dr. B. Nithya, Dr. V. Ilango "Predictive Analytics in HealthCare Using Machine Learning Tools and Techniques". May-2017.

[3] Dr. Aziz Makandar1, Miss. Nayan Jadhav2 "Classifying and Predictive Analytics for Disease Detection". May-2023.

[4] Mohd Javaid, Abid Haleem, Ravi Pratap Singh, Rajiv Suman, Shanay Rab "Significance of machine learning in healthcare: Features, pillars and applications". June 2022.

[5] Sunday Adeola Ajagbe, Matthew O. Adigun "Deep learning techniques for detection and prediction of pandemic diseases". March 2023.

[6] I. Preethi , Dr.K. Dharmarajan "Diagnosis of chronic disease in a predictive model using machine learning algorithm". December 2023.

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Ms. Arhama Ansari (03)

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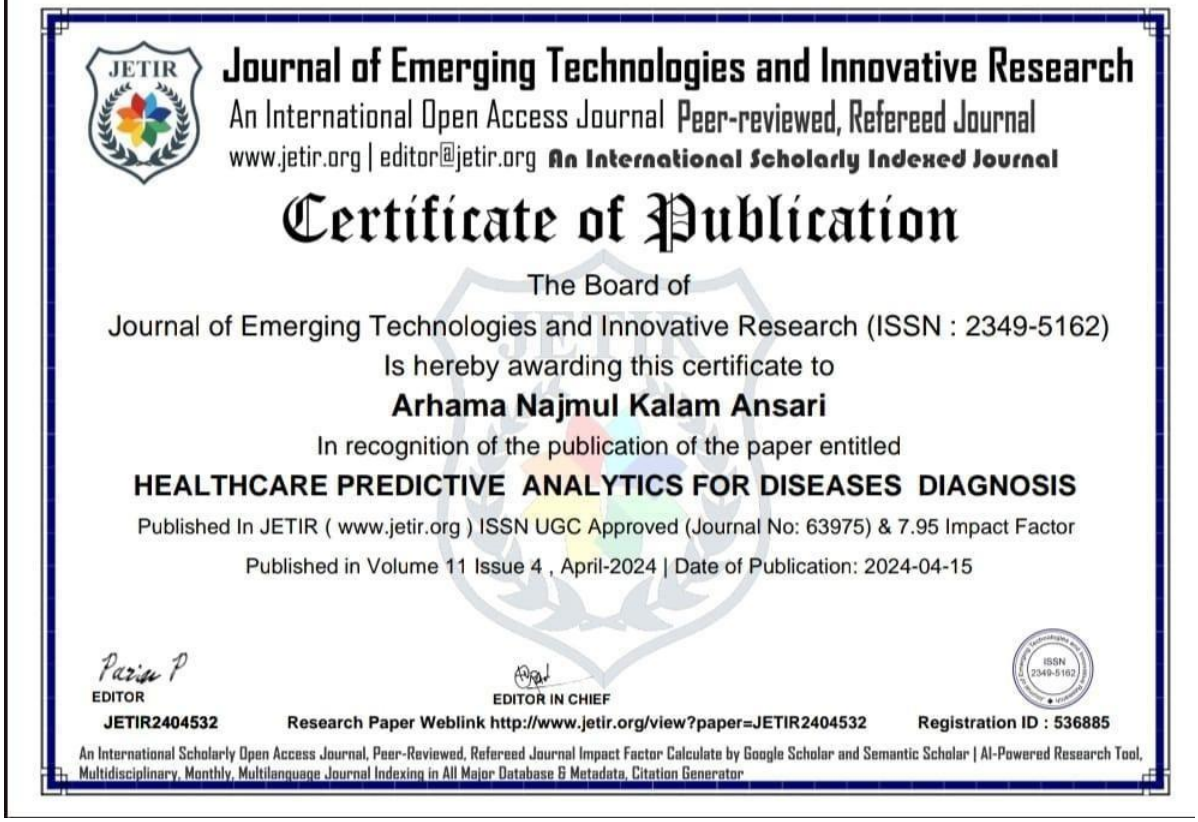

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