A Project Report

on

BRAIN STROKE PREDICTION BY USING MACHINE LEARNING

Submitted in partial fulfillment of the

requirement for the award of the degree of

BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE AND ENGINEERING

Under The Supervision of
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SCHOOL OF COMPUTING SCIENCE AND ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING /
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GALGOTIAS UNIVERSITY, GREATER NOIDA
INDIA
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SCHOOL OF COMPUTING SCIENCE AND ENGINEERING
GALGOTIAS UNIVERSITY, GREATER NOIDA

CANDIDATE'S DECLARATION

We hereby certify that the work which is being presented in the the project, entitled **"** BRAIN STROKE PREDICTION BY USING MACHINE LEARNING**"** in partial fulfillment of the requirements for the award of the Bachelor of Technology in Computer Science and Engineering submitted in the School of Computing Science and Engineering of Galgotias University, Greater Noida, is an original work carried out during the period of Feburary 2023 to May 2023, under the supervision of Mr.Ravi Sharma (Assistant professor), Department of Computer Science and Engineering, of School of Computing Science and Engineering , Galgotias University, Greater Noida

The matter presented in the thesis/project/dissertation has not been submitted by me/us for the award of any other degree of this or any other places.

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This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

Supervisor Name

Designation

CERTIFICATE

The Final Project Viva-Voce examination of PRASHANT KUMAR 20SCSE1010435, VINAYAK KUMAR 20SCSE1010163 and WAZIDA TABBASUM 20SCSE1010311 has been held on_____and their work is recommended for the award of Bachelor of Technology In Computer Science and Engineering

Signature of Examiner(s) **Signature of Supervisor(s)**

Signature of Program Chair **Signature of Dean**

Date: May, 2023

Place: Greater Noida

Abstract

Stroke is one of the most serious diseases worldwide, directly or indirectly responsible for a significant number of deaths. Various data mining techniques are used in the healthcare industry to aid in the diagnosis and early detection of diseases. Current research considers several elements that lead to stroke. First, we examine the characteristics of those who suffer a stroke more often than others.The dataset is from a freely available source and various classification algorithms are used to predict the onset of a stroke shortly. Using the Naïve Bays and Decision Tree, it was possible to achieve an accurate percent. Using various statistical techniques and principal component analysis, we identify the most important factors for stroke prediction. We conclude that age, heart disease, average glucose level, and hypertension are the most important factors for detecting stroke in patients. System analysis is the process of researching a method in order to understand its goals and purposes and build systems and processes that will achieve them in an effective manner. Systems analysis is a problem-solving method that deconstructs a system into its component elements in order to evaluate how effectively those component parts perform and interact to achieve their goals. System analysis is the process of researching a method in order to understand its goals and purposes and build systems and processes that will achieve them in an effective manner. A systems analysis phase is included in the construction of a computer-based information system, which develops or improves the data-model, which is a prerequisite for developing or improving a database. System analysis may be approached in a variety of ways. Systems analysis would include the following processes when developing a computer-based information system:

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CHAPTER-1

Introduction

Health is considered as an essential aspect of everyone's life, and there is a need for a recording system which tracks data on diseases and the relationship between them. Most of the information pertaining to diseases could be found in the case summaries of patients, medical records found in clinics and other records that are maintained manually. The sentences in them could be deciphered through various methodologies of text mining and machine learning (ML). Machine learning is a tool which can disseminate the content as a part of information retrieval in which semantic and syntactic parts of the content are given prevalence. Various ML and text mining methodologies are proposed and implemented for feature extraction and classification. Stroke is a term used by most of the healthcare practitioners to describe injuries in the brain and spinal cord resulting from abnormalities in the supply of blood. Stroke projects its meaning based on different perspectives; however, globally, stroke evokes an explicit visceral response. Machine learning can be portrayed as a significant tracker in areas like surveillance, medicine, data management with the aid of suitably trained machine learning algorithms. Data mining techniques applied in this work give an overall review about the tracking of information with respect to semantic as well as syntactic perspectives. The proposed idea is to mine patient's symptoms from the case sheets and train the system with the acquired data. Next, the case sheets were mined using tagging and maximum entropy methodologies, and the proposed stemmer extracts the common and unique set of attributes to detects the stroke disease. Then, the processed data were fed into various machine learning algorithms such as, Decision tree, Logistic Regression, K-Nearest Neighbors, Random Forest, Support vector machine. Among these algorithms, Support vector Machine achieves high accuracy.The most typical kind IS ISCHEMIC STROKE stroke is this one. It occurs when the blood arteries in the brain narrow or block, significantly reducing the amount of blood flow (ischemia). Fat deposits that accumulate in blood vessels or blood clots or other debris that move through the bloodstream, typically from the heart, and lodge in the blood vessels in the brain cause blocked or restricted blood arteries.

Brain bleeding results in a hemorrhagic stroke. This may occur when a brain blood artery rupture or when bleeding occurs in the brain tissue. Pressure brought on by bleeding, edema, or a lack of blood flow can all contribute to hemorrhagic stroke damage. An ischemic stroke, which is a stroke brought on by a stopped blood supply, can result in bleeding in the brain tissue. As a result, the brain's tissue is harmed.

Stroke continues to be the second biggest cause of mortality in the globe and places a significant strain on both national healthcare systems and individuals. Cardiovascular disease, diabetes, and hypertension are all potentially modifiable risk factors for stroke.Atrial fibrillation, glucose metabolism dysregulation, and risk factors from lifestyle.Consequently, the aim of our study is to use machine learning methods over successfully anticipate the stroke using huge existing data sets based on possibly adjustable risk components.

The plan was then to create an application that would deliver a customized warning. Based on each user's level of stroke risk and a message about changing their way of life The likelihood of a positive outcome following a stroke can be significantly increased if treatment is received quickly.

Most strokes are preventable.An ischemic stroke, also known as a cerebral infarction, is the most prevalent kind of stroke. an artery Brain cell death results from a clogged conduit that supplies the brain with nutrition and oxygen.The inability of these cells to regenerate means that harm is irreversible. But the brain can adapt, thus Many patients get better, and some don't ever have any disabilities again. The second kind of stroke is When a blood vessel in the brain bursts, it results in a cerebral haemorrhage, which causes bleeding and harm to the brain's tissue Hypertension, often known as high blood pressure, is the main risk factor for both forms of stroke. Diabetes and hypertension are additional frequent stroke risk factors.

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Project Deliverables

- Project Information
- Project Documentation
- Proposed system
- Requirements List
- Program

Chapter-2

LITERATURE SURVEY

Stroke Prediction Using SVM

In this paper we were using Support Vector Machine for stroke prediction. This research work investigates the various physiological parameters that are used as risk factors for the prediction of stroke. Data was collected from International Stroke Trial database and was successfully trained and tested using Support Vector Machine (SVM). Machine learning algorithms have been proposed as important tools in decision making in medical field. The objective of this work is to develop a machine learning based approach to predict the possibility of stroke in people having the symptoms or risk factors of stroke. In this work, we have implemented SVM with different kernel functions and found that linear kernel gave an accuracy of 90 %. The results were evaluated on a spectrum of patients of different age groups.

Stroke Prediction using Artificial Intelligence

The stroke deprives person's brain of oxygen and nutrients, which can cause brain cells to die. Numerous works have been carried out for predicting various diseases by comparing the performance of predictive data mining technologies. In this work, we compare different methods with our approach for stroke prediction on the Cardiovascular Health Study (CHS) dataset. Here, decision tree algorithm is used for feature selection process, principle component analysis algorithm is used for reducing the dimension and adopted back propagation neural network classification algorithm, to construct a classification model. The proposed method use Decision Tree algorithm for feature selection method, PCA for dimension reduction and ANN for the classification. The experimental results show that the proposed method has higher performance than other related well-known methods.

Burden of Stroke in the World

Stroke is the second leading cause of death and leading cause of adult disability worldwide with 400-800 strokes per 100,000, 15 million new acute strokes every year, 28,500,000 disability adjusted life-years and 28-30-day case fatality ranging from 17% to 35%. The burden of stroke will likely worsen with stroke and heart disease related deaths projected to increase to five million in 2020, compared to three million in 1998. This will be a result of continuing health and demographic transition resulting in increase in vascular disease risk factors and population of the elderly. Developing countries account for 85% of the global deaths from stroke. The social and economic consequences of stroke are substantial. The cost of stroke for the year 2002 was estimated to be as high as $49.4 billion in the United States of America (USA), while costs after discharge were estimated to amount to 2.9 billion Euros in France.

Burden of Stroke in Uganda

The actual burden of stroke in Uganda is not known. According to WHO estimates for heart disease and stroke 2002, stroke was responsible for 11 per 1000 population (25,004,000) 4 disability adjusted life years and mortality of 11,043. Stroke is one of the common neurological diseases among patients admitted to the neurology ward at Mulago, Uganda's national referral hospital accounting for 21% of all neurological admissions. Unpublished research done at Mulago hospital, showed a 30-day case fatality of 43.8% among 133 patients admitted with stroke. The economic burden caused by stroke has not been explored in Uganda but given the very high dependent population (53%), high prevalence of HIV/AIDS, drug resistant TB and Malaria, the impact of stroke and other emerging non-communicable diseases on the resource limited economy is astronomical.

Chapter-3

SYSTEM ANALYSIS

Systems analysis is a problem-solving method that decomposes a system into its component components in order to evaluate how effectively those component parts perform and interact to fulfil its objective. System analysis is the process of researching a method in order to understand its goals and purposes and build systems and processes that will achieve them in an effective manner. Systems analysis is a problem-solving method that deconstructs a system into its component elements in order to evaluate how effectively those component parts perform and interact to achieve their goals. System analysis is the process of researching a method in order to understand its goals and purposes and build systems and processes that will achieve them in an effective manner. A systems analysis phase is included in the construction of a computer-based information system, which develops or improves the data-model, which is a prerequisite for developing or improving a database. System analysis may be approached in a variety of ways. Systems analysis would include the following processes when developing a computer-based information system:

- Creating a feasibility study to determine if a proposal is economically feasible.
- Conducting fact-finding procedures to determine the system's end-user needs. It is really helpful to the patients to predict the disease.

Functional Requirements

Functional Requirement defines a function of a software system and how the system must behave when presented with specific inputs or conditions. These may include calculations, data manipulation and processing and other specific functionality. In this system following are the functional requirements:

• Machine Learning Methodology
• Asset Visualization

Using this methodology, the modeler can discover the “performance ceiling” for the data set before settling on a model. In many cases, a range of models will be equivalent in terms of performance so the practitioner can weigh the benefits of different methodologies.

Few methodologies used in our projects are:

• Decision Tree
• Naïve Bayes

Decision Tree

A decision tree is a decision support tool that uses a tree-like graph or model of decisions and their possible consequences, including chance event outcomes, resource costs, and utility. It is

one way to display an algorithm that only contains conditional control statements. Decision tree is one of the important methods for handling high dimensional data. Tree based learning algorithms are considered to be one of the best and mostly used supervised learning methods.

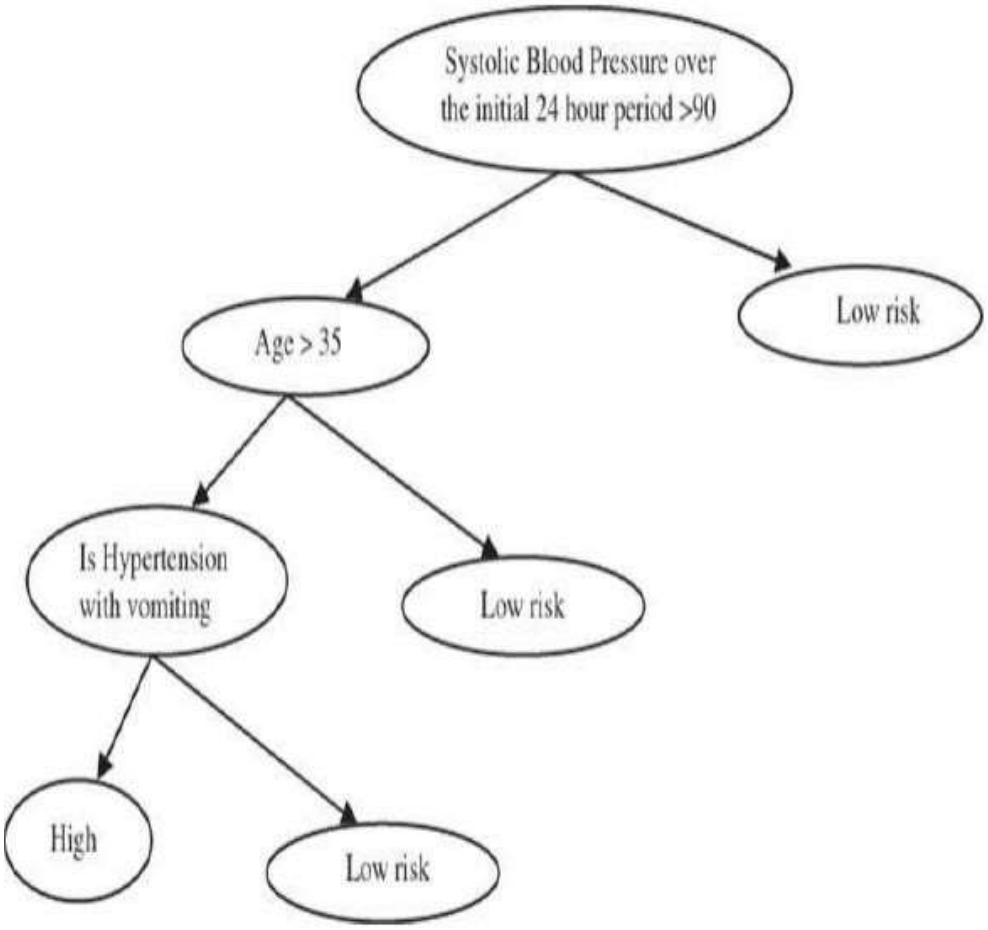

Fig.3.1

Naive Bayes

A Naïve Bayes classifier is a probabilistic machine learning model that's used for classification task. The crux of the classifier is based on the Bayes theorem. Using Bayes theorem,

$$P(A|B) = P(B|A) * P(A) / P(B)$$

we can find the probability of A happening, given that B has occurred. Hence, B is the evidence and A is the hypothesis. The assumption made here is that the predictors/features are independent. That is the presence of one particular feature does not affect the other. Hence it is called naïve

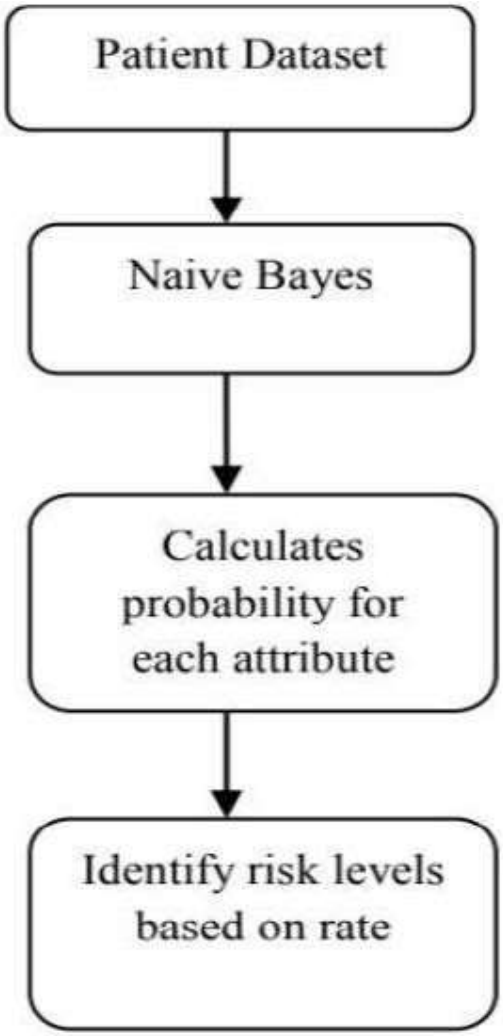

Fig.3.2

Naive Bayes algorithms are mostly used in sentiment analysis, spam filtering, recommendation systems etc. They are fast and easy to implement but their biggest disadvantage is that the requirement of predictors to be independent. In most of the real-life cases, the predictors are dependent, this hinders the performance of the classifier.

Challenges

Stroke continues to be the second biggest cause of mortality in the globe and places a significant strain on both national healthcare systems and individuals. Cardiovascular disease, diabetes, and hypertension are all potentially modifiable risk factors for stroke.Atrial fibrillation, glucose metabolism dysregulation, and risk factors from lifestyle.Consequently, the aim of our study is to use machine learning methods over successfully anticipate the stroke using huge existing data sets based on possibly adjustable risk components.

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Advantages:

- Decision trees work better with lots of data compared to Naive Bayes.
- The decision tree model can be used for both classification and regression problems, and it is easy to interpret, understand, and visualize.
- It handles both continuous and discrete data.
- By taking these datasets and comparing with the patients disease we will predict the accurate result that whether the patient have Brain Stroke or not.
- The dataset for this study was obtained from the stroke trial database patient history, hospital records, risk factors and symptoms are all included in the database.

Chapter -4

SYSTEM DESIGN

Design is a meaningful engineering representation of something that is to be built. It is the most crucial phase in the developments of a system. Software design is a process through which the requirements are translated into a representation of software. Design is a place where design is fostered in software Engineering. Based on the user requirements and the detailed analysis of the existing system, the new system must be designed. This is the phase of system designing. Design is the perfect way to accurately translate a customer's requirement in the finished software product. Design creates a representation or model, provides details about software data structure, architecture, interfaces and components that are necessary to implement a system. The logical system design arrived at as a result of systems analysis is converted into physical system design.

Model phases
The waterfall model is a sequential software development process, in which progress is seen as flowing steadily downwards (like a waterfall)through the phases of Requirement initiation, Analysis Design Implementation, Testing and maintenance.

Requirement Analysis:
This phase is concerned about the collection of requirements of the system. This process involves generating document and requirement review. System Design: Keeping the requirements in mind the system specifications are translated in to a software representation. In this phase the designer emphasizes on: algorithm, data structure, software architecture etc.

Coding:
In this phase programmer starts his coding in order to give a full sketch of product. In other words, system specifications are only converted in to machine readable compute code.

Implementation:
The implementation phase involves the actual coding or programming of the software. The output of this phase is typically the library, executables, user manuals and additional software documentation.

Testing:
In this phase all programs (models) are integrated and tested to ensure that the complete system meets the software requirements. The testing is concerned with verification and validation.

Maintenance:
The maintenance phase is the longest phase in which the software is updated to fulfill the changing customer need, adapt to accommodate change in the external environment, correct

errors and oversights previously undetected in the testing phase, enhance the efficiency of the software.

System Architecture

A system architecture is the conceptual model that defines the structure, behavior, and more views of a system.

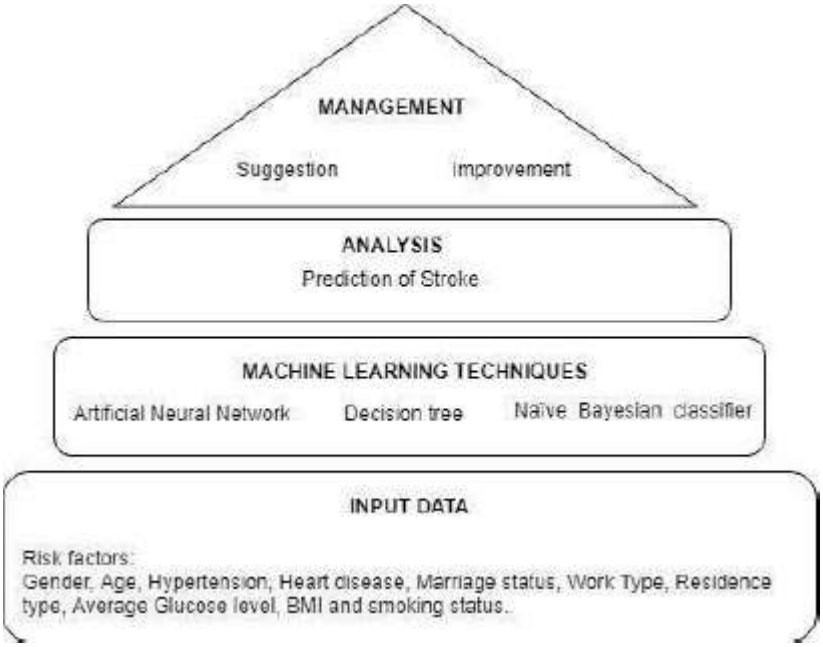


Fig.4.1

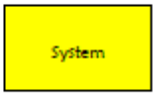
An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system. The overall logical structure of the project is divided into processing modules and a conceptual data structure is defined as Architectural Design.

- Input data: Risk factors like age, gender, hypertension, heart disease, BMI, Smoking status, Glucose level.

- Machine Learning Techniques: Artificial Neural Networks, Decision Tree, Naïve Bayes classifier.

- Analysis: Prediction and analysis of stroke whose performance is based on machine learning techniques.

• Management: Suggestion and improvement of stroke victims.

Actor	An actor as mentioned is a user of the system and isdepicted using a stick figure. The role of the user is written beneath the icon. Actors are not limited to humans. If a system communicates with another application and expects input or delivers output then that application can also be considered as an actor.	 Actor
Use case	A Use Case is the functionality provided by the system typically described as verb + object (e.g.: Register Car, Delete User). Use Cases are depicted with an ellipse. The name of the Use Case is writtenwithin the ellipse.	
Directed Association	Associations are used to link Actors with use cases and indicates that an actor participates in the Use Case in some form. Directed Association is same as association but difference is that it represented by a line having an arrow head.	
System boundary boxes	You can draw a rectangle around the use cases, called the system boundary box, to indicate thescope of your system. Anything within the boxrepresents functionality that is in scope and anything outside the box is not.	

UML Design

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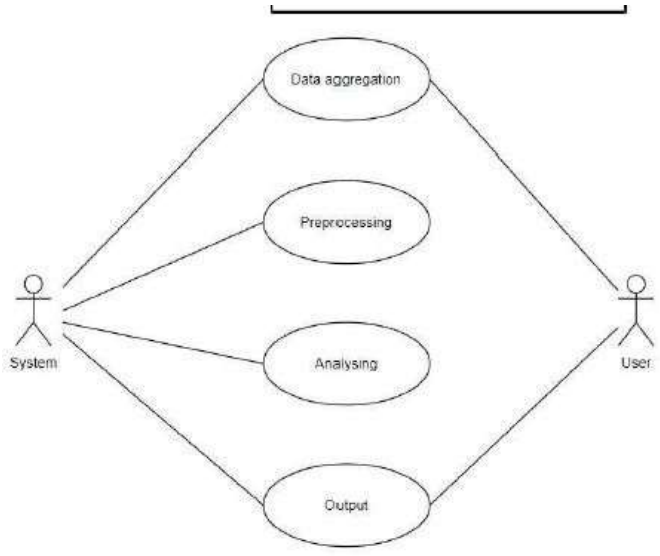


Fig.4.2

Activity Diagram

An activity diagram is used to model a large activity's sequential work flow by focusing on action sequences and respective action initiating conditions. The state of an activity relates to the performance of each workflow step. An activity diagram is represented by shapes that are connected by arrows.

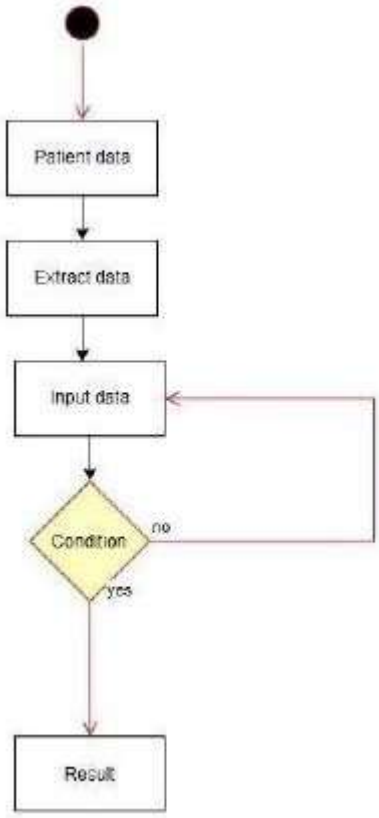


Fig.4.3

Chapter-5

IMPLEMENTATION

ALGORITHM

Step 1: Data collection and pre-processing.
Step 2: To identify the risk formation.
Step 3: different levels of data are identified
Step 4: Algorithms such as Decision Tree, Logistic Regression, Nave Bayes, and Random Forest are used. Step 5: If the trained model is 'False,' load the learned data and begin training the model; otherwise, proceed to Step 1.
Step 6: Initialize the relevant data for the prediction using the user data. Step 7: Assign "STROKE" with the projected object's return value.
" STROKE" ==1 patient suffered a stroke.
"STROKE" ==0 The patient did not suffer from a stroke.
Step 8: Load the trained data
Step 9: If Heart disease=="y," Heart disease=="1"
Otherwise, if Heart disease=="N," then Heart disease==0. If Hypertension=="y," Hypertension ==1.
Otherwise, if Hypertension =="N," then Hypertension ==0. If Married=="y," Married ==1.
Otherwise, if Married =="N," then Married ==0. If Smoking status=="y," Smoking status ==1
Otherwise, if Smoking status =="N," Smoking status ==0.
Step 10: Use the current model to process the new record. Step 11: Initialize the anticipated item from the record.
Step 12: Return the model object with the estimated stroke levels.
Step 13: You may now calculate the user's likelihood of having a stroke.

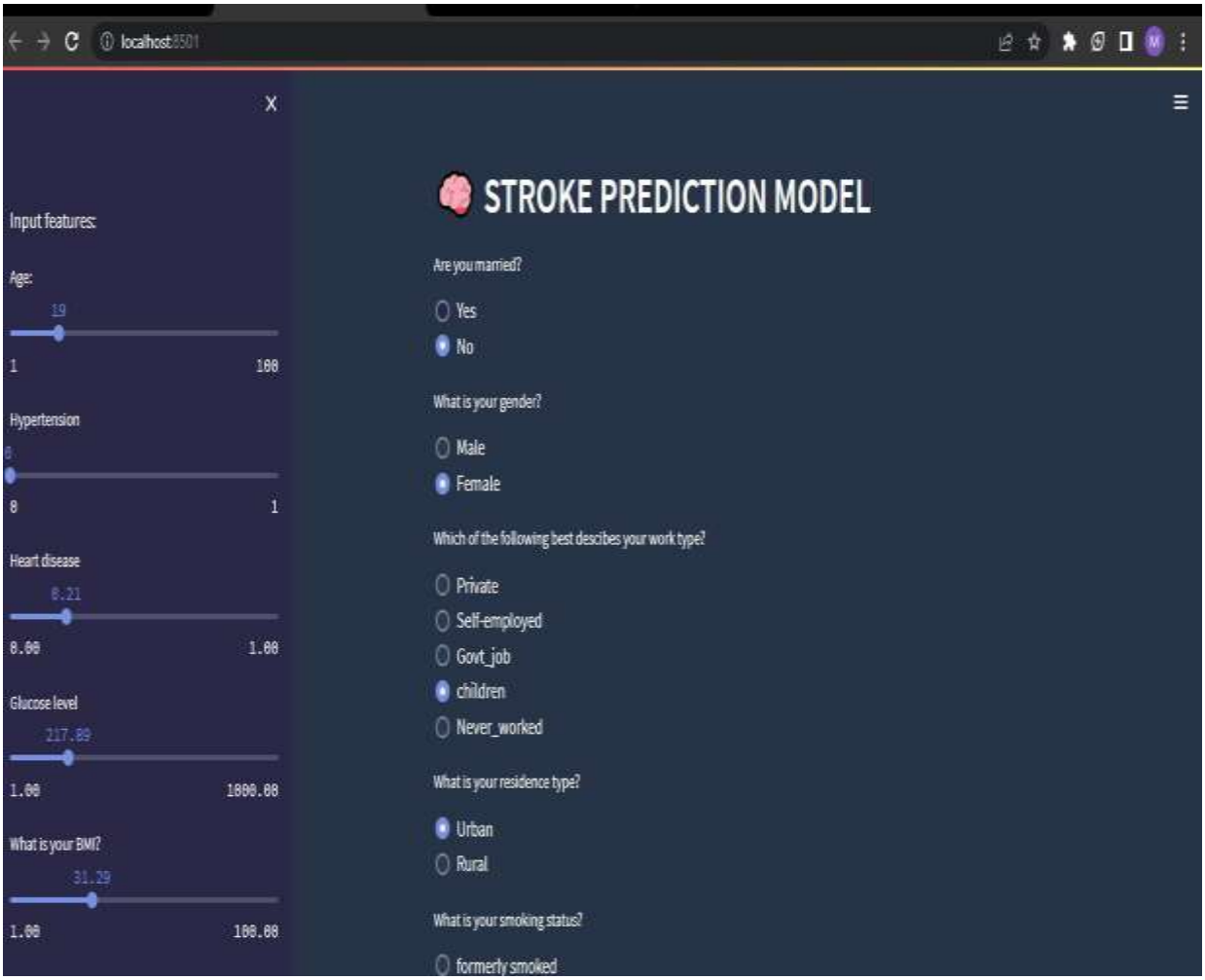
Source Code

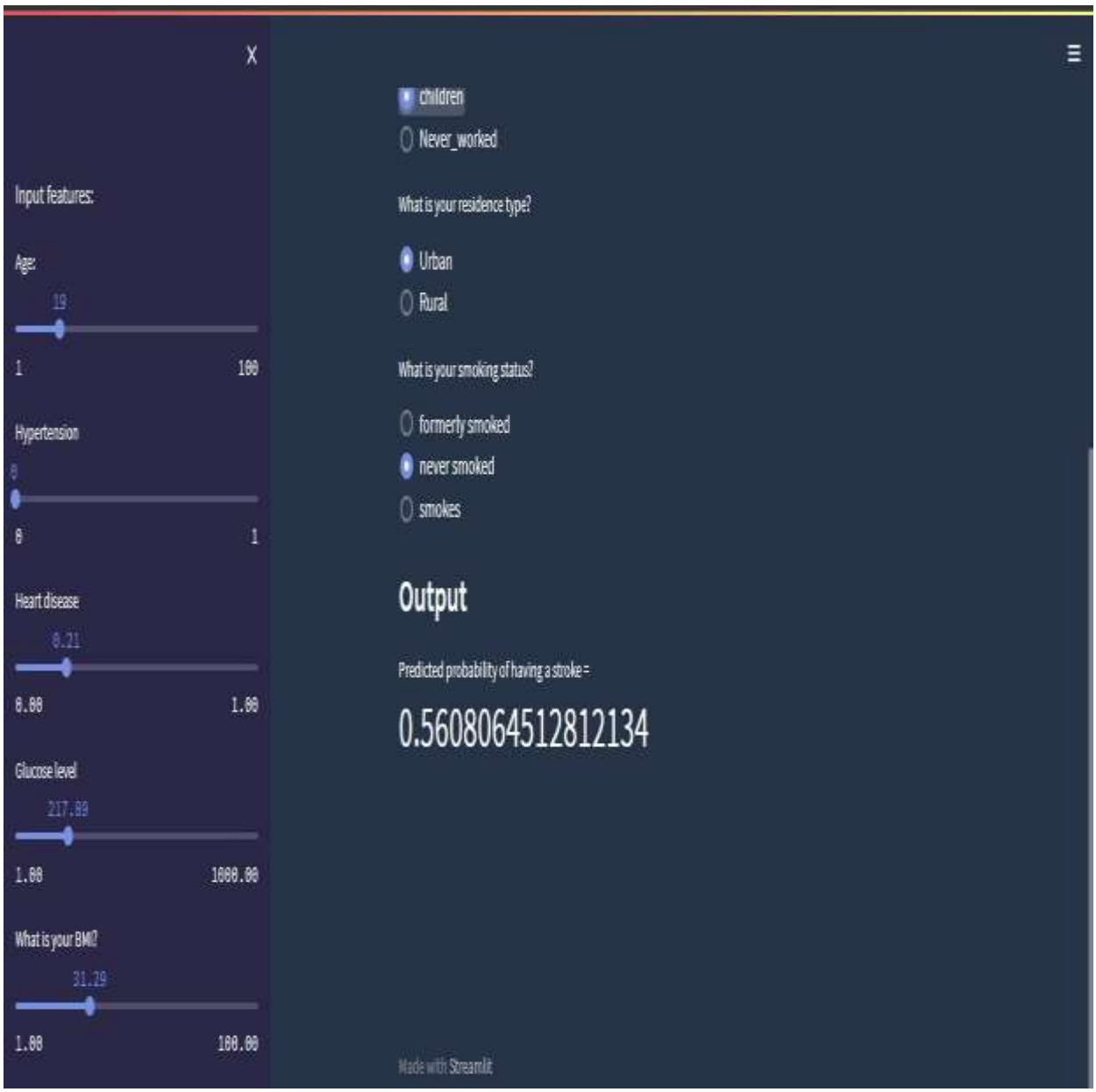
```
import streamlit as st
import pickle
import pandas as pd
import sklearn


st.set_page_config(
        page_title = 'STROKE PREDICTION MODEL',
        page_icon = ',layout =
        'wide',
        initial_sidebar_state='expanded'
)



model = pickle.load(open('model.pkl','rb'))

st.header('  STROKE PREDICTION MODEL')

st.sidebar.write('Input features:')
age = st.sidebar.slider('Age:', 1, 100, 20)
hypertension = st.sidebar.slider('Hypertension', 0, 1, 0)
heart_disease = st.sidebar.slider('Heart disease', 0.0, 1.0, 0.0)
avg_glucose_level = st.sidebar.slider('Glucose level', 1.0, 1000.0, 250.0)
bmi = st.sidebar.slider('What is your BMI?', 1.0, 100.0, 24.9)
ever_married = st.radio("Are you married?", ('Yes', 'No'))
gender = st.radio("What is your gender?", ('Male', 'Female'))
work_type = st.radio("Which of the following best descibes your work type?", ('Private', 'Self-employed','Govt_job', 'children', 'Never_worked'))
residence_type = st.radio("What is your residence type?", ('Urban', 'Rural'))
smoking_status = st.radio("What is your smoking status?",('formerly smoked', 'never smoked', 'smokes'))
```

```
ever_married_indx = 1 if ever_married == "Yes" else 0
gender_indx = 1 if gender == "Male" else 0

work_type_input = work_type
work_type_indx = {
   "Private": 0,
   "Self-employed": 0,
   "Govt_job": 0,
   "children": 0,
   "Never_worked": 0,
}
work_type_indx[work_type_input] = 1

residence_type_indx  = 1 if residence_type == "Urban" else 0

smoking_status_input = smoking_status
smoking_status_formerly_smoked_indx = 1 if smoking_status_input == "formerly smoked" else
0
smoking_status_smokes_indx = 1 if smoking_status_input == "smokes" else 0

data = {
   "age": [age],
   "avg_glucose_level": [avg_glucose_level],
   "bmi": [bmi],
   "gender_Male": [gender_indx ],
   "ever_married_Yes": [ever_married_indx],
   "work_type_Govt_job": [work_type_indx ["Govt_job"]],
   "work_type_Never_worked": [work_type_indx ["Never_worked"]],
   "work_type_Private": [work_type_indx ["Private"]],
   "work_type_Self-employed": [work_type_indx ["Self-employed"]],
   "work_type_children": [work_type_indx ["children"]],
   "Residence_type_Urban": [residence_type_indx ],
   "smoking_status_formerly smoked": [smoking_status_formerly_smoked_indx ],
   "smoking_status_smokes": [smoking_status_smokes_indx ]
}

test_df = pd.DataFrame(data)


pred_prob = model.predict_proba(test_df)[:,1]

st.subheader('Output')
st.metric('Predicted probability of having a stroke = ', pred_prob, '')
```

Chapter-6

Result




children
Never_worked
Input features:
What is your residence type?
Age:
Urban
19
Rural
1
100
What is your smoking status?
Hypertension
formerly smoked
never smoked
0
smokes
0
1
Output
Heart disease
Predicted probability of having a stroke =
0.21
0.5608064512812134
0.00
1.00
Glucose level
217.89
1.00
1000.00
What is your BMI?
31.29
1.00
100.00
Made with Streamlit

TESTING

The purpose of testing is to discover errors. Testing is a process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, subassemblies, assemblies and or a finished product.

It is the process of exercising software with the intent of ensuring that the software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of tests. Each type of test type addresses a specific testing requirement.

Testing is an extremely critical and time-consuming activity. It requires proper planning of the overall testing process. Frequently the testing process starts with the test plan. This plan identifies all testing related activities that must be performed and specifies the schedule, allocates the resources, and specifies guidelines for testing. The test plan specifies conditions that should be tested; different units to be tested, and the manner in which the module will be integrated together. Then for different test unit, a test case specification document is produced, which lists all the different test cases, together with the expected outputs, that will be used for testing.

During the testing of the unit the specified test cases are executed and the actual results are compared with the expected outputs. The final output of the testing phase is the testing report and the error reports are a set of such report. Each test report contains a set of test cases and the result of executing the code with the test cases. The error report describes the error encountered and the action taken to remove the error.

Chapter-8

Conclusion and Future Scope

The importance of knowing and understanding the risks of brain stroke is very much in these trying times. The model predicts the probability of brain stroke on the basis of very trivial day-to-day and known to all parameters. This makes this project highly relevant and of need to society. The objective of implementing the project on a web platform was to reach as many individuals as possible. The early warning can save someone's life who might have a probability of a stroke.

Several assessments and prediction models, Decision Tree, Naive Bayes and Neural Network, showed acceptable accuracy in identifying stroke-prone patients. This project hence helps to predict the stroke risk using prediction model and provide personalized warning and the lifestyle correction message through a web application. By doing so, it urges medical users to strengthen the motivation of health management and induce changes in their health behaviors.

This project helps to predict the stroke risk using prediction model in older people and for people who are addicted to the risk factors as mentioned in the project. In future, the same project can be extended to give the stroke percentage using the output of current project. This project can also be used to find the stroke probabilities in young people and underage people by collecting respective risk factor information's and doctors consulting

Publication

Acceptance Notification 5th IEEE ICAC3N-23 & Registration: Paper ID 1370

1 message

Microsoft CMT <email@msr-cmt.org> Thu, May 25, 2023 at 10:50 PM
Reply-to: Vishnu Sharma <vishnu.sharma@galgotiacollege.edu>
To: Wazida Tabbasum <wazida.20scse1010311@galgotiasuniversity.edu.in>

Dear Wazida Tabbasum,

GALGOTIAS UNIVERSITY

Greetings from ICAC3N-23 ...!!!

Congratulations. .....!!!!!

On behalf of the 5th ICAC3N-23 Program Committee, we are delighted to inform you that the submission of "Paper ID- 1370 " titled "Detection of Brain Stroke using Machine Learning" has been accepted for presentation and further publication with IEEE at the ICAC3N- 23 subject to incorporate the reviewers and editors comments in your final paper. All accepted papers will be submitted for inclusion into IEEE Xplore subject to meeting IEEE Xplore's scope and quality requirements.

For early registration benefit please complete your registration by clicking on the following Link: >https://forms.gle/8e6RzNbho7CphnYN7 on or before 30 May 2023.

Registration fee details are available @ https://icac3n.in/register.

You must incorporate following comments in your final paper submitted at the time of registration for consideration of publication with IEEE:

Reviewer Comment:
The title chosen " Detection of Brain Stroke using Machine Learning " is relevant for publication.
The formatting of paper is not proper. Formatting must be strictly as per template.
All authors information must be complete and should be in proper format and as per the sequence desired. Citation of references within the content is not proper. Make only relevant citation. All references must be cited in content properly.
Conclusion and result section needs to be improved and require better explanation.

Editor Note:
1. All figures and equations in the paper must be clear.
2. Final camera ready copy must be strictly in IEEE format available on conference website www.icac3n.in.
3. Transfer of E-copyright to IEEE and Presenting paper in conference is compulsory for publication of paper in IEEE.
4. If plagiarism is found at any stage in your accepted paper, the registration will be cancelled and paper will be rejected and the authors will be responsible for any consequences. Plagiarism must be less then 20% (checked through Turnitin).
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6. Violation of any of the above point may lead to rejection of your paper at any stage of publication.
7. Registration fee once paid will be non refundable.

If you have any query regarding registration process or face any problem in making online payment, you can Contact @ 8168268768 (Call) / 9467482983 (Whatsapp) or write us at icac3n23@gmail.com.

Regards:
Organizing committee
ICAC3N – 2023

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