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Lifestyle Disease Prediction

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Abstract: Conditions that are associated with the way a person or group of people live are known as life conditions. Healthcare assiduity collects enormous complaint- related data that's unfortunately not booby-trapped to discover retired information that could be used for effective decision timber. This study aims to understand support vector machine and use it to prognosticate life conditions that an individual might be susceptible to. also, we propose and pretend an profitable machine literacy model as an volition to deoxyribonucleic acid testing that analyzes an existent's life to identify possible pitfalls that form the foundation of individual tests and complaint forestallment, which may arise due to unhealthy diets and inordinate energy input, physical dormancy, etc. The simulated model will prove to be an intelligent low- cost volition to descry possible inheritable diseases caused by unhealthy cultures.

Keywords: Deoxyribonucleic acid testing, healthcare industries, lifestyle diseases, support vector machine

I. INTRODUCTION

A report prepared by the World Health Organization and World Economic Forum says that India will dodge an accumulated loss of$236.6 billion by 2015 because of morbid cultures as well as amiss diet(1). life and diet are the two main factors that are considered to impact receptiveness to colorful conditions. conditions are substantially caused by a combination of metamorphosis, life selections, and surroundings. In addition, relating health pitfalls in an existent's family is one of the most pivotal effects an existent can do to help his/ her guru understand and diagnose hereditarily linked runs like cancer, diabetes, and internal illness. conditions that are associated with the way a person or group of people live are known as life conditions. They include atherosclerosis; heart complaint and stroke; rotundity and type II diabetes; and smoking and alcohol- related conditions. This study aims to understand Decision tree(DT) and use it to prognosticate life conditions that an individual might be susceptible to. The need for public mindfulness isn't stressed enough, but life conditions are easy to help. Simply modifying an existent's life to reduce and exclude pitfalls can be intriguing. Deoxyribonucleic acid(DNA) and inheritable testing are creating a new breadth of individualized drug. still, on an average, DNA testing may dodge ₹ 10,000 to 20,000(2), which is precious. Though there are numerous retreating conditions and tests, they're aimlessly tested because they're expensive, and factual tests haven't been developed yet. Our cultures are imperative in adding or dwindling pitfalls of colorful conditions. According to some exploration conducted in the discipline of epigenetics determines that an existent's life selections can modify his/ her well- being at inheritable position. This study discusses about a model that can prognosticate the chances of an individual carrying a life complaint. life conditions depend on factors like heaviness, drill, and food loves and therefore have a strong association with the abovementioned factors. In our simulated model, an actor will input his/ her details like fattiness, sleeping habits and will discover the liability of suffering from life conditions. The remainder of this handwriting is organized as follows. Section 2 provides a brief summary about affiliated work in machine literacy(ML) sphere. Section 3 focuses on ML and DT(direct and multiclass) algorithm. Section 4 explains the proposed system(block illustration and working) for life complaint vaticination. Section 5 presents simulation results for the proposed system. Section 6 concludes the study with unborn compass.

II. LITERATURE SURVEY

1) TITLE: Disease prediction by using machine learning.
Authors: Sayali Ambhekar and Dr.Rashmi Phalinkar
Year: 2018
Disease Prediction using Machine literacy is the system that's used to prognosticate the conditions from the symptoms which are given by the cases or any stoner. The system processes the symptoms handed by the stoner as input and gives the affair as the probability of the complaint. Naïve Bayes classifier is used in the vaticination of the complaint which is a supervised machine learning algorithm. The probability of the complaint is calculated by the Naïve Bayes algorithm. With an increase in biomedical and healthcare data, accurate analysis of medical data benefits early complaint discovery and case care.

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By using direct retrogression and decision tree we're prognosticating conditions like Diabetes, Malaria, Jaundice, Dengue, and Tuberculosis.

2) TITLE: Graph theoretical metrics and machine learning for diagnosisofparkinson's disease..
Authors: Kazeminejad and Soltanian-Zadeh
Year: 2017
In this study, we shoveled the felicity of graph theoretical analysis for automatic opinion of Parkinson's complaint. Resting state fMRI data from 18 healthy controls and 19 cases were used in the study. Next, a brain network graph was constructed using the regions as bumps and the Pearson correlation between their average time series as edge weights. A chance of edges with the topmost magnitude were kept and the rest were neglected from the graph using a thresholding system ranging from 10 to 30 with 2 supplements. Global graph theoretical criteria for integration(Characteristic path length and effectiveness), sequestration(Clustering Measure and Transitivity) and small- worldness were pulled for each subject and their between group differences were subdued to statistical analysis. Original criteria, including integration, sequestration, centrality(betweenness, z-score, and participation measure) and nodal degree, were also pulled for each subject and used as features to train a support vector machine classifier.

3) Title: Study of machine learning algorithms for special disease prediction.
Authors: kanchan and kishor
Year: 2016
The worldwide study on causes of death due to heart complaint/ pattern has been observed that it's the major cause of death. However, 23, If recent trends are allowed to continue.6 million people will die from heart complaint in coming 2030. The healthcare assiduity collects large quantities of heart complaint data which unfortunately aren't “ booby-trapped ” to discover retired information for effective decision timber. In this paper, study of PCA has been done which finds the minimal number of attributes needed to enhance the perfection of colorful supervised machine learning algorithms. The purpose of this exploration is to study supervised machine learning algorithms to prognosticate heart complaint

4) Title: Prediction of diabetes based on personal lifestyle indicators
Authors: Anand and shakti
Year: 2015
Diabetes Mellitus or Diabetes has been portrayed as worse than Cancer and HIV(Human Immunodeficiency Virus).It develops when there are high blood sugar situations over a prolonged period. recently, it has been quoted as a trouble factor for developing Alzheimer, and a leading cause for blindness & order failure. Prevention of the complaint is a hot content for disquisition in the healthcare community. multitudinous ways have been discovered to find the causes of diabetes and cure it. This disquisition paper is a discussion on establishing a relationship between diabetes trouble likely to be developed from a person's quotidian life conditioning analogous as his/ her eating habits, sleeping habits, physical exertion along with other pointers suchlike BMI(Body Mass Index), waist circumference etc.

III. PROBLEM STATEMENT

By using machine learning algorithms, life style diseases are predicted after calculating various features. Two different machine learning algorithms, SVM and decision tree are implemented and compared for better accuracy and performance.

IV. SCOPE OF THE PROJECT

ML being an essential CS operation is used for prognosticating results given target input parameters and is being extensively used for perfecting mortal life in several ways. Complex diseases also known as polygenic are caused by contemporaneous goods of further than one gene frequently in a complex commerce with terrain and life factors, which implies that if a parent has a particular complaint, it does not inescapably mean that a child would develop the same. still, there could be a possibility of high threat of developing the complaint(i.e., inheritable vulnerability), and for such a possibility where it can not be a sure circumstance but threat prevails, the proposed model would give a detailed report of differences in an existent's life similar as maintaining a healthy weight, and sugar situations may be suitable to reduce threat in case of inheritable predilection known that inheritable makeup can not be altered.

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farther additions to the model would include when an individual enters his/ her details(i.e., input to the prophetic model), the model would determine his/ her identity grounded on several inputs, show an existent's current status of his/ her health negative to a asked ideal health using graphs, let know life changes, give balanced diet and croaker consultations, recommend exercises, etc.

The model would take into account climatic conditions and pollution situations and rank metropolises and cities with an ideal terrain as to the preventative measures that an existent could take making the model more happy specific, accessible, and flexible in terms of customization. The fact that deep literacy(DL) is catching ML algorithms in terms of delicacy would suggest the possibility of SVM being replaced by DL in the near future

V. PROPOSED SYSTEM

This study aims to understand Decision Tree Classifier and use it to prognosticate life conditions that an individual might be susceptible to. The need for public mindfulness is not stressed enough, but life conditions are easy to help. Simply modifying an existent's life to reduce and exclude pitfalls can beinteresting.By using machine literacy algorithms, life conditions are prognosticated after calculating colorful features. Two different machine learning algorithms, SVM and decision tree are enforced and compared for better delicacy and performance.

VI. ALGORITHM

1) *Support Vector Machine:* Support Vector Machine or SVM is one of the most popular Supervised knowledge algorithms, which is used for Bracket as well as Regression problems. still, primarily, it's used for type problems in Machine knowledge.The thing of the SVM algorithm is to produce the stylish line or decision boundary that can insulate n- dimensional space into classes so that we can fluently put the new data point in the correct order in the future. This stylish decision boundary is called a hyperplane.

Step 1: Load the important libraries. ...
Step 2: Import dataset and extract the X variables and Y separately. ...Step 3: Divide the dataset into train and test. ...
Step 4: Initializing the SVM classifier model. ...
Step 5: Fitting the SVM classifier model. ...
Step 6: Coming up with predictions

2) *Binary Tree:* Tree is a Supervised knowledge fashion that can be used for both type and Retrogression problems, but substantially it's preferred for working Bracket problems. o In a Decision tree, there are two bumps, which are the Decision knot and Leaf Node. Decision bumps are used to make any decision and have multiple branches, whereas Leaf bumps are the affair of those opinions and don't contain any farther branches. o The opinions or the test are performed on the base of features of the given dataset.

Step 1: Define the problem in structured terms. ...
Step 2: Model the decision process. ...
Step 3: Apply the appropriate probability values and financial data. ...
"Solve" the decision tree. ...
Perform sensitivity analysis. ...
List the underlying assumptions

3) *Feasibility Algorithm:* Comparison of algorithm aims to get the algorithm that is considered the fastest and accurate to make a prediction of a problem. Result of comparison of SVM and Decision tree can be concluded that SVM 74% accuracy and Decision tree 85.0 % accuracy.

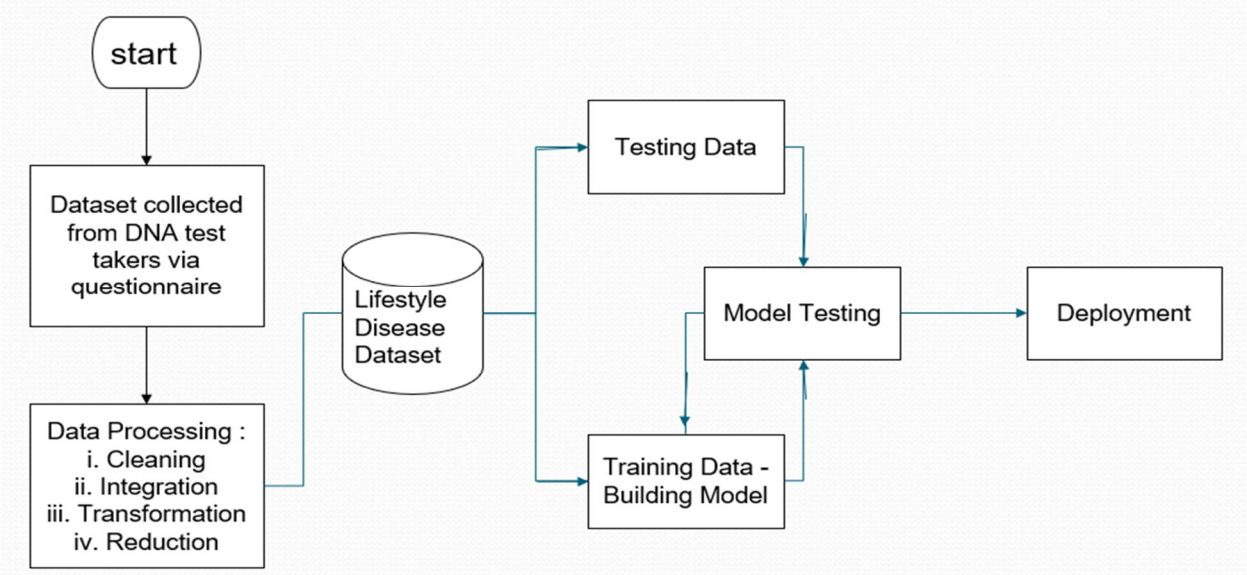
Decision tree is better classifier than SVM with the accuracy percentage 85.0% and the accuracy rate for SVM was 74%, which is lower than Decision tree accuracy value.

SL.NO	Algorithm	Accuracy
1	SVM	74%
2	Decision tree	85%

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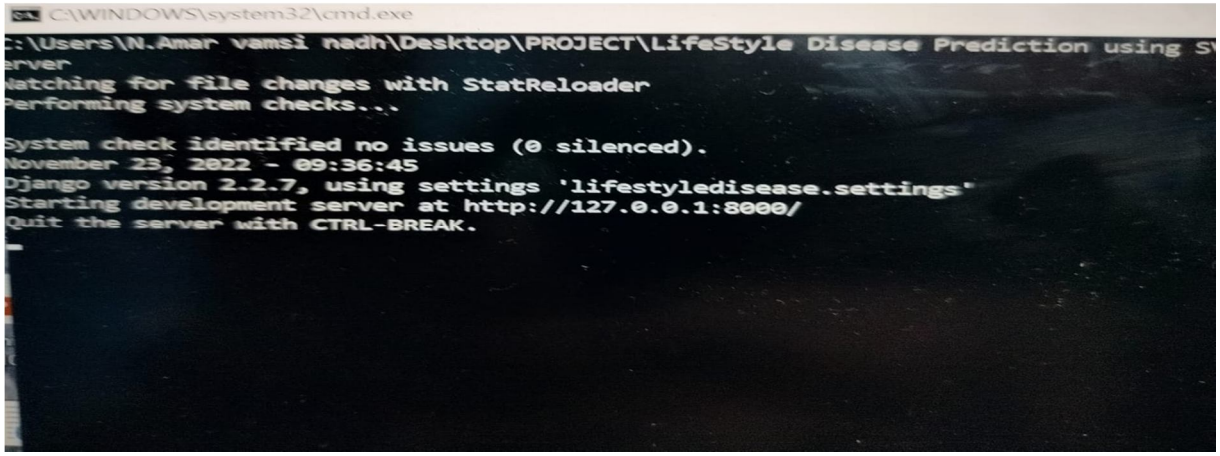
Method/parameter	Decision Tree	SVM
Understandibility	simple to understand and generate.	Difficult to understand and interpret.
Data type	Numerical and categorical.	Simple or linear and Kernel or non linear.
Deterministic/Non deterministic	Deterministic.	It is also a deterministic classifier.
Suitable for	Large data.	Smaller data.
Applicable	pattern recognition, sequence recognition, financial applications.	Handwriting recognition, intrusion detection, email classifications.

VII. SYSTEM ARCHITECTURE

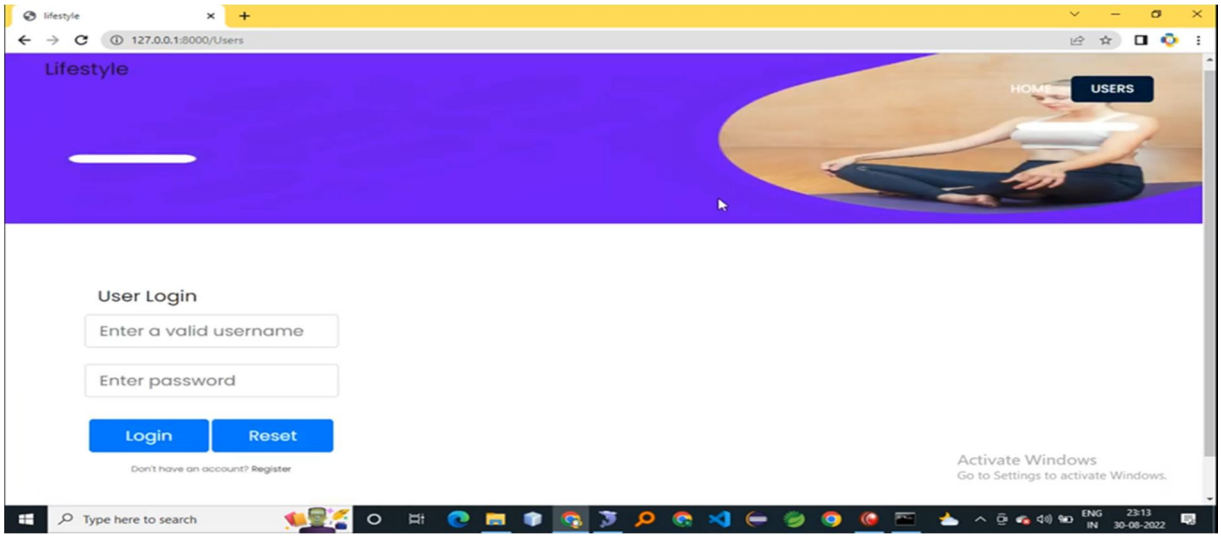


A. Outputs:

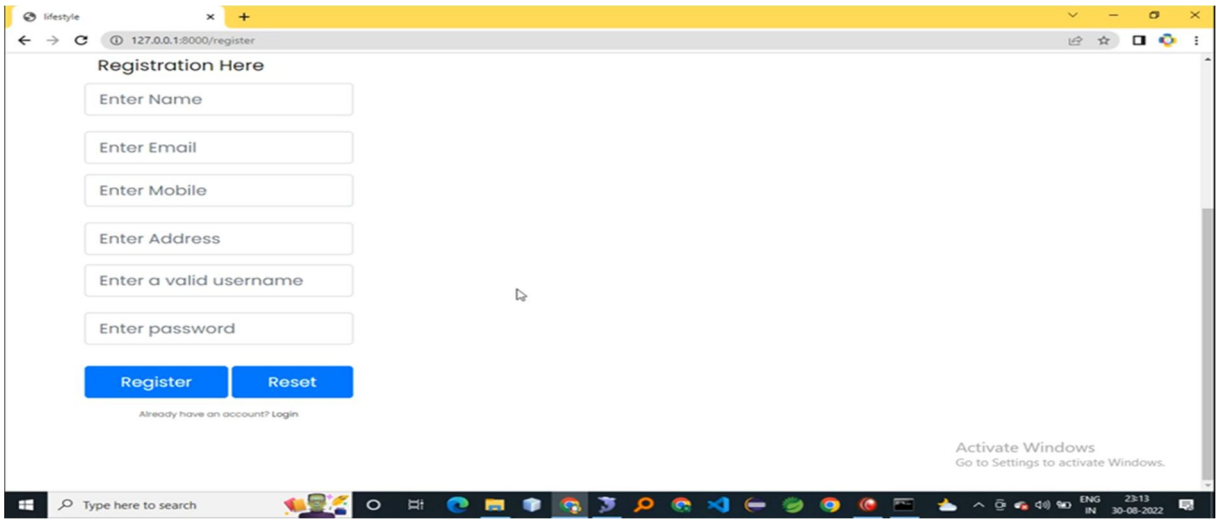
1) cmd output:



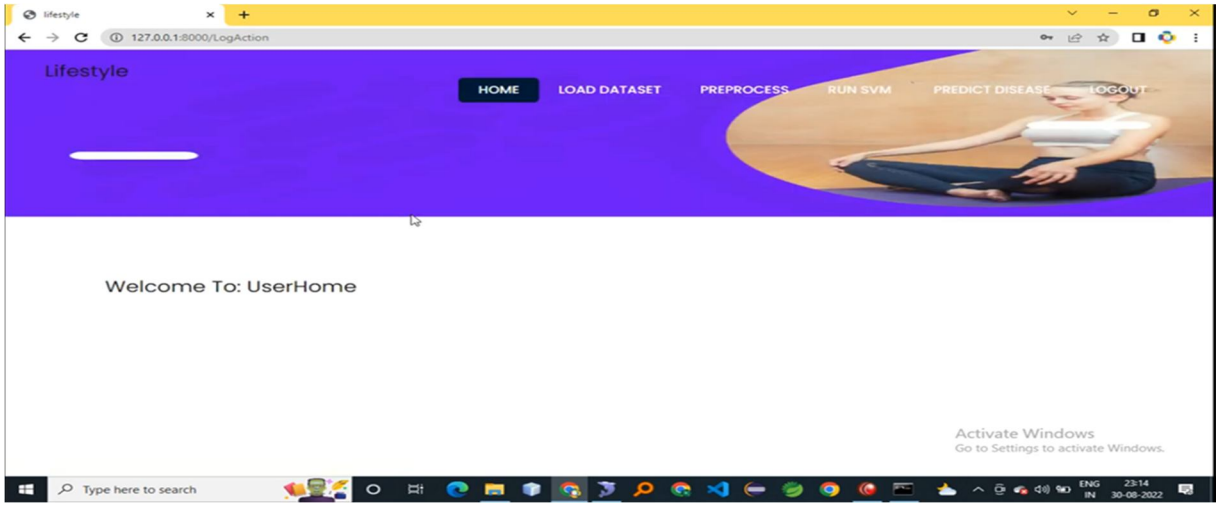
2) User Interface Outputs



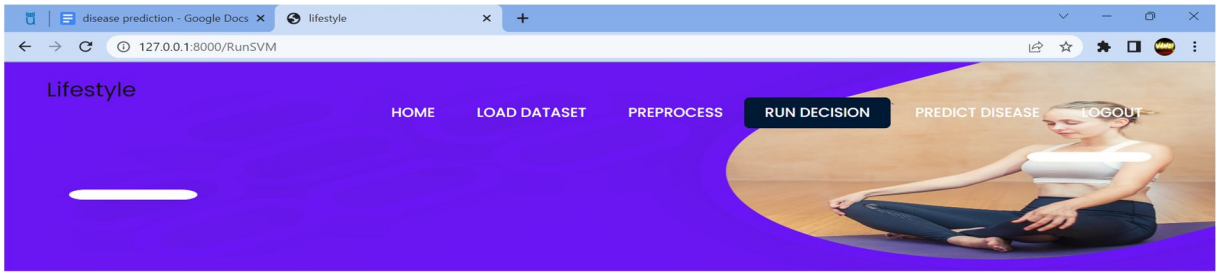
B. Registration



C. Home screen



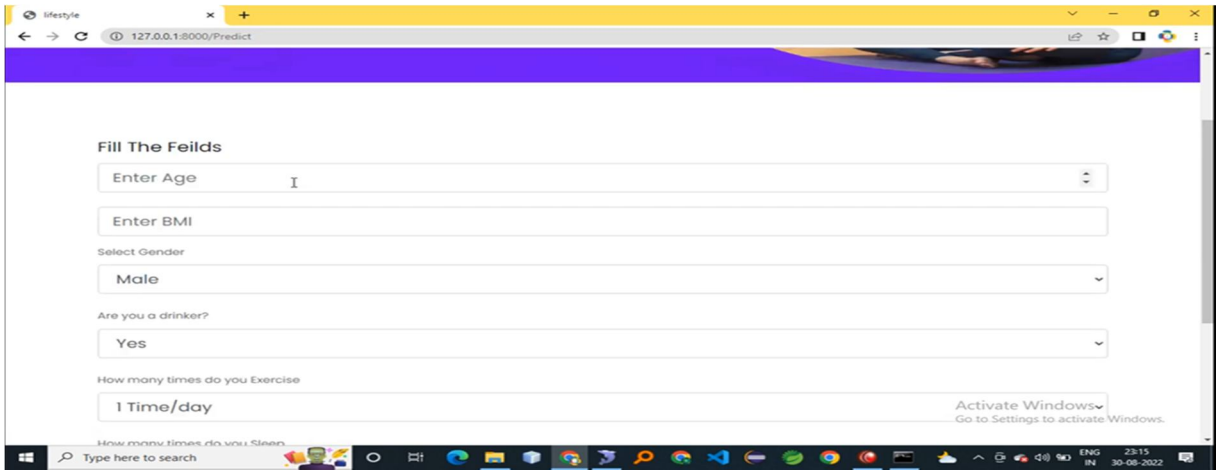
D. Accuracy



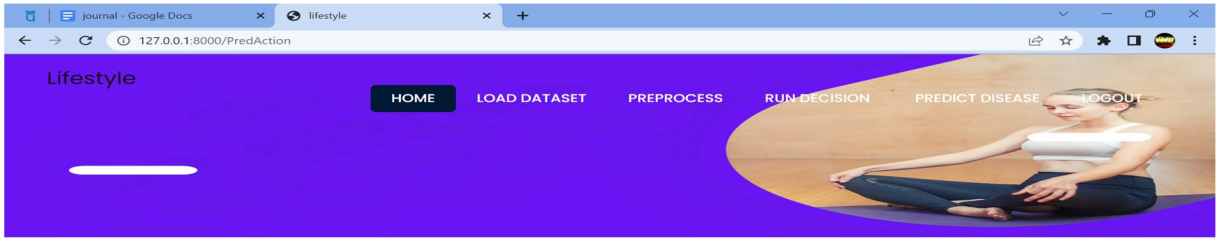
Accuracy Score: 85.0%



E. Predict Disease



F. Result



Disease Predicted As : Depression



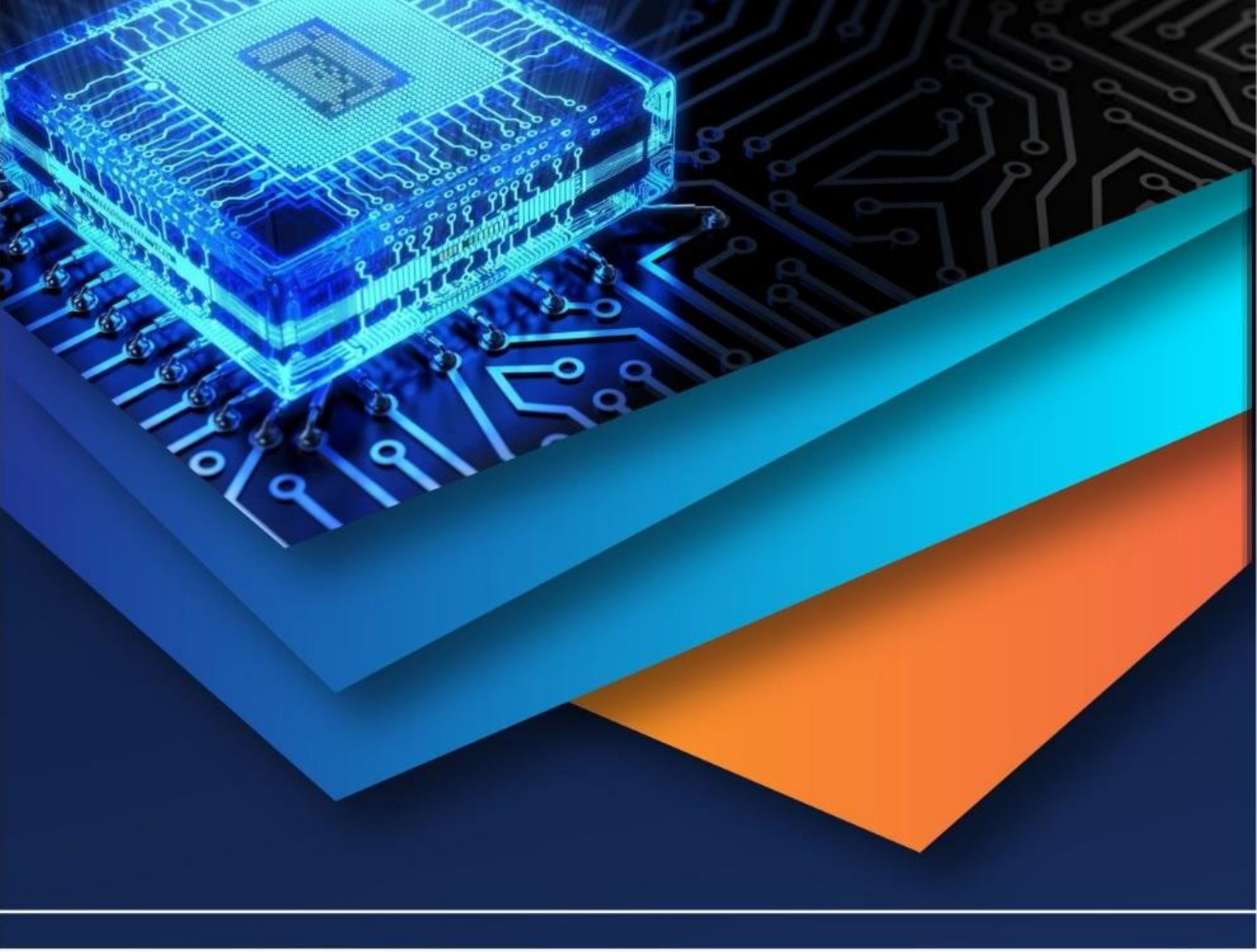
VIII. CONCLUSION

ML being an essential CS operation is used for prognosticating results given target input parameters and is being extensively used for perfecting mortal life in several ways. Complex diseases — also known as polygenic — are caused by contemporaneous goods of further than one gene frequently in a complex commerce with terrain and life factors, which implies that if a parent has a particular complaint, it doesn't inescapably mean that a child would develop the same. still, there could be a possibility of high threat of developing the complaint(i.e., inheritable vulnerability), and for such a possibility where it can not be a sure circumstance but threat prevails, the proposed model would give a detailed report of differences in an existent's life similar as maintaining a healthy weight, and sugar situations may be suitable to reduce threat in case of inheritable predilection known that inheritable makeup can not be altered.

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