PREDIRE DISEASE PREDICTION SYSTEM

GROUP-10

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INTRODUCTION

Predire is a website that uses Machine Learning algorithms to predict diseases with the help of symptoms provided by our users/patients. It also provides Healthcare related news and research papers for doctors and medical students.

This website caters not only to the public but also to hospitals and private corporations.

With the integration of powerful machine learning techniques and accurate medical data, we have developed a website that can predict 41 diseases. It predicts diseases that range from common diseases such as common cold, fever, etc to severe diseases such as hepatitis, tuberculosis, diabetes, etc.

The already existing applications for disease prediction do not predict a wide variety of diseases, instead, they are focused on predicting a single disease. Additionally, they do not provide an environment where the user can learn or gain knowledge about topics related to their application.

Predire tackles all the above constraints and provides an intricate and accurate prediction using a different approach than the pre-existing systems on the internet.

Predire's prediction model is weight-based. It predicts the highest weighted disease based on 5 symptoms provided by the user. Here, weights are values ranging from 1-5 assigned to each disease based on their severity, where the higher value indicates a higher severity.

THEORY

Existing System:

- The existing systems do not provide prediction of multiple diseases. They are focussed on a single disease such as Diabetes, Tuberculosis, Heart disease etc. Since they are solely focused on prediction, they do not have a lot of versatality.

- Even though they specialise in a single disease, no descriptive analysis is provided for their users. Also, they do not provide an environment where the user can learn or gain knowledge about topics related to their application.

- All the existing systems are web/mobile applications where no importance is given to the user interface of their application.

THEORY

Proposed System:

To resolve the problems occurring in the existing system, we came up with a solution to create a web application that handles all these problems and provides a better way to work.

Our application will be easier for the doctors, patients and students to use as it will be user friendly. We have put in a lot of effort in designing a modern, elegant yet efficient website.

We have adopted a different prediction approach from the existing systems to provide fast and accurate results.

We provide a subtle description for the disease with a list of precautions to take.

IMPLEMENTATION

This system's primary goal is to diagnose illnesses using user-provided symptoms as input. Additionally, we have also tested a few additional machine learning models such as Naive bayes, SVM, Decision Tree etc so that we can compare how they perform to the ones we are currently using.

First we clean the dataset at hand to remove any noise and redundancy from it to transform it into data which is ready for visualization and prediction
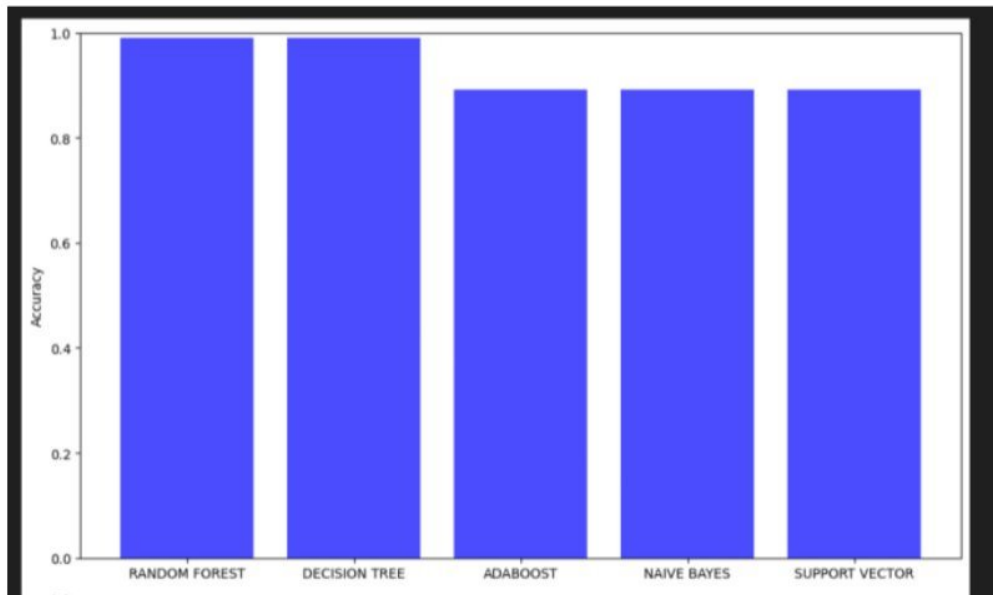
We then split our data to training and test dataset for the application of machine learning algorithms.

Here in our model we have selected five machine learning algorithms which are:- Random forest, Decision Tree, Naïve Bayes, SVM, Logistic Regression.

COMPARING ML ALGORITHMS

- After applying the algorithms to our model and comparing the accuracies of the same we can conclude that Random Forest algorithm has the highest accuracy following decision tree algorithm.

- We can see that adaboost and other algorithms fall short because the decision tree has already grown very complex.

COMPARING ML ALGORITHMS
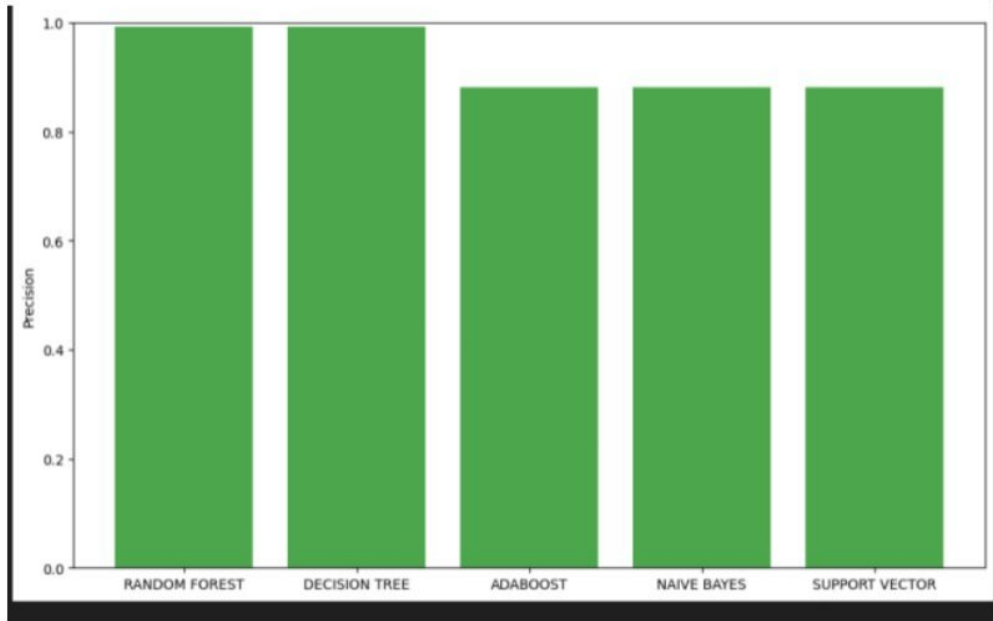
- The results for Precision is same as that for the accuracy with random forest and decision tree as prevailing algorithms with the highest precision.

RESULT AND DISCUSSION

- After implementing all the selected algorithms we observe that Random Forest Algorithm has the highest accuracy among the machine learning algorithms with an accuracy of over 99%.

- Therefore we use this algorithms prediction and integrate it with the website to throw prediction based on the symptoms provided.

- We obtained the Symptoms with the highest severity by plotting a severity rank graph which came out to be high fever , coma, chest pain, weakness in limbs with some of the highest ranks.
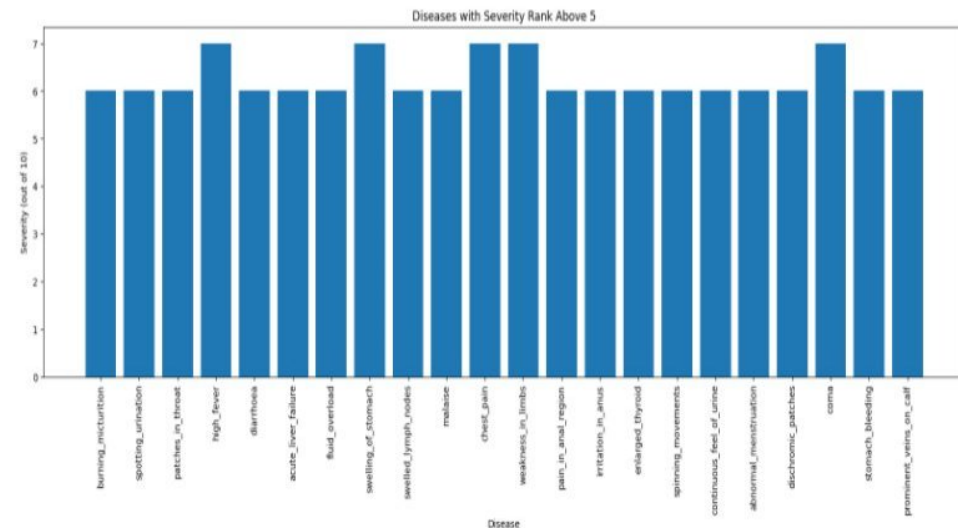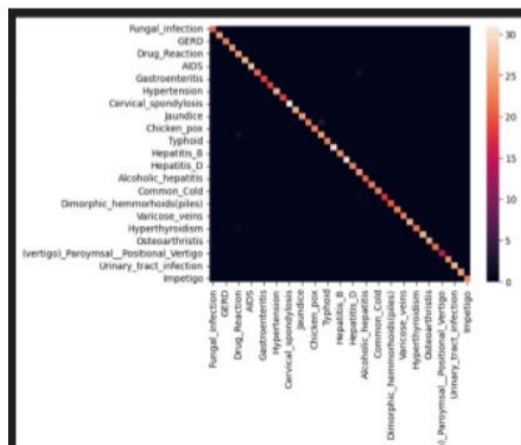
CONCLUSION

Our machine learning-based disease prediction model can be an accurate tool for diagnosing various medical conditions. By leveraging diverse datasets containing symptoms, disease descriptions, and precautions, our model can demonstrate promising results in early diagnosis.

The integration of machine learning techniques enhances the efficiency of disease prediction, providing valuable insights for healthcare professionals and most importantly individuals.

This project underscores the transformative impact of machine learning in healthcare and emphasizes the need for ongoing research in this dynamic field. With the use of blockchain-system, this can be transformed into a promising system which will have centralized data of patients and help them with better and improved diagnosis."

In the future, new features can be added to improve the accuracy of the prediction model. For example, new disease data have an impact on the number of systems seeking medical treatment and the hospital. In addition, in the face of a larger amount of data, we can use the cloud architecture in this paper to carry out distributed computing.

We can also work on our UI by providing the user with information curated specifically for them through their past diagnosis and store it in the database which can further help the doctors as well as patient to keep track of their past diseases.

We can also add a hospital or clinic recommendation for the disease predicted to further assist the user about the next steps they can take.

FUTURE SCOPE

SCREENSHOTS OF THE USER INTERFACE
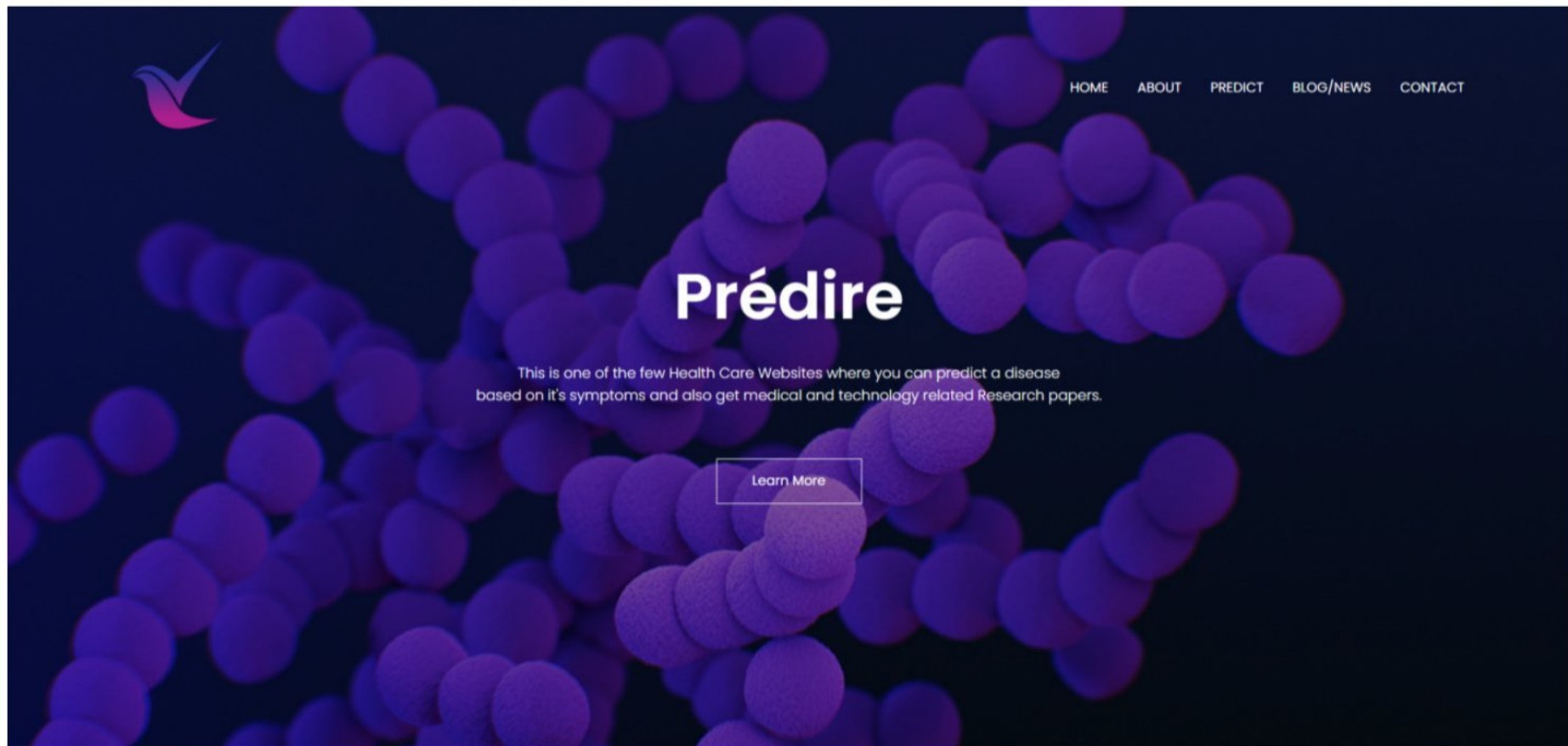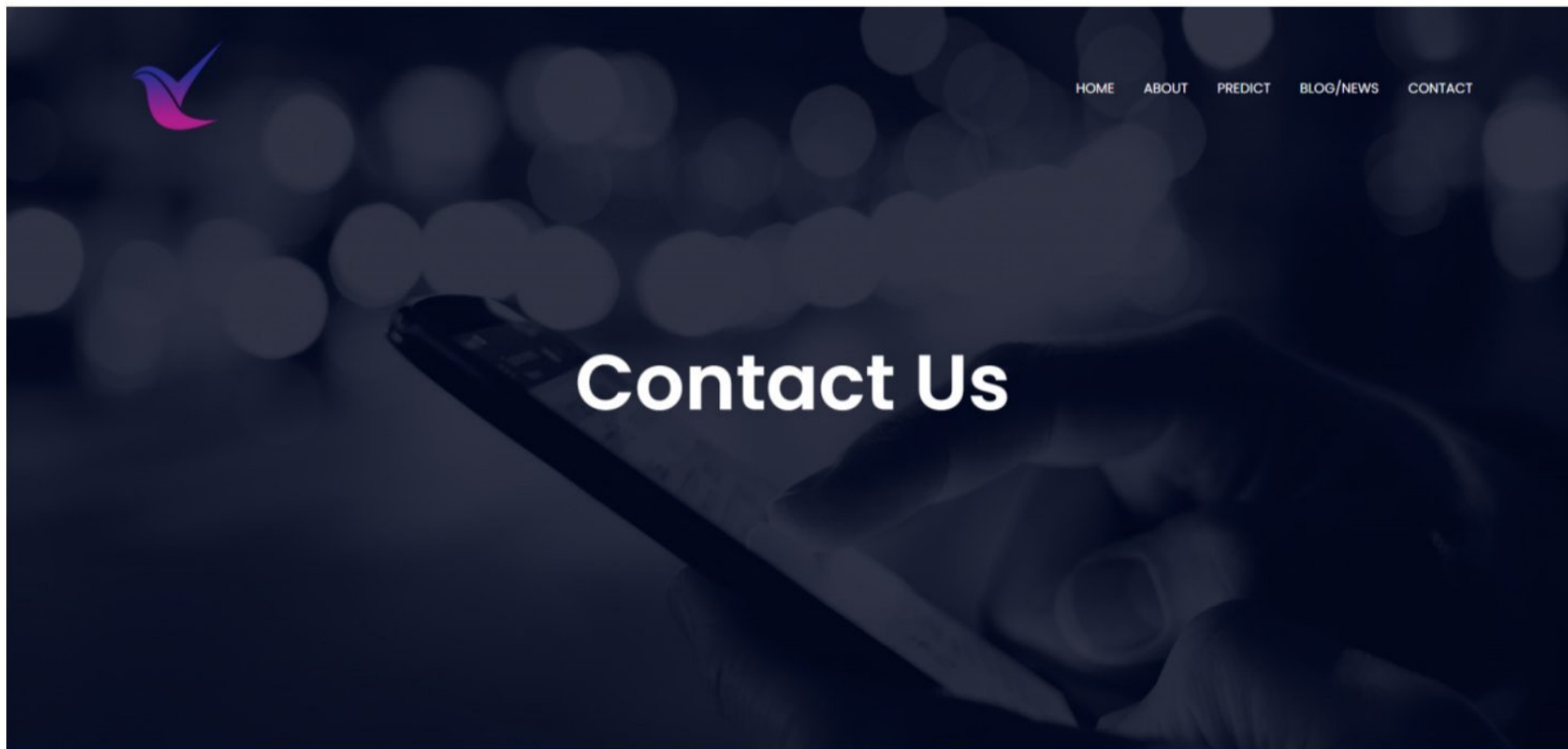
SCREENSHOTS OF THE USER INTERFACE

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SCREENSHOTS OF THE USER INTERFACE

Symptom1

Symptom2

Symptom3

Symptom4

Symptom5

PREDICT

Output
{{prediction_text}}

INSTRUCTIONS

To use the Prediction Model, Enter the value assigned to the your contracted symptoms.

JUNCHENG ZHOU CONTRIBUTION

Juncheng Zhou made some contributions in data preprocessing, optimizing data cleaning and transformation processes to enhance the model's performance.

Alternatively, he made some contributions to user interface design and user experience, ensuring the project's usability and user-friendliness.

Despite not being the main focus, his expertise and contribution are components of the project's success.

THANK YOU