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LIVER DISEASE PREDICTION USING MACHINE LEARNING

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Abstract : In Human beings, Liver is the most primary a part of the frame that plays many features along with the production of Bile, excretion of bile and bilirubin, metabolism of proteins and carbohydrates, activation of Enzymes, Storing glycogen, vitamins, and minerals, plasma proteins synthesis and clotting factors. The liver effortlessly receives affected because of intake of alcohol, ache killer capsules, food conduct, and includes lots of stressed out practices. Currently, the liver associated illnesses are recognized by analyzing liver characteristic blood check reports and test reports. It takes greater time as well as luxurious. While employing unique statistics mining algorithms to ease this process it's miles feasible to reduce the time for diagnosing the liver ailment. When greater information are used, the prediction may be greater correct. To avoid the neighborhood garage scarcity experienced in many healthcare centers, cloud garage is used. As the files generated are voluminous in size in fitness care facilities cloud storage might be the perfect preference.

INTRODUCTION

Liver disease is a significant global health issue, demanding timely diagnosis for effective treatment. Machine learning has emerged as a valuable tool for predictive analysis in medicine. By utilizing diverse patient data and advanced algorithms, machine learning can aid in early detection and risk assessment of liver diseases. This introduction explores the significance of liver disease prediction, data collection, challenges, and the potential for improved patient outcomes through the integration of artificial intelligence in clinical practice. Millions of individuals worldwide suffer from liver problems, which are a global health concern. Successful treatment and the avoidance of problems with these illnesses depend on early discovery and correct diagnosis.

Liver disease is a considerable worldwide health concern that requires timely diagnosis for effective treatment. In medicine, machine learning has taken root as an extremely useful technique in predictive analysis. Early detection of liver diseases and risk assessment can be facilitated by machine learning through the use of various patient data and sophisticated algorithms. This introduction examines the importance of liver disease prediction, data collection challenges, and opportunities for enhanced patient outcomes using artificial intelligence integration into clinical practice.

Traditional diagnostic techniques are inaccurate, frequently intrusive, and time-consuming. The aim of liver disease prediction is to identify individuals who are at high risk of developing liver disease and to implement early interventions to prevent or slow down the progression of the disease. In this work, the effectiveness of three widely used ML techniques are examined: logistic regression, support vector machines, and Random forest technique.

LITERATURE SURVEY:-

- Varun Vats, et.Al (2018) taken into consideration three distinct ML (Machine Learning) algorithms. A evaluation of those algorithms were done for comparing their forecasting accuracy and computing intricacy. These algorithms blanketed AP (Affinity Propagation), K method and DBSCAN. This work turned into dedicated to the scientific dataset based totally on lever disorders. This paintings made use of the Silhouette coefficient to measure the comparative efficiency of the taken into consideration algorithmic strategies
- Vyshali J Gogi, et.Al (2018) said that the healthcare zone had loads of data but this records was of no use. This enough statistics required a leading analytic device so that the hidden relationship and the treasured understanding could be decided. The liver disorder stated the scientific circumstance of the human liver-associated with the human liver. The liver illnesses caused surprising adjustments in fitness situations that ruled the functioning of the liver affecting different inner frame organs. This paintings made use of several type algorithms based totally on facts mining. These algorithms protected DT (Decision Tree), LD (Linear Discriminant), SVM Fine Gaussian, and LR (Logistic Regression). This paintings made use of Lab-based totally metrics of patients within the shape of a liver dataset.

EXISTING SYSTEM:-

The traditional liver disease diagnosis system involves doctors or medical professionals using various medical tests, such as blood tests, biopsy, and imaging techniques like ultrasound, MRI, or CT scans to identify liver disease in patients. The interpretation of the test results and diagnosis is done by medical professionals based on their experience and knowledge. This approach can be done.

PROPOSED SYSTEM:-

- We are proposing a module in such a way that takes liver disease patient dataset. There are some of the stages involved in this process.
- In the first stage Data Pre-processing is applied to convert the raw data into useful data and external noises are removed. Later missing values in the dataset are replaced by the process called Imputation.
- In the second stage feature selection is done. After that visualization of attributes is done to get the statistical report of healthy and un healthy people, chemical compositions, male and female ratio etc. are obtained.
- In the third stage we consider the training data and testing data to predict the values and compare them with respect to actual values. Here three different classification algorithms are used like Logistic Regression, Support vector machine, Random Forest classifier. Based on accuracy score we select one classifier.
- In the fourth stage we develop a web software which is used by the user to interact with website to enter required details then the prediction is displayed whether the user has high risk of occurrence of liver disease or not.

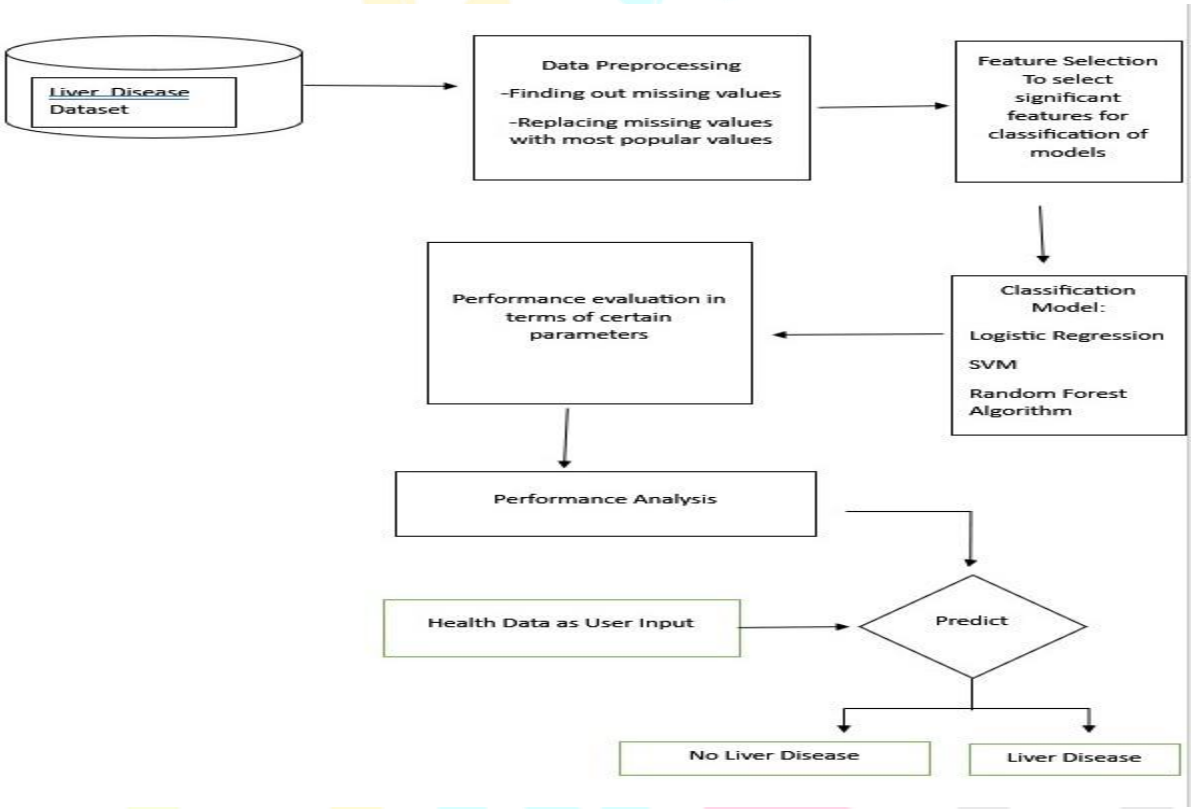


Fig:-System Architecture

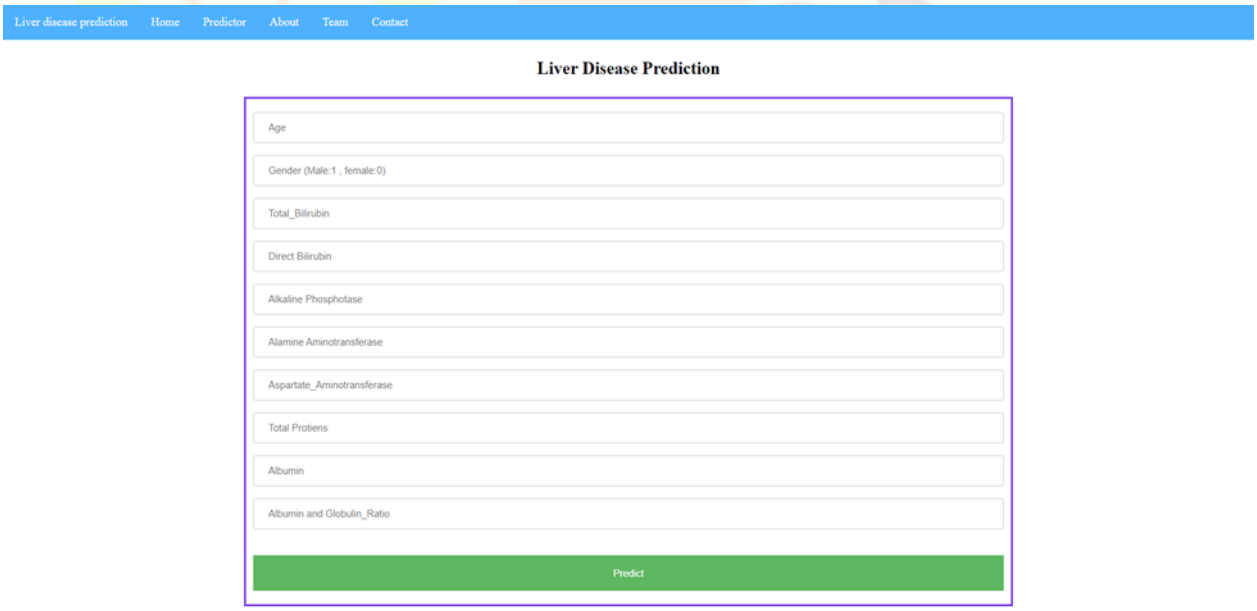
RESULT:-

The web application was created successfully we used flask frame work for backend and html for frontend. Flask follows the model view controller architecture. The application was tested successfully. The user needs to provide information, which is stored in model of flask, and the data is input for the trained machine learning algorithms. And finally displayed the output in new html page like if the patient has serious issues, it displays consult doctor otherwise you are healthy.

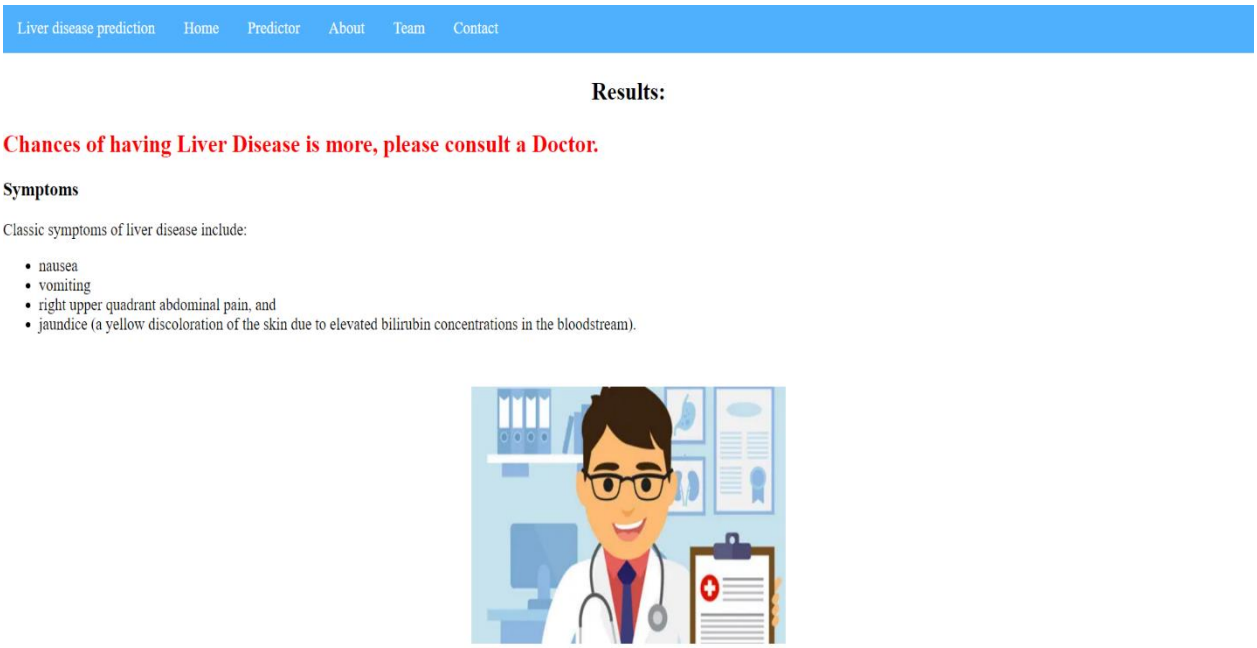
Screenshots:-

- Below is the demonstration of our home page:

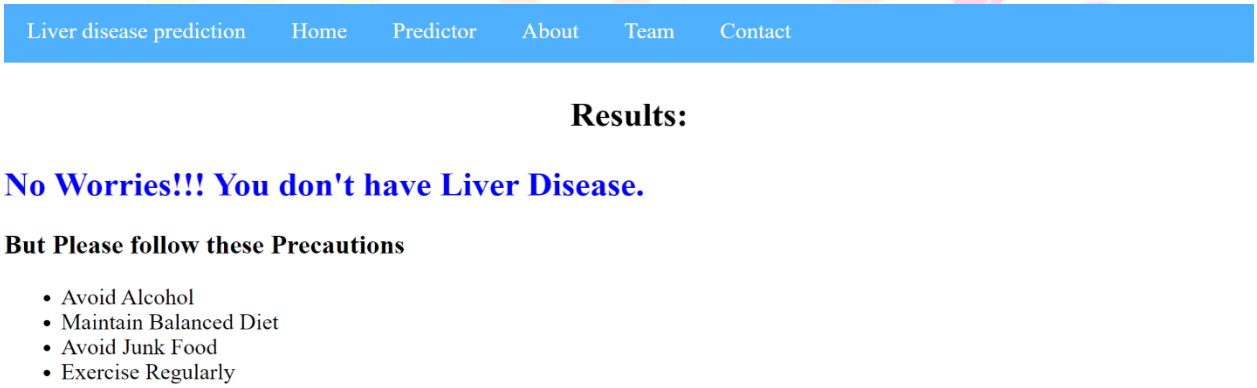
- Below is the demonstration of our Prediction Page:



- Below is the demonstration of our Team page:



- Below is the demonstration of our Explore page if the person is not affected by the disease.



CONCLUSION:-

The utility will have the option to predict liver infection earlier and advocate the well-being condition. This application can be tremendously gainful in low-profits nations wherein our absence of medicinal foundations and simply as specific specialists. In our study, there are a few bearings for destiny paintings on this area. We simply explored a few popular supervised system getting to know algorithms; more algorithms can be picked to bring together an increasing number of unique version of liver disorder prediction and performance can be gradually improved.

Through this mission we've elevated the efficiency of the prediction. We have expanded the accuracy of the prediction algorithms wherein we've got used unique algorithms to expect the accuracy of the disease at extraordinary accuracy degrees. We have used a specific dataset Indian liver patient dataset wherein we've 10 attributes and more than 500 affected person's statistics so it might be very useful and provide great accuracy of the prediction.

FUTURE WORK:-

One location for improvement is the use of extra advanced algorithms and models for statistics processing and evaluation. This can cause even extra correct predictions and diagnoses, in addition to improved performance and pace. Another location for development is the development of more complete datasets for education and validation of device mastering models. This can assist enhance the generalizability of the fashions and decrease the risk of over becoming to unique datasets. In addition, the mixing of different styles of facts assets, together with scientific snap shots, laboratory checks, and patient histories, can in addition beautify the accuracy and reliability of diagnoses. Furthermore, the usage of device gaining knowledge of techniques in mixture with different medical technology, inclusive of wearable gadgets and telemedicine, can offer more comprehensive and continuous tracking of sufferers with liver disorders.

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