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Liver Disease Detection Using Machine Learning

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ABSTRACT: **:** This paper Develope accurate models for classifying different types of liver diseases based on patient data such as symptoms, medical history, lab tests (like liver function tests), and imaging results (ultrasound, MRI, etc.).Predict danger of developing specific liver diseases or complications (e.g., liver cirrhosis, hepatocellular carcinoma) based on patient characteristics, lifestyle factors, genetic markers, and clinical data. Identify the most significant features (biomarkers, clinical indicators) contributing to the prediction of liver diseases. Predict that every single patient will respond to different treatments (e.g., medications, lifestyle changes) based on their clinical profiles and disease characteristics.Machine learning technology has used in this project.Functions like accuracy score and testing has used to predict accuracy of machine learning model..

KEYWORDS: Cirrhosis, Liverdisease, Real-Time Hepatitis ,Computer Vision, Symptoms of liver conditions , OpenCV.

I. INTRODUCTION

Patients with liver problems that are difficult to detect in the early stage will help to continue their function normally whether they are partially damaged. There are chances for a patient surviving a liver disease to be better if they are diagnosed early. Human liver is an important organ performs many functions energy storage, linked to metabolism, and waste cleansing. It also aids in the digestion of food, the change of food into energy, and the storing of energy until needed. It also helps in the removal potentially dangerous compounds from our bloodstream.The disease can be a common word that can show condition of liver how much it is affecting..

These are some of the features of Liver:

- It produces a component in our immune system that may affect illness.
- It Produce the protine which became mix in blood cell of body.
- Red blood cells or RBC that became old or damaged are broken down.
- High blood sugar is stored as glycogen in the body..

This research focuses on developing a machine learning system using Logistic regression and Naive Bayes, two powerful algorithms in the field of computer vision and machine learning.These two algorithms used for classification and prediction.We use logistic regression for classify our model and predict the outcome.Naive bayes we use for our classification task.Naive bayes uses Bayes theorem and calculate the probability of a classwith some data. By integrating these technologies, the model can accurately track liver activities in real-time and with it, it can predict the liver condition and predict the possibility of strokes on a liver. The methodology involves using Naive Bayes for classification, which classify and tracks the condition of liver. combination not only ensures precision.

II. LITERATURE SURVEY / EXISTING SYSTEM

The current framework points to revolutionize conventional Liver disease detection System by leveraging machine learning innovation, decentralized activity coordination, and anonymized communication. This inventive methodology looks for to overcome the disease of liver, improving health, effectiveness, and good patient coordination.

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Additionally, the framework explores the integration of progressed advances like the Web of Things (IoT), fog/edge computing, and information analytics to optimize activity administration and communication in real- world disease scenarios. By saddling these advances, the framework yearns to make a more effective, secure, and brilliantly disease detection environment able of adjusting to the complexities of present day hospital networks.

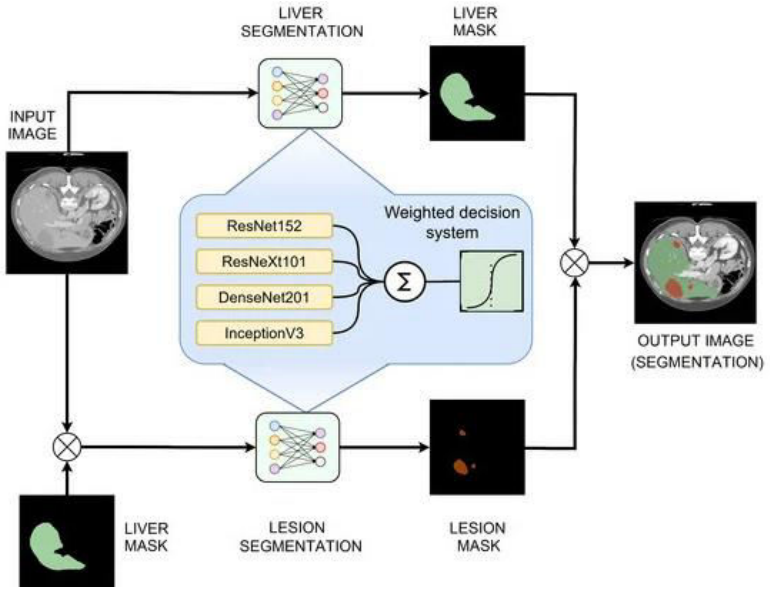

Fig 1 : Liver disease existing framework architecture

The Control of Decentralization: Machine learning Architecture
Machine learning innovation presents a decentralized framework, which contrasts strongly with conventional centralized models. This inventive approach advances a more law based and evenhanded advanced environment based onorganizing and collaboration. Decentralization through machine learning innovation guarantees a more straightforward, secure, and productive strategy for conducting exchanges and putting away data.
The engineering of machine learning innovation comprises a few key components, counting a decentralized organize,data,pieces,exchanges, trust-based notoriety frameworks, savvy contracts, privacy-preserving layers, client interfacing, and communication modules. Together, these components make a secure, straightforward, and productive framework for exchanges and information storage.

Challenges :

Complexity: Executing and keeping up a decentralized framework with progressed machine learning can be complex and requires noteworthy expertise.
Scalability: Keeping up execution and productivity as the arrange develops is crucial. Cost: Building and keeping up a machine learning framework can be restrictively expensive.
Security Dangers: Strong security measures are essential to relieve the chance of breaches and attacks.

III. PROPOSED METHODOLOGY AND DISCUSSION

The framework points to improve activity administration and productivity by leveraging a crossover approach that combines testing and training data. Through classifiaction-based tests, it looks for to accomplish the taking after objectives:

Robust Procedures: By creating versatile steering methodologies, the framework viably handles activity blockage and diminishes liver problems. These techniques powerfully alter based on real-time symptoms.

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Sustainable Urban Portability: Tending to challenges postured by fast urbanization and expanded health activity, the framework advances economical medical services. It contributes to diminished emanations, superior asset utilization, and moved forward by and large mobility.

Reliability and Execution: Improving the unwavering quality and execution of cleverly hospital frameworks, the proposed arrangement points to make a consistent and proficient encounter for commuters.

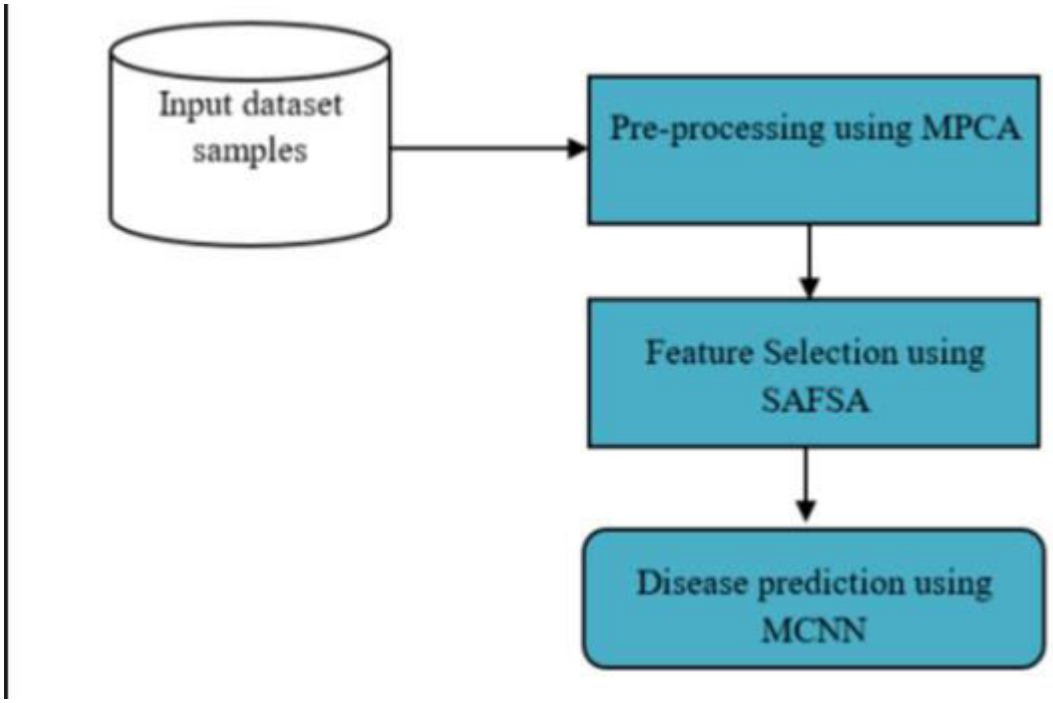

Figure 2:Proposed Framework Architecture

IV. EXPERIMENTAL RESULTS

Figures appears the comes about liver disease results:-

1. Login details

- Figure 2 shows the interface when using thelogin page of the liver disease detection
- Upon activation, of project it gives feature of login.
- If you are already a user then you can login directly via you name,email address but if you are a new user you sholud register first and then you can login.

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Fig.4.1 :- *Login page of liver disease detection*

2. Profile Details

- Figure 3 shows the interface when it show the profile details of user.
- Upon activation of project when user will login on login page then if his data exists in database then his all information will be shown in his profile details.
- This function is only applicable for users who have registered first and then they can login and see their details.
-

Fig.4.2. **Profile details**

3. Liver disease status

- Figure 4 shows the interface when it use the Liver Disease Status Function.
- In this function some input take from user like blood rate,heart rate,pulse rate…etc to detect his current status
- of liver.

Fig.4.3 Liver disease status

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4. Result status

- Above figure of result statusshows the screen when using the result function on the liver disease detection.

Fig 4.4.2: : Result status

V. CONCLUSIONS

The early prediction gives the physicians to take the necessary steps to save the life of patient. In this, the Kernel SVM approach produces better results than the other techniques. But system should predict more accurate and correct results. To get better results we need to use some advanced techniques for predicting the disease.The integration of these algorithms enables the system to analyze patterns and make predictions with high precision, that is crucial for early and accurate detection of liver disease. This early detection is vital as it allows for timely intervention, potentially improving patient prognosis and management of the disease.Furthermore, our system is designed to be user-friendly, allowing healthcare professionals to input patient data easily and receive swift, reliable results. This efficiency supports clinicians in making more informed decisions, ultimately enhancing patient care by providing a valuable diagnostic tool that augments traditional medical practices.In conclusion, our liver disease detection system represents a significant advancement in medical diagnostics, combining the strengths of multiple machine learning approach to deliver a powerful, accurate, and efficient solution for detecting liver disease. It underscores the potential of technology in transforming healthcare, providing a practical tool that aids in early diagnosis and better patient outcomes.

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