Liver Disease Detection using Deep Learning

Prof. A. P. Kulkarni[1], Rohini Bhorde[2], Sakshi Bhalerao[3], Aditya Kadu[4], Soham Kokane[5]

Assistant Professor, Department of Information Technology[1]

B.E. Students, Department of Information Technology[2,3,4,5]

Sinhgad Institute of Technology, Lonavala, Maharashtra, India

Abstract: *A highly contagious blood-borne disease, liver cirrhosis is frequently asymptomatic in its early stages. It is therefore difficult to diagnose and treat individuals in the early phases of sickness. The sickness gets harder to diagnose and treat as it gets closer to its latter stages. The aim of this effort is to provide a deep learning and machine learning based artificial intelligence system that could help medical professionals diagnose liver cirrhosis early. The suggested system uses high-frequency ultrasound image reading to provide a fully automated approach of diagnosing liver cirrhosis. The differences between the textural patterns of healthy and sick livers have been made visible by these methods. The confirmation of the differences in liver texture between diseases and even between mild and severe instances within a single disease was made possible by these noteworthy results. These techniques are easier to handle and put into practice. It is impossible to discuss the excellence of a particular technique. Different diseases can require different analyses. When differentiating between distinct tissue textures, however, the combination of various approaches can yield encouraging results.*

Keywords: Image Processing, Prediction, Healthcare, Data analytics, CNN, SVM

I. INTRODUCTION

Due to a lack of physical activity and the trend toward sedentary lifestyles, liver problems are more prevalent than ever. While liver disease is still manageable in rural places, it is becoming more and more common in urban areas, especially metropolitan ones. The ability to predict liver diseases is essential to human survival. The liver is the largest internal organ in the human body, therefore damage to it always causes problems in the person's life. Humans have been found to have a variety of liver illnesses, including cirrhosis, fatty liver, liver cancer, hepatitis, and liver tumors. The percentage of ailments is rising as a result of rising drug, alcohol, pickle, and food use. Liver illnesses claim millions of lives each year. There are various illness situations that might impact the liver. Long-term alcohol consumption alters the metabolism of the liver, which can have negative effects on overall health. Hepatic issues are caused by hemochromatosis.

II. MOTIVATION

To identify liver disease, a set of blood tests known as liver function tests can be utilized. Additional blood tests can be performed to search for particular liver issues or hereditary disorders. imaging analysis. Liver damage can be seen on an MRI, CT scan, and ultrasound.

III. OBJECTIVE

Goal the development and validation of a clinical prediction model to determine the likelihood of diagnosing liver illness after liver function tests (LFTs), and the model's transformation into a primary care-friendly, simplified scoring system.

Copyright to IJARSCT
www.ijarsct.co.in

DOI: 10.48175/568

ISSN
2581-9429
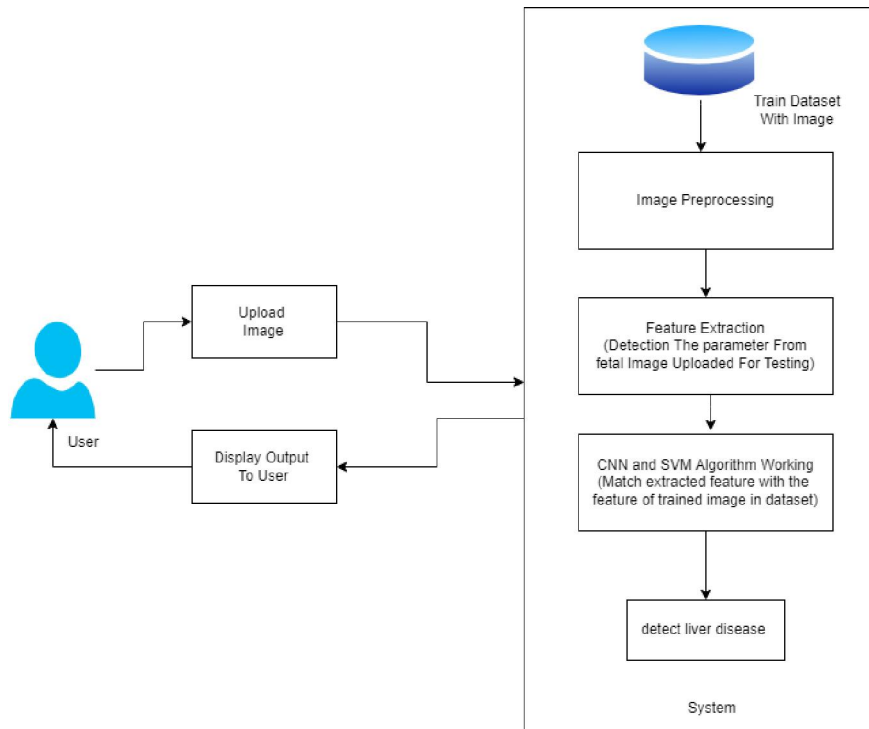IJARSCT

254

IV. SYSTEM ARCHITECTURE

Figure 1: System Architecture.

V. SOFTWARE REQUIREMENT

- IDE: Pycharm, Spyder
- Operating System: windows 10
- Programming Language: Python

VI. HARDWARE REQUIREMENTS

- Processor: Intel i5
- Speed: 1.1 GHz min
- RAM: 8 GB
- Hard Disk: 40 GB
- Monitor: LCD/LED

VII. APPLICATIONS

- Diagnosis, monitoring and treatment assessment of liver disease in early stage.
- It provides assistance to physicians to treat patients more precisely

VIII. CONCLUSION

The differences between the textural patterns of healthy and sick livers have been made visible by these methods. The confirmation of the differences in liver texture between diseases and even between mild and severe instances within a single disease was made possible by these noteworthy results. These techniques are easier to handle and put into practice. It is impossible to discuss the excellence of a particular technique. Different diseases can require different analyses. When differentiating between distinct tissue textures, however, the combination of various approaches can yield encouraging results.

ACKNOWLEDGEMENTS

REFERENCES

[1]. TImage processing tool for detection of liver disease,Juan Rodolfo MaestreRendon,Norma RamirezHernandez,978-1-6654-1262-9/21/31.00 ©2021 IEEE

[2]. Convolutional Neural Network Architectures for Fatty Liver Disease Detection,Shaun Almeida, HirtikaMirghani, Maniroja Edinburgh,978-1-6654-6539-7/22/31.00 ©2022 IEEE

[3]. Liver disease detection using machine learning techniques,Deepika Bhupathi1, Christine Nya-Ling Tan1 , Sreenivas Sremath Tirumula1 and Sayan Kumar Ray1, 27 September 2022

[4]. Liver Disease detection due to excessive alcoholism using Data Mining Techniques,1 Insha Arshad,2Chiranjit Dutta,3Tanupriya Choudhury,4Abha Thakral,978-1-5386-4485-0/18/31.00 ©2018 IEEE

[5]. Measuring Steatosis in Liver Biopsies using Machine Learning and Morphological Imaging ,NikolaosGiannakeas, Markos G. Tsipouras,063-7125/17 31.00© 2017 IEEE DOI 10.1109/CBMS.2017.98 23729198/17 31.00 © 2017 IEEE

[6]. Diagnosis of Liver Disease using Machine Learning Models ,Baddigam Jaya Krishna Reddy,978-1-72815464-0/20/31.00 ©2020 IEEE

[7]. Liver Disease Detection: Evaluation of Machine Learning Algorithms Performances With Optimal Thresholds, Aritra Pan, Indian Institute of Management, Bodh Gaya, India*, 24 October 2022

[8]. Deep Convolutional Neural Network Based Analysis of Liver Tissues Using Computed Tomography Images,MehrunNisa 1,2, Saeed Ahmad Buzdar 2 ,Khalil Khan 3,* and Muhammad Saeed Ahmad 4,Symmetry 2022

[9]. Prediction and Detection of Liver Diseases using Machine Learning ,R.T. Umbare ,Omkar Ashtekar,9798-3503-9781-9/23/31.00 ©2023 IEEE

[10]. S. Liu, S. Liu, W. Cai, S. Pujol, R. Kikinis, and D. Feng, "Early diagnosis of alzheimer's disease with deep learning," in Biomedical Imaging (ISBI), 2014 IEEE 11th International Symposium on. IEEE, 2014, pp. 1015– 1018.

Copyright to IJARSCT
www.ijarsct.co.in

DOI: 10.48175/568

256

ISSN
2581-9429
IJARSCT