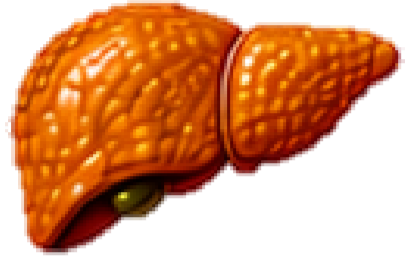


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## INTRODUCTION

Hepatic steatosis is the accumulation of triglycerides in the liver and is associated with metabolic disorders that increase the likelihood of liver damage. Its diagnosis is difficult, as most doctors prefer to use invasive methods to ensure greater accuracy.

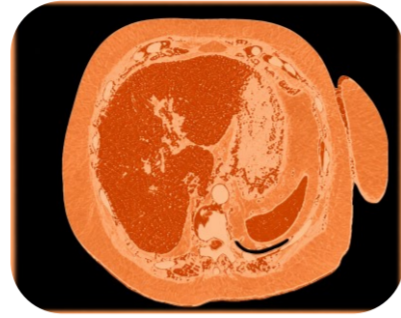
This study proposes a CNN model to analyze changes in the attenuation patterns, texture and intensity distribution in CT images, enabling a computational characterization of hepatic steatosis to facilitate diagnosis.



NAFLD is often asymptomatic

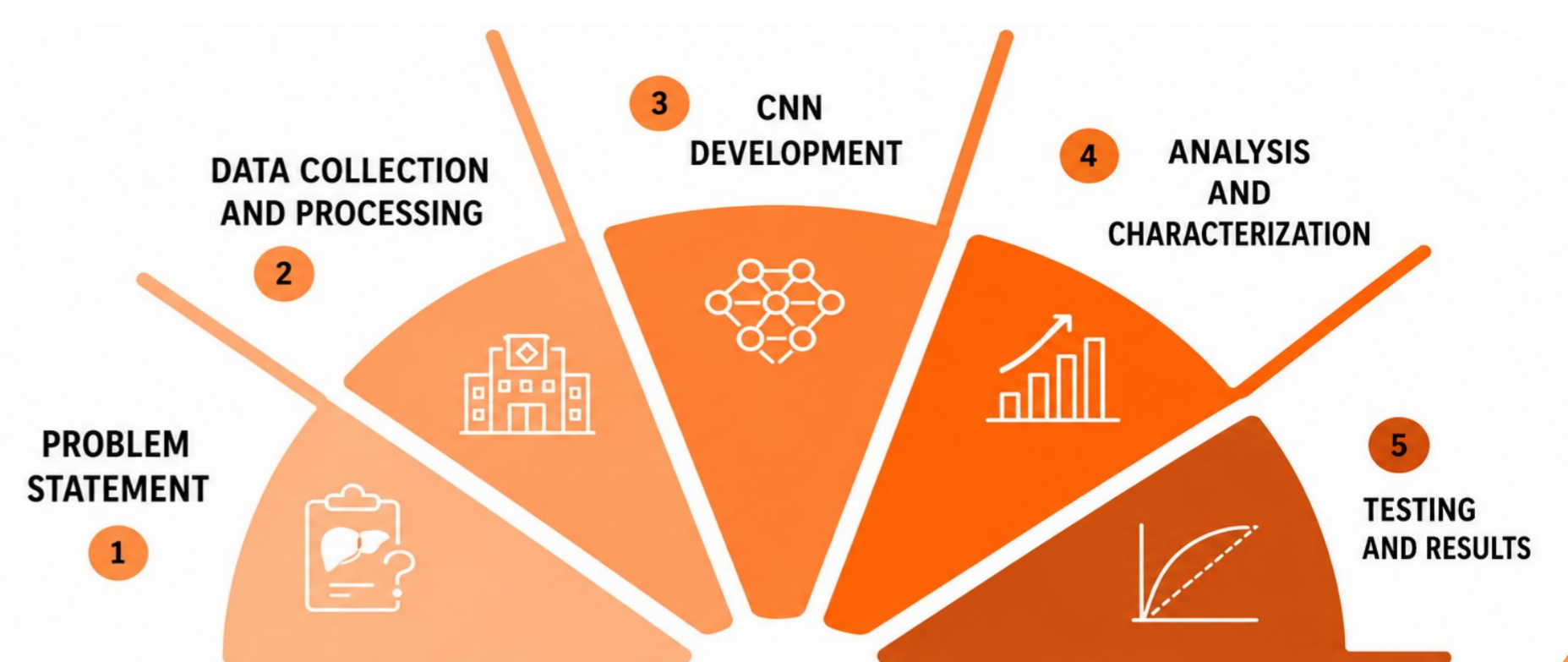


Biopsy is invasive and may cause complications



CNN analyzes CT patterns to support diagnosis

## METHODOLOGY



### ABBREVIATIONS

<b>CNN</b> Convolutional Neural Network	<b>CT</b> Computed Tomography	<b>ROI</b> Region of Interest	<b>HU</b> Hounsfield Units	<b>NAFLD</b> Non-Alcoholic Fatty Liver Disease
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## MODEL DEVELOPMENT AND ANALYSIS

The parameters considered in establishing the criteria for hepatic steatosis were: apparent density, structural heterogeneity, intensity distribution, entropy and energy (Fig. 1). Figure 2 shows the model used to develop the neural network.

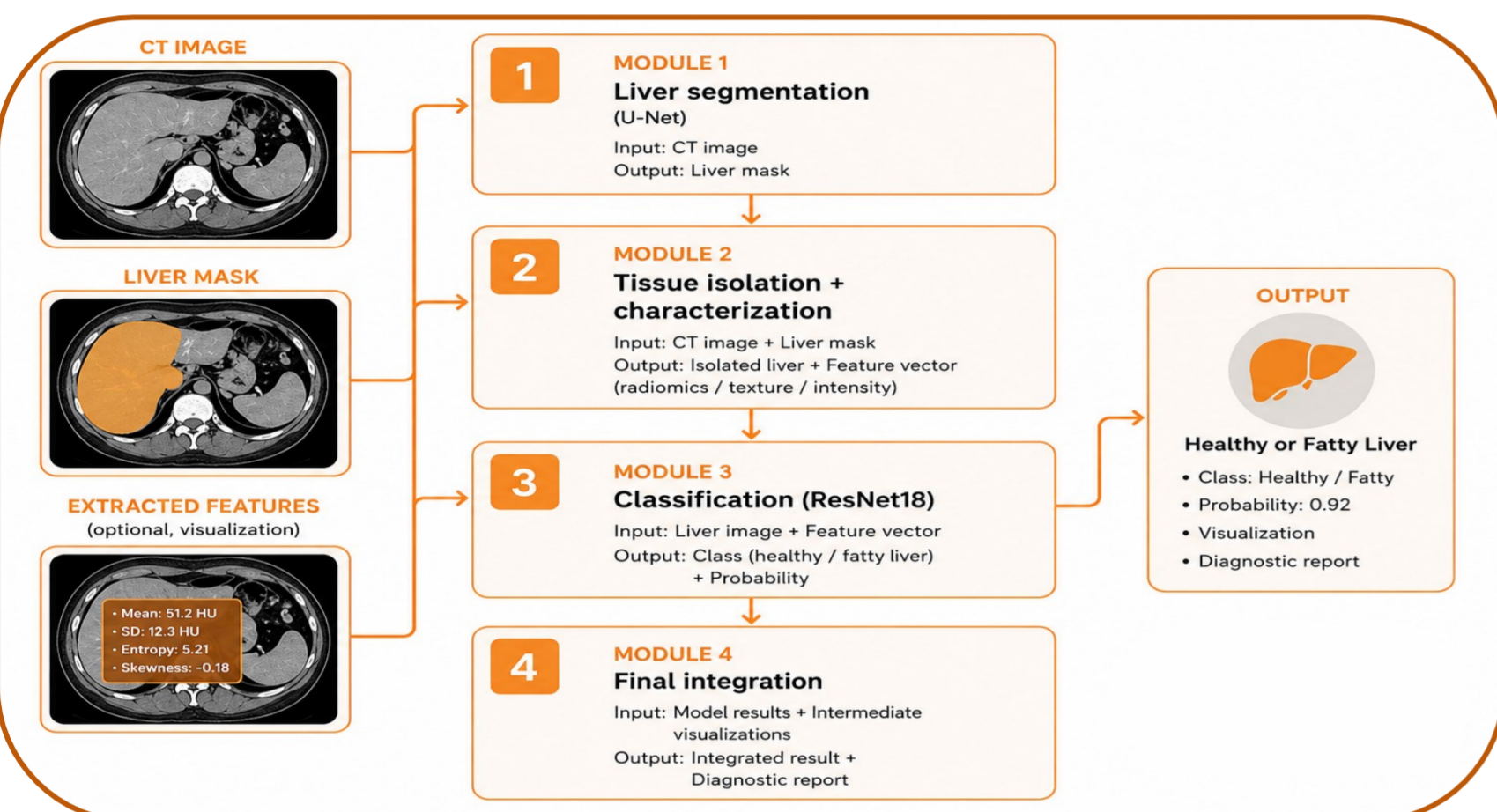


Fig. 1 Neural network characterization parameters

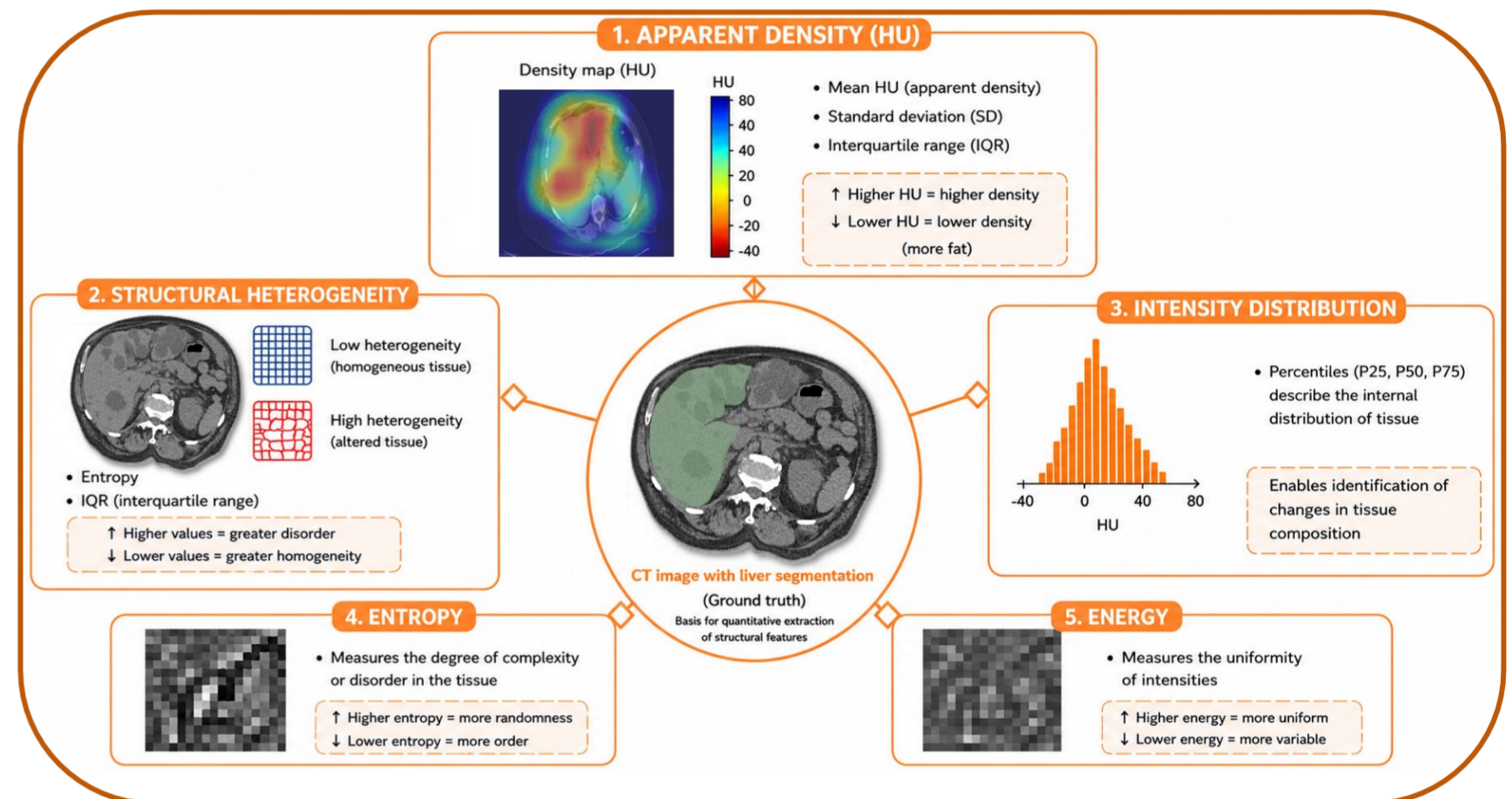


Fig. 2 Architecture of the proposed Computational Model

## RESULTS

The results are shown in Fig. 3; the image illustrates how the neural network distinguishes between fatty liver and healthy livers. The results show a healthy liver, a liver with steatosis, and a third liver with steatohepatitis.

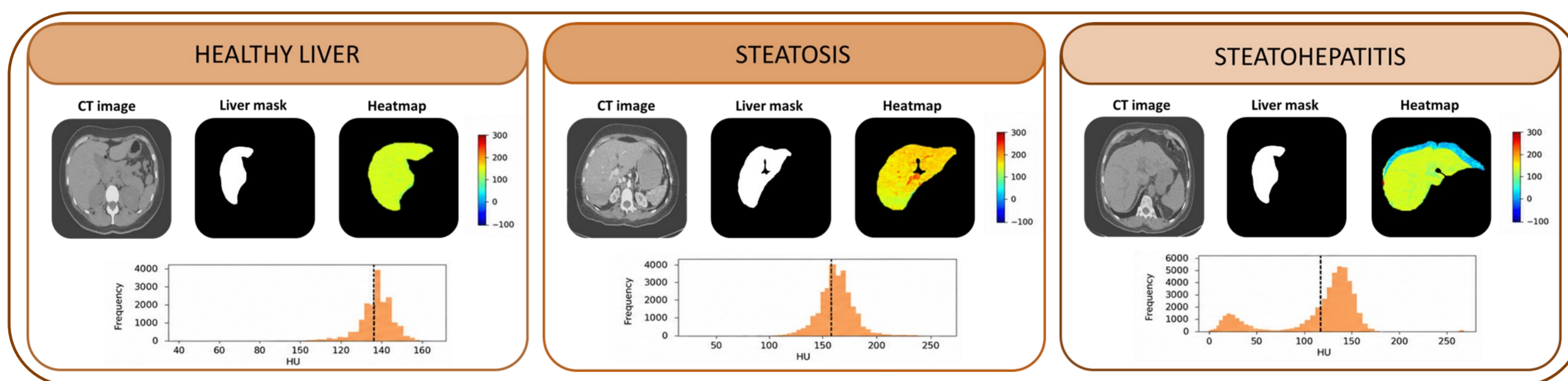


Fig. 3 Comparative characterization of liver tissue patterns

## CONCLUSIONS

- The incorporation of hepatic steatosis features into a CNN model enabled the identification of structural changes in medical images.
- The results demonstrate that computed tomography images contain sufficient information to analyze hepatic steatosis. The proposed computational model aims to support medical diagnosis of liver diseases, reducing the need for invasive procedures and minimizing potential side effects for patients.

## ACKNOWLEDGMENTS

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