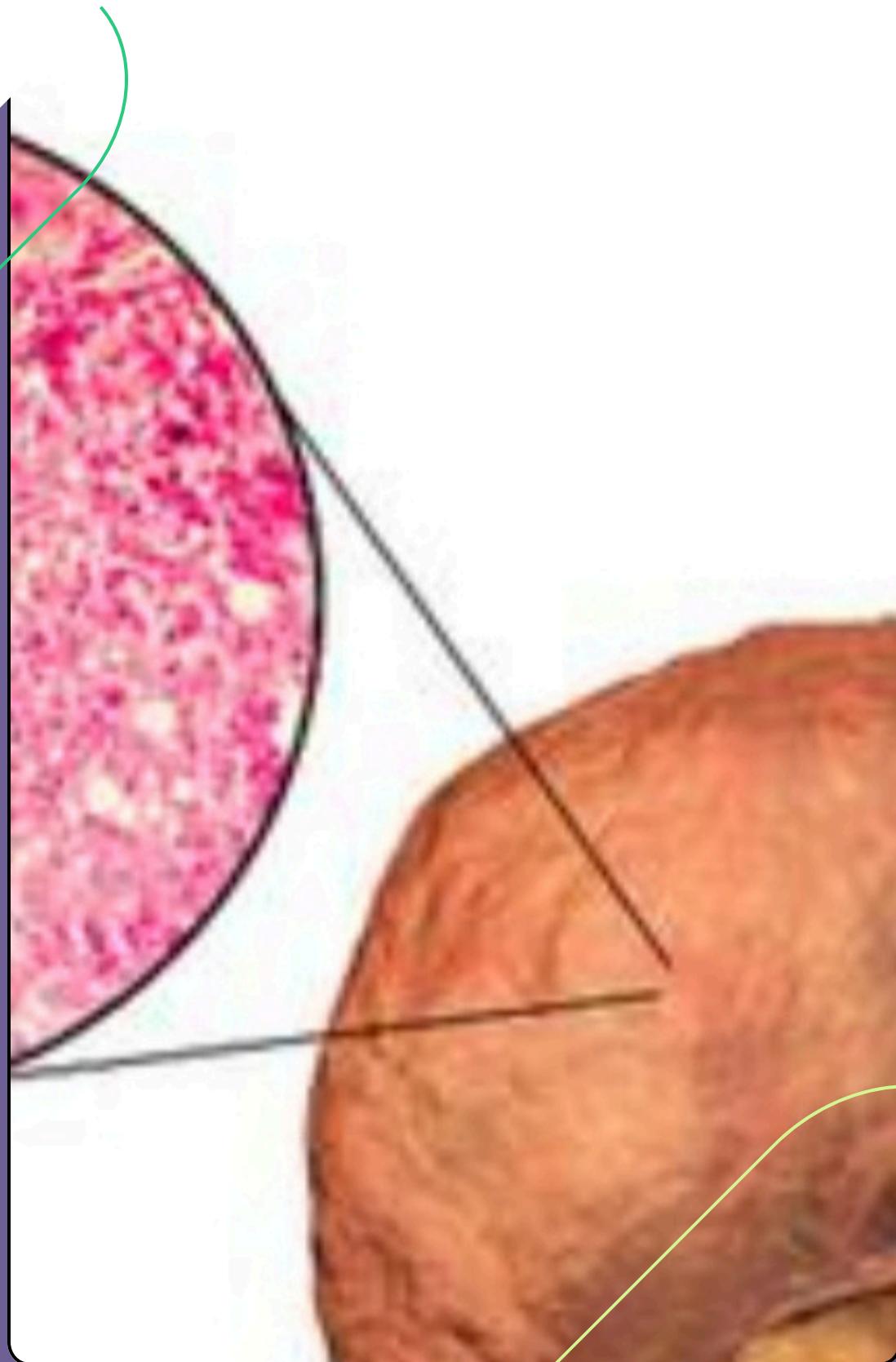


Revolutionizing Liver Care

Predicting Liver Cirrhosis using Advanced
Machine Learning Techniques

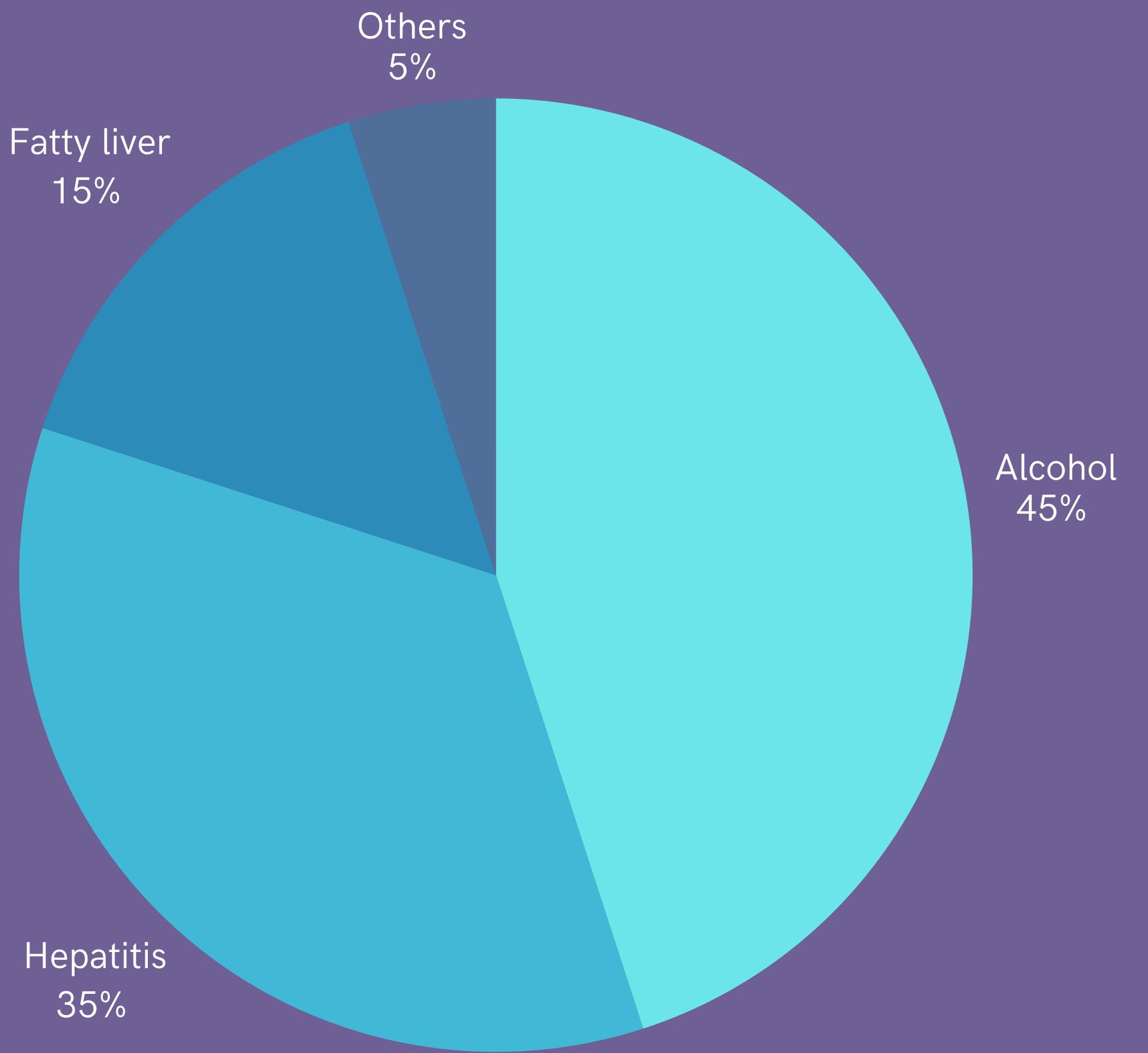


Introduction to Liver Cirrhosis :

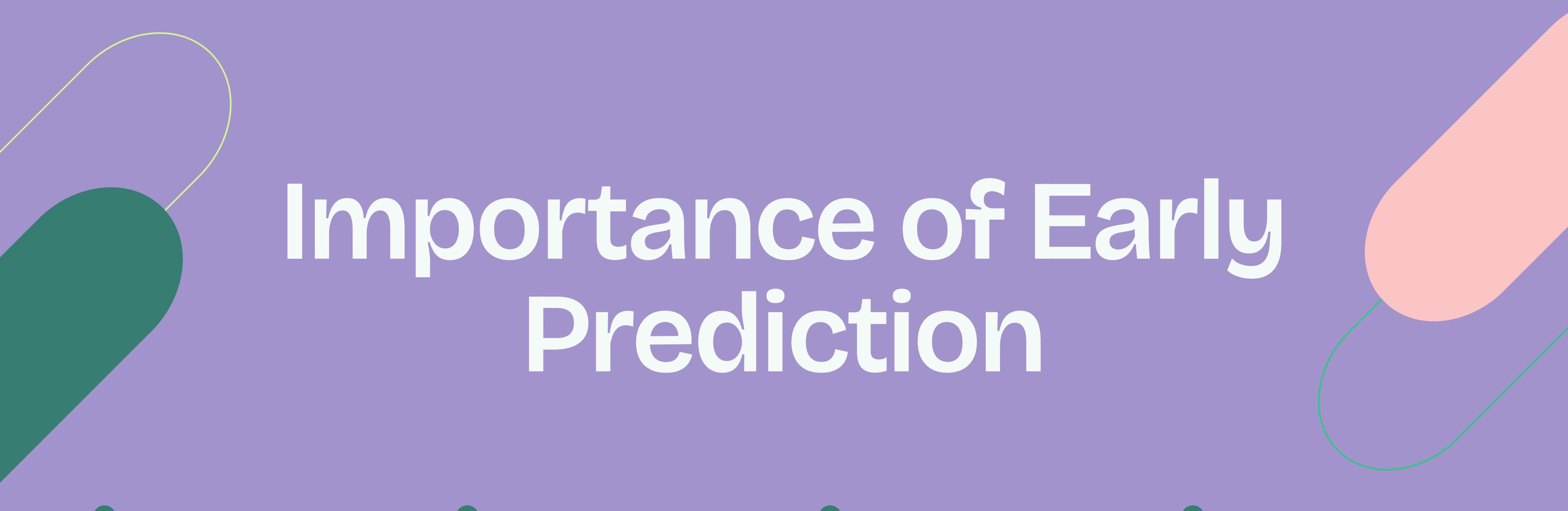


- Liver cirrhosis is a progressive and potentially life-threatening condition caused by long-term liver damage, often due to alcohol abuse, viral hepatitis, or fatty liver disease.
- Other common causes often include viral infections, alcohol, and fatty liver.
- It often develops silently, showing no early symptoms, and is typically diagnosed through blood tests and imaging.
- Increases hospital stays and treatment costs.

Understanding Liver Cirrhosis



Liver cirrhosis is a serious condition characterized by **progressive liver damage**. This page examines the primary causes of cirrhosis, including alcohol abuse, viral infections, and fatty liver disease, illustrated in a detailed pie chart.



Importance of Early Prediction

Initial diagnosis leads to **higher survival rates.**

Early treatment starts to **improve patient outcomes.**

Advanced treatment options **available for patients.**

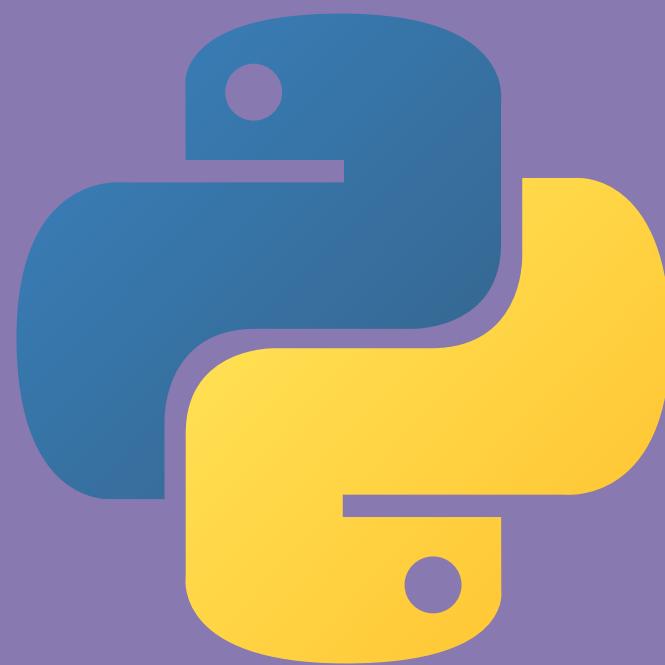
Late diagnosis results in **significantly lower survival.**



Defining the Challenges in Liver Care

- **Delayed Diagnosis:** Many patients are diagnosed in advanced stages due to subtle early symptoms, reducing treatment effectiveness.
- **Inaccurate Traditional Methods:** Conventional diagnostic techniques often lack precision and adaptability across diverse patient profiles.
- **Data Scarcity:** Limited quality datasets hinder the development and validation of robust predictive models.
- **Lack of Predictive Tools:** Healthcare systems often miss opportunities for early intervention due to the absence of intelligent forecasting systems.

Technologies Used



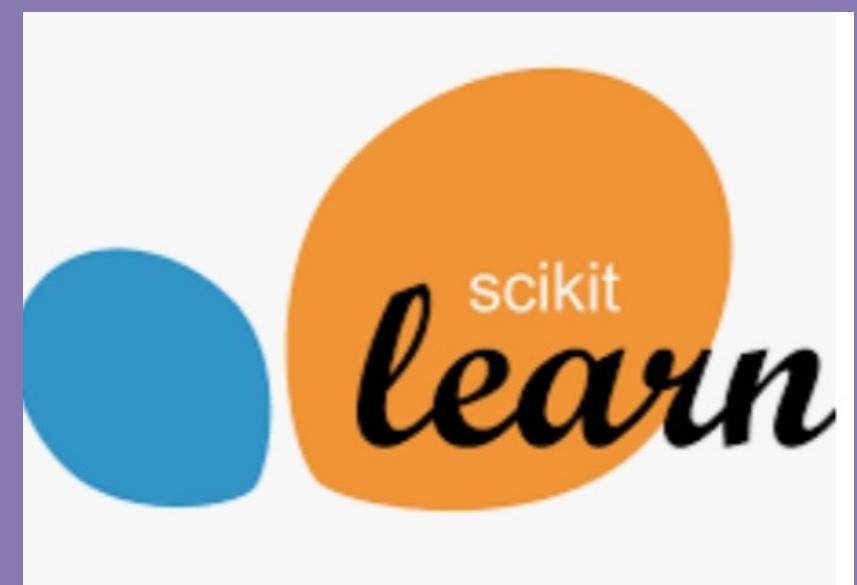
Python
(Pandas, NumPy,
SKlearn)



Flask
(web framework)

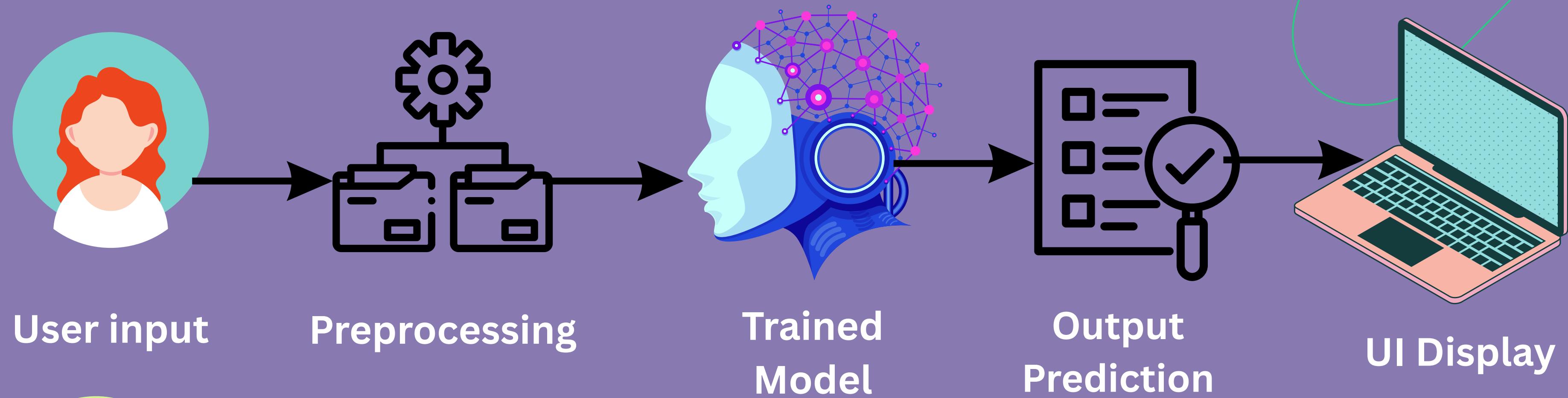


HTML/CSS
(frontend)



**Machine Learning
Models**
(RF, XGBoost, KNN)

Project Architecture

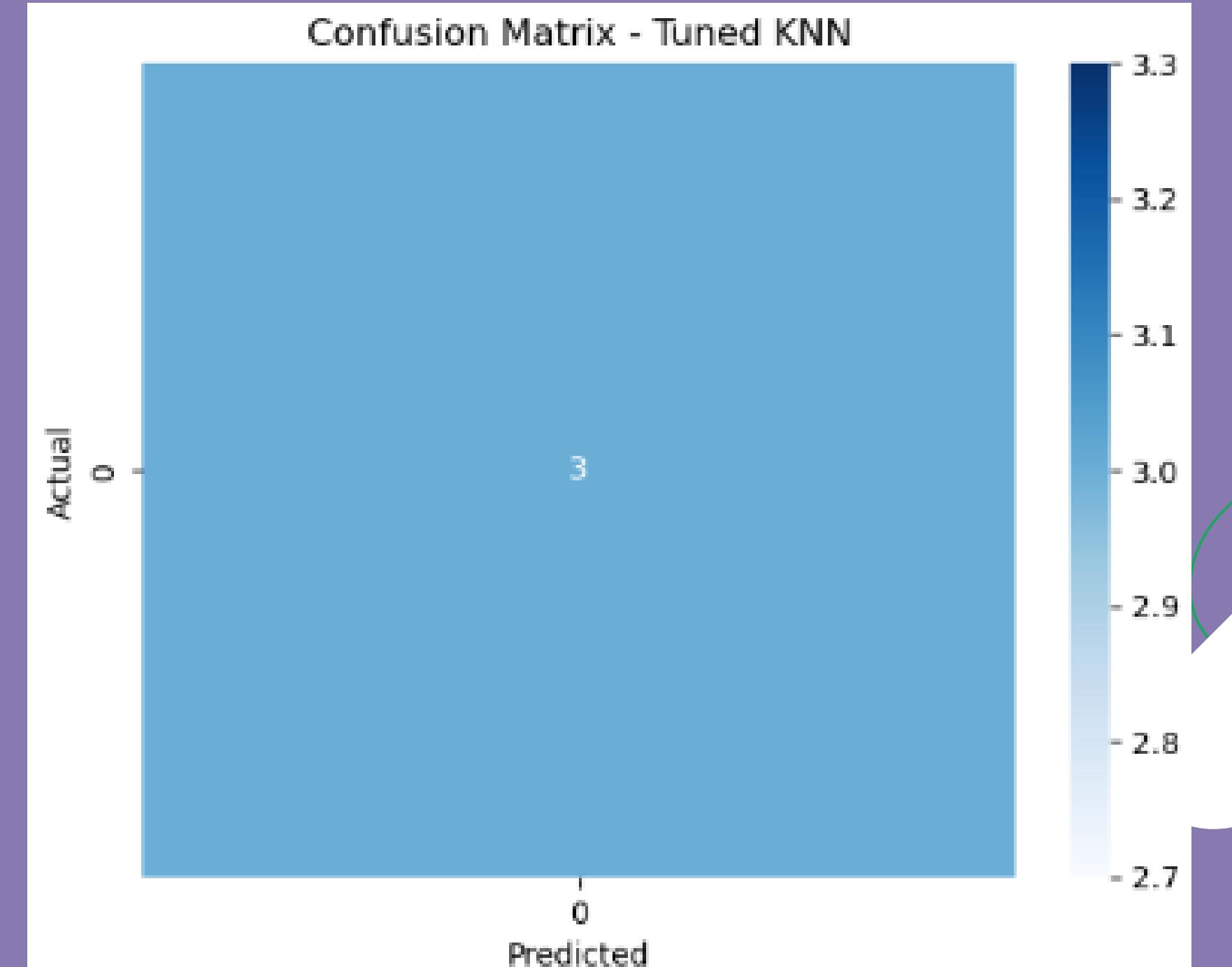
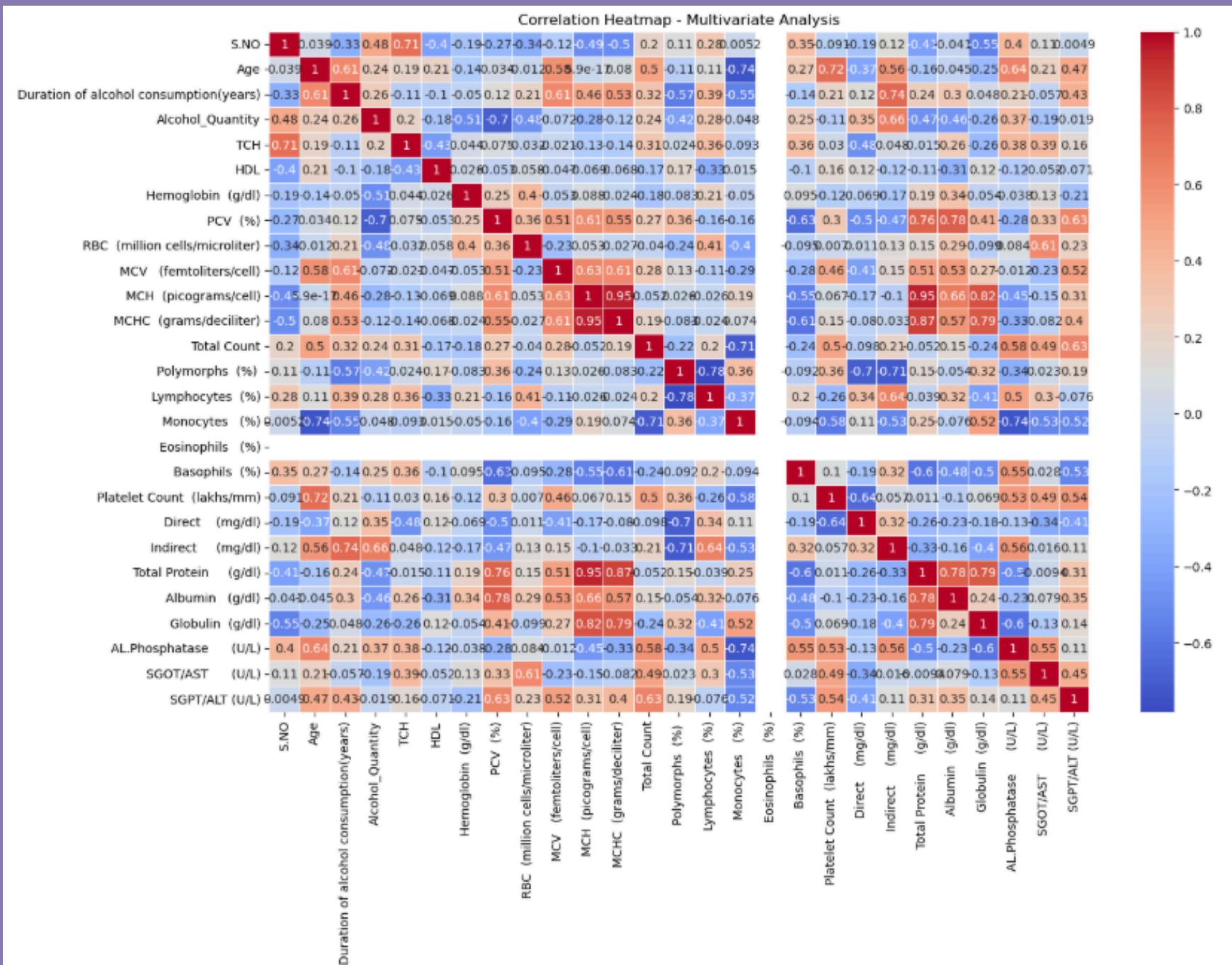


Indian Liver Patient Dataset

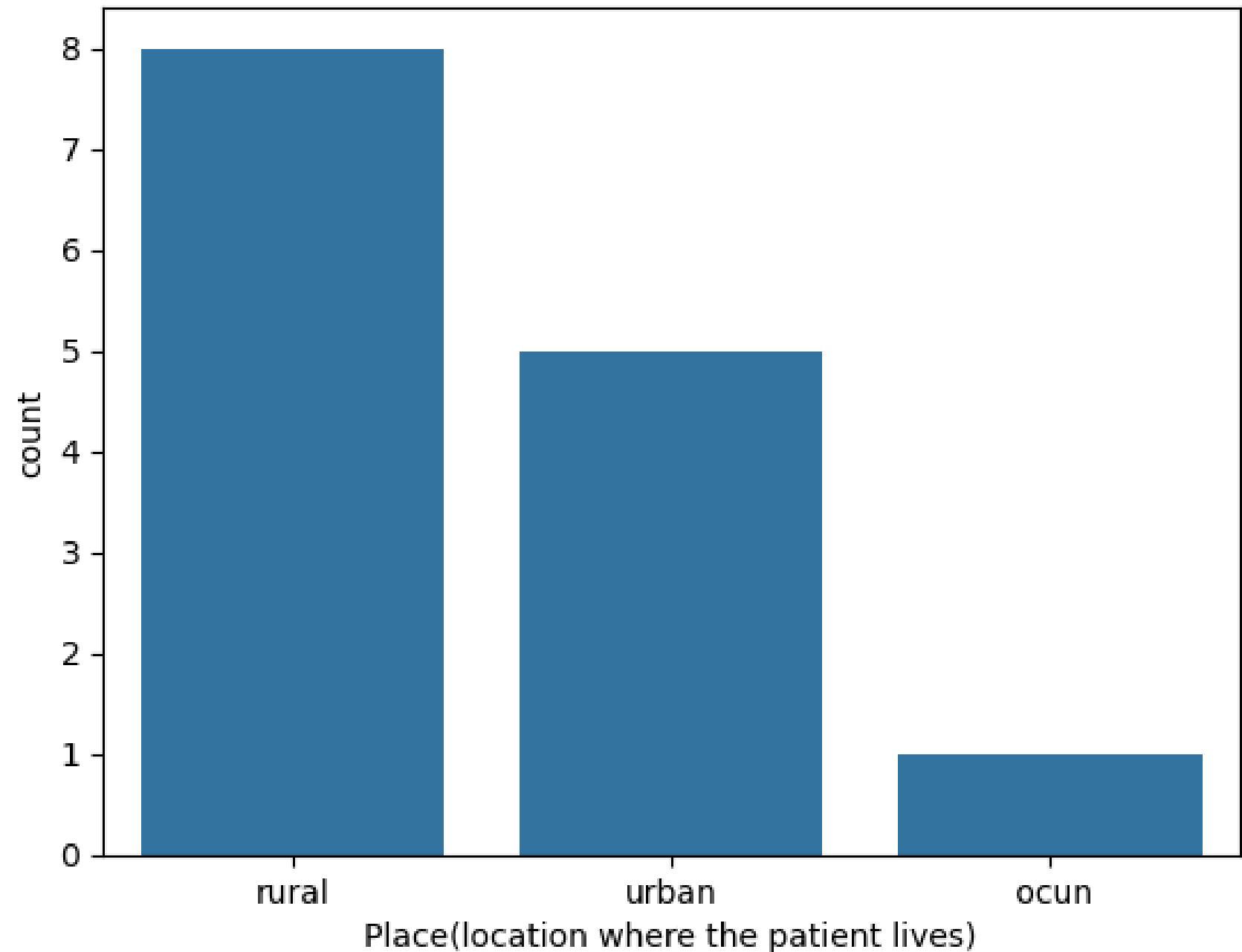
Feature Name	Description
Age	Age of the patient
Gender	Male or Female
Total_Bilirubin	Bilirubin amount in-g
Direct_Bilirubin	Direct bilirubin content
Alkaline_Phosphatase	Enzyme level in blood
Alamine_Aminotransferase	ALT enzyme level
Aspartate_Aminotransferase	AST enzyme level
Total_Proteins	Total protein level
Albumin	Albumin concentration

- **Source:** Kaggle
- **Records:** 583 records
- **Purpose:** Used to train ML models for liver cirrhosis prediction

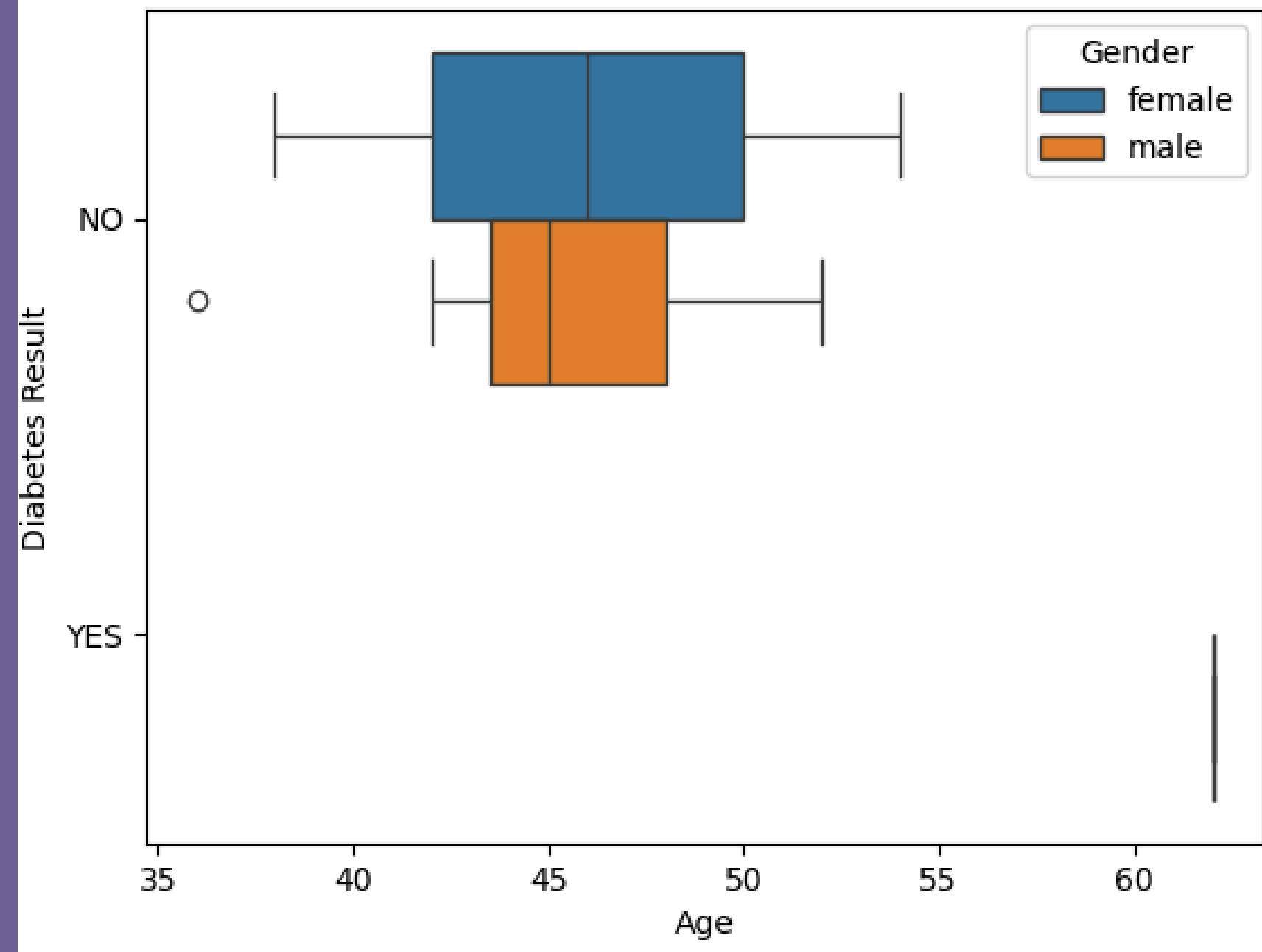
Exploratory Data Analysis



Location



Gender vs Diabetes Result

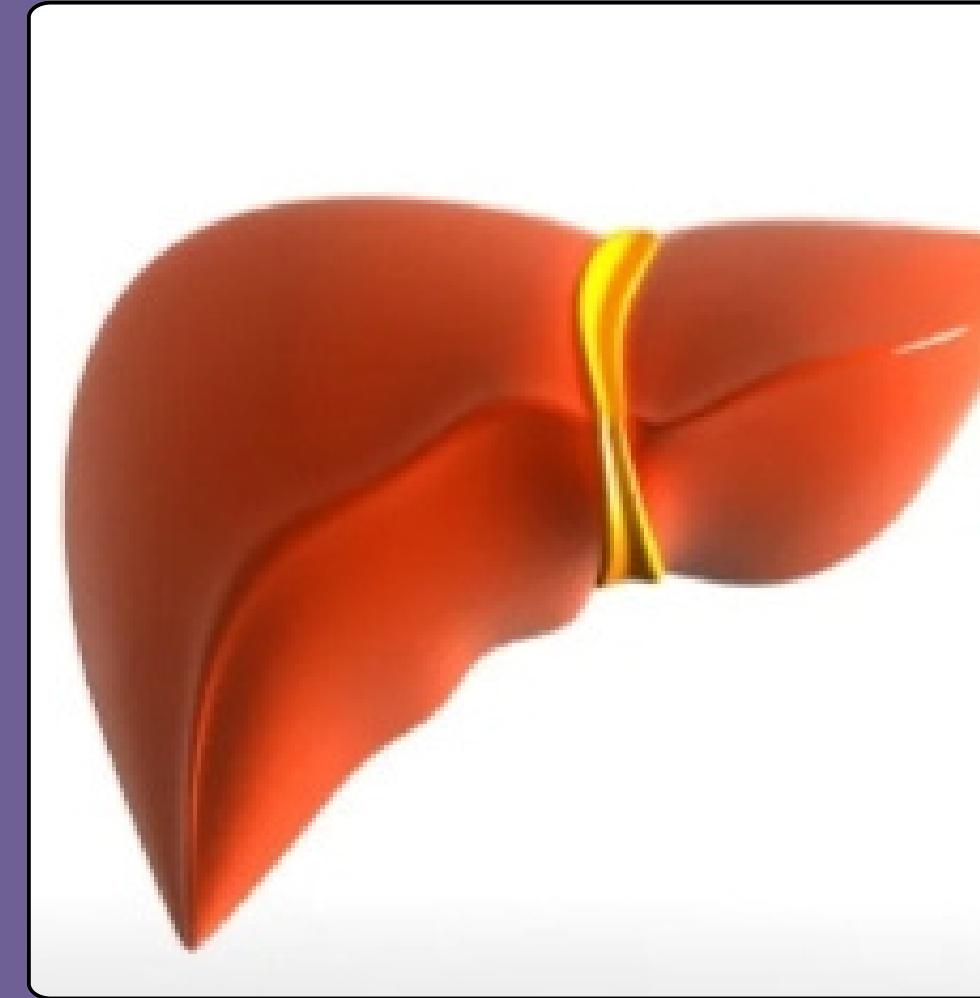


Transforming Liver Care Through AI



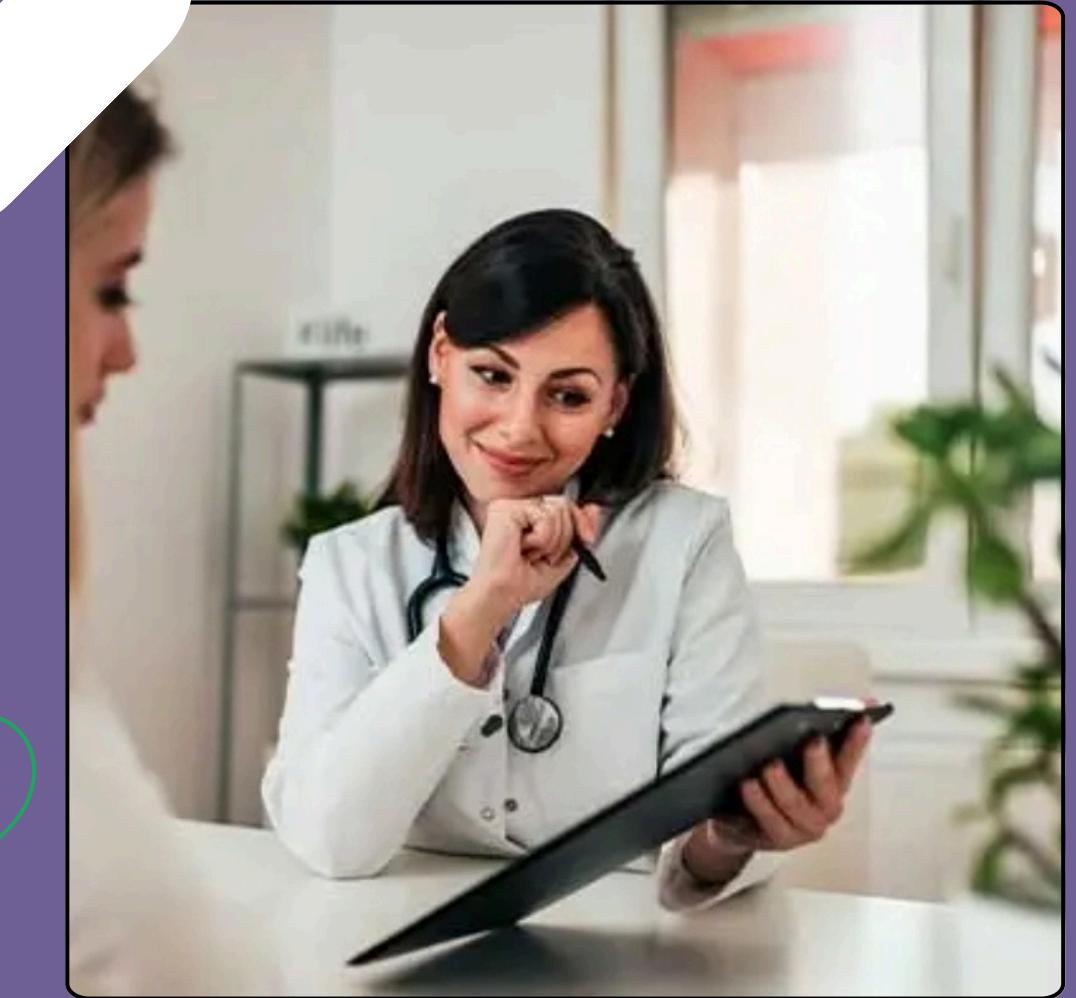
Step 1

Utilizing AI for **early detection** of liver cirrhosis.



Step 2

Engaging patients in proactive liver health management.



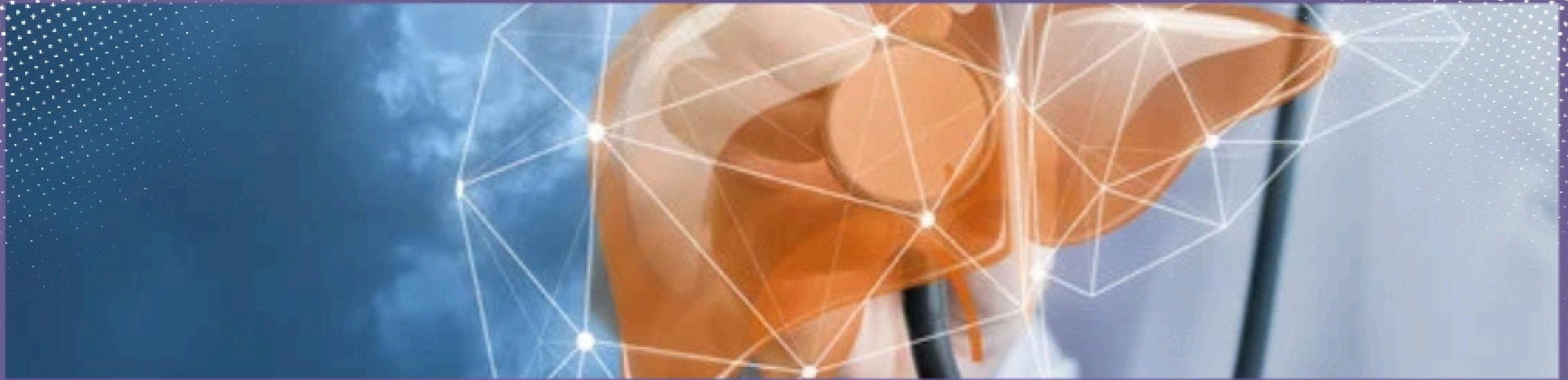
Step 3

Implementing solutions for **enhanced patient outcomes**.



Exploring the Uniqueness of Our Liver Care Approach

- **AI-Driven Prediction:** Employing advanced machine learning models like Random Forest, XGBoost, and KNN for accurate early risk detection.
- **Holistic Data Analysis:** Deep exploration of patient datasets to identify key indicators and improve model insights.
- **Interactive Web Platform:** A Flask-powered application offers easy access for both healthcare professionals and patients.
- **Patient-Centric Focus:** Designed to enable early diagnosis, timely treatment decisions, and better patient outcomes.



Conclusion: Revolutionizing Liver Care

Liver cirrhosis is a serious condition often detected late. Using AI and ML, our project helps in early prediction, leading to better patient outcomes.

