**Project Report: Revolutionizing Liver Care – Predicting Liver Cirrhosis using ML**

**1. Introduction**

Liver cirrhosis is a chronic liver disease caused by scarring and irreversible damage to liver tissue. If undetected, it can lead to liver failure. Early prediction allows better treatment. This project uses machine learning to create a liver cirrhosis prediction model to support early diagnosis.

**2. Objective**

* Develop a liver disease prediction model using ML
* Deploy the model as a web application using Flask
* Provide user-friendly prediction for healthcare professionals

**3.Dataset Description**

| **Feature Name** | **Description** |
| --- | --- |
| Age | Patient's age in years |
| Gender | Male/Female |
| Total Bilirubin | Measure of bilirubin in blood |
| Direct Bilirubin | Direct bilirubin level |
| Alkaline\_Phosphotase | Enzyme related to liver function |
| Alamine\_Aminotransferase | Enzyme indicative of liver inflammation |
| Aspartate Aminotransferase | Liver enzyme |
| Total Proteins | Protein content in blood |
| Albumin | Blood albumin level |
| Albumin\_and\_Globulin\_Ratio | Ratio important for liver diagnosis |
| liver disease (Target) | 1 = Cirrhosis, 0 = No Cirrhosis |

**4. Methodology**

* Data Collection
* Data Cleaning, Preprocessing
* Exploratory Data Analysis (EDA)
* Model Training (Random Forest)
* Model Evaluation (Accuracy, Recall, F1-Score)
* Flask-based UI Deployment

**5. Outcome**

* Interactive Flask app with prediction result
* High-performing model (Random Forest with ~68% accuracy)
* Early intervention support for doctors