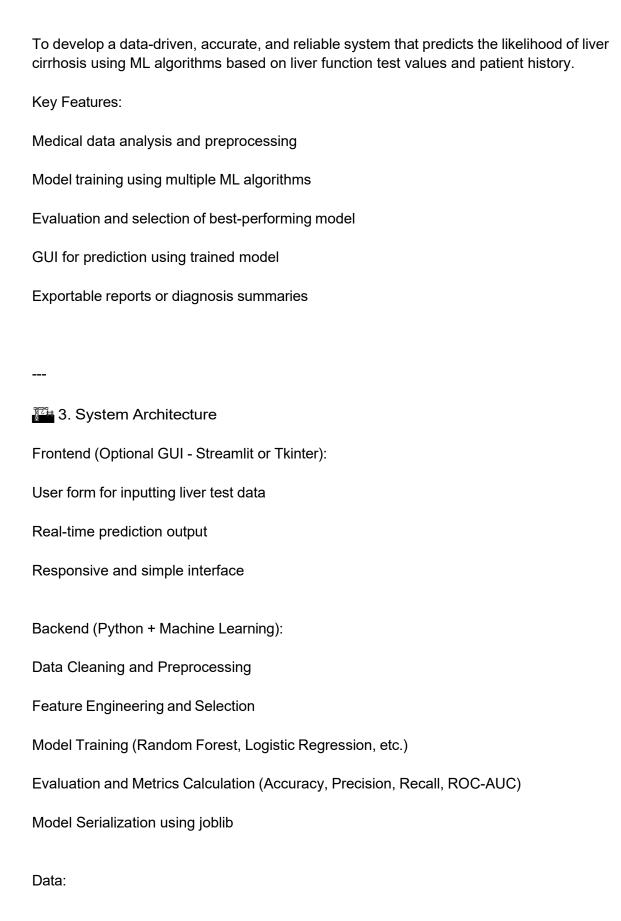
Revolutionizing Liver Care: Predicting Liver Cirrhosis Using Machine Learning Algorithms
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1. Introduction
Project Title:
Revolutionizing Liver Care: Predicting Liver Cirrhosis Using Machine Learning Algorithms
Overview:
This project leverages the power of machine learning to build a predictive model that can detect liver cirrhosis in patients using medical records. By analyzing clinical features from liver patient datasets, the system can assist medical professionals in diagnosing liver cirrhosis at early stages, enabling faster treatment and better patient outcomes.

★ 2. Project Overview
Purpose:



Liver Cirrhosis Dataset (CSV format)

Features include: Age, Gender, Bilirubin, Albumin, Enzymes, etc.

O 4. Setup Instructions

Prerequisites:

Python 3.8+

pip

Jupyter Notebook / VS Code / PyCharm

Liver Cirrhosis Dataset (CSV)

Installation & Setup:

Clone the repository or download the code git clone https://github.com/your-username/liver-cirrhosis-ml.git

Navigate to project folder cd liver-cirrhosis-ml

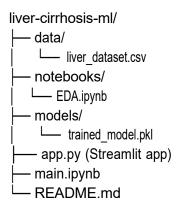
Install dependencies pip install -r requirements.txt

Run the Application:

Run in Jupyter Notebook jupyter notebook main.ipynb

OR run a Streamlit GUI (if implemented) streamlit run app.py

5. Folder Structure



▶ 6. Running the Application

For notebook-based prediction jupyter notebook main.ipynb

For GUI-based prediction streamlit run app.py

7. ML Pipeline Stages

Stage Description

Data Loading Reading liver patient data Preprocessing Handling missing values, encoding, scaling Feature Selection Correlation analysis, domain knowledge Model Training Using algorithms like Logistic Regression, RF Evaluation Using metrics like Accuracy, Precision, AUC Deployment Streamlit/Tkinter interface for predictions

8. Model Validation & Evaluation

Split data into training and testing sets Cross-validation for robust evaluation Metrics used: Accuracy Precision & Recall **Confusion Matrix ROC-AUC Curve** 9. User Interface Screenshots (If GUI) used) Page **Screenshot Name** Home Page home.png Input Form Page input-form.png Prediction Output Page prediction.png
Evaluation Metrics Page evaluation.png **1**0. Testing Tools Used: Jupyter Notebook (model testing) Streamlit GUI test (if used) Manual input/output verification Scikit-learn test set validation

Testing Coverage: Input data validation Model prediction correctness UI prediction integration Model evaluation metrics verification 11. Demo or Showcase Optional video demo or screenshots can be linked here. Example: [Insert YouTube/Google Drive link to project demo] ⚠ 12. Known Issues Model accuracy depends on dataset quality No SMS/email notification feature No cloud deployment yet GUI only supports basic input (no file upload) 13. Future Enhancements Integration with hospital systems Real-time API deployment

Larger and more diverse datasets

Use of deep learning (CNN/LSTM) for advanced detection

Notification system for predictions



★ 14. Conclusion

The liver cirrhosis prediction system developed using machine learning offers a powerful and efficient tool for early disease detection. The integration of data science with healthcare not only improves diagnosis accuracy but also helps medical professionals make faster and more informed decisions.