

LiverCare: Revolutionizing Liver Care

Predicting Liver Cirrhosis using Advanced Machine Learning Techniques

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Introduction

- Liver cirrhosis: Chronic, progressive liver disease
- Irreversible scarring of liver tissue
- Leads to severe complications & potential liver failure
- **Early Detection = Improved Outcomes**
- Leveraging Machine Learning for prediction

Project Objectives

- ✓ *Develop predictive model for early detection*
- ✓ *Compare multiple ML algorithms to identify best performer*
- ✓ *Provide user-friendly web interface for real-time predictions*
- ✓ *Demonstrate ML's role in hepatology & clinical decision-making*

Project Workflow

1. Data Acquisition
2. Data Preprocessing
3. Model Training & Optimization
4. Model Selection
5. Web Application

Machine Learning Models Used

- Logistic Regression
- Logistic Regression CV
- XGBoost Classifier
- Ridge Classifier
- K-Nearest Neighbors Classifier
- Random Forest Classifier
- Decision Tree Classifier

Technical Stack

Programming Language: Python 3.x

Libraries: pandas, scikit-learn, xgboost, flask, kagglehub, joblib

Web Framework: Flask

Machine Learning: Classification algorithms with hyperparameter tuning

Key Takeaways

Machine Learning enables early detection of liver cirrhosis

Provides clinical decision support for healthcare professionals

User-friendly web interface simplifies predictions

Conclusion

Advanced ML techniques show great potential in liver care

Real-time predictions can assist in timely interventions

Paving the way for AI-powered healthcare solutions