






**GOVERNMENT OF TAMILNADU**

**Naan Mudhalvan - Project-Based Experiential Learning**

# A Review of Liver Patient Analysis Methods Using Machine Learning

Submitted by

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# INTRODUCTION

## OVERVIEW

- Liver diseases averts the normal function of the liver. This disease is caused by an assortment of elements that harm the liver.
- Diagnosis of the disease is very costly and complicated.
- The goal of this work is to evaluate the performance of different Machine Learning algorithms in order to reduce the high cost of liver disease diagnosis.
- This project compares various classification algorithms such as Random Forest, Decision Tree, Logistic Regression, KNN and ANN Algorithm with an aim to identify the best technique

# PURPOSE

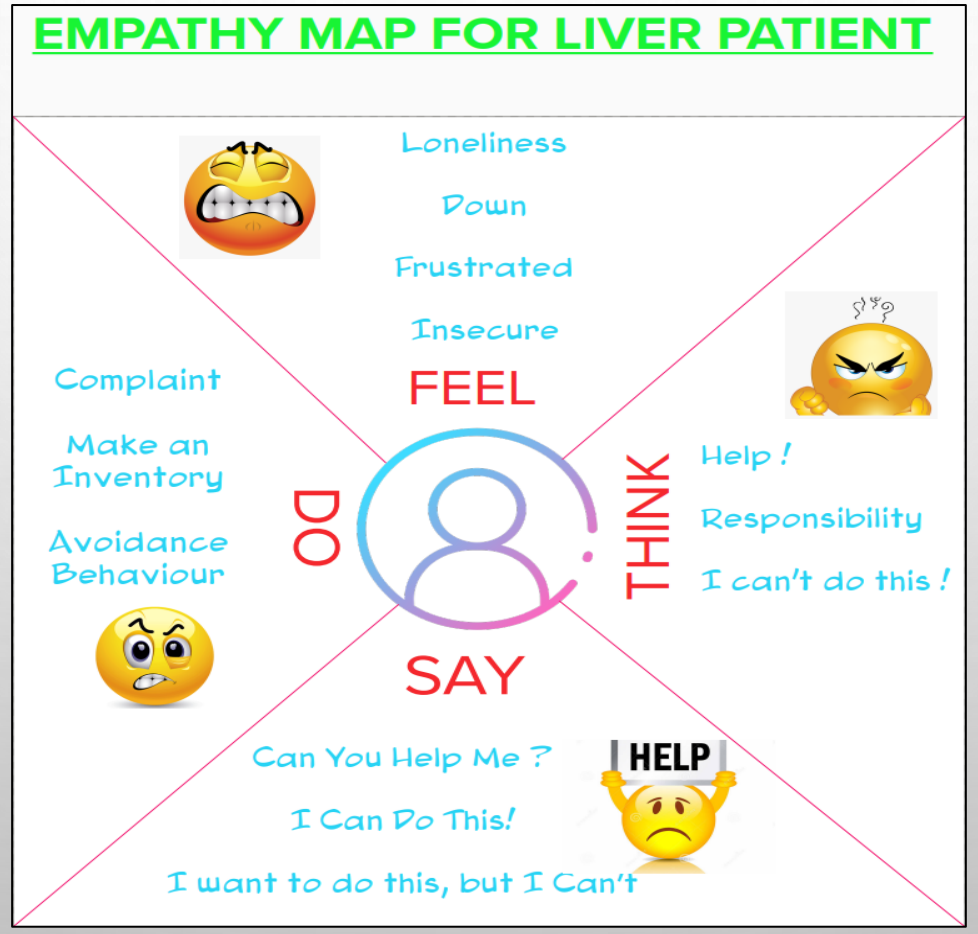
The Purpose of this Project includes,

- Reduce the high cost of liver disease diagnosis
- It detects patterns of specific Liver diseases
- It can alert clinicians to any irregularities to assess a patient's health based on knowledge collected from large data sets
- It shows improved accuracy, efficiency, and decision-making
- It helps physicians to identify best treatment for particular Liver disease
- It can produce fast analysis report, operational efficiency and reduce operational cost.

# PROBLEM DEFINITION & DESIGN THINKING

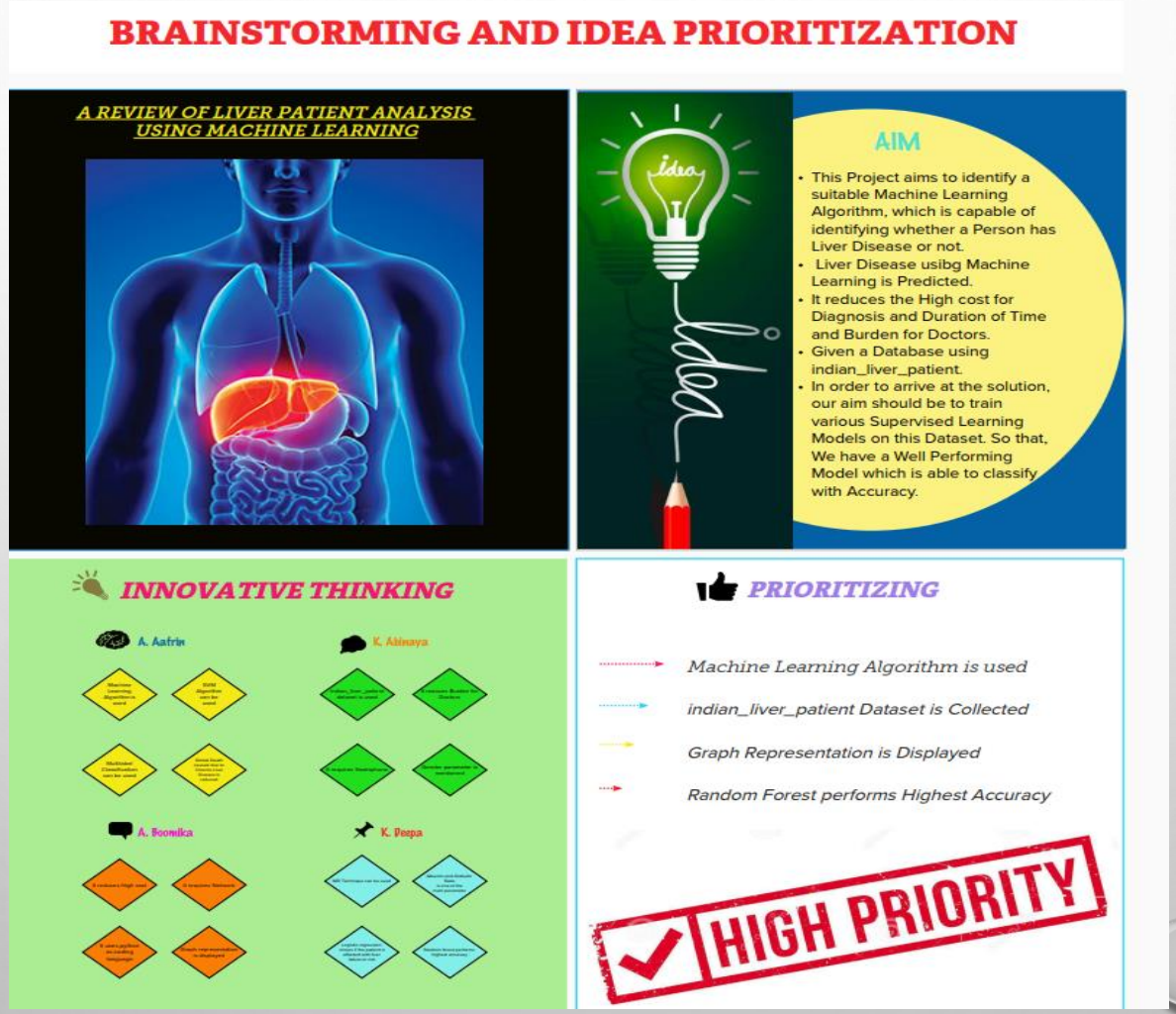
## EMPATHY MAP

- Empathy map is a template that organizes a user's behavior and feelings to create a sense of empathy between the Users and the Admin

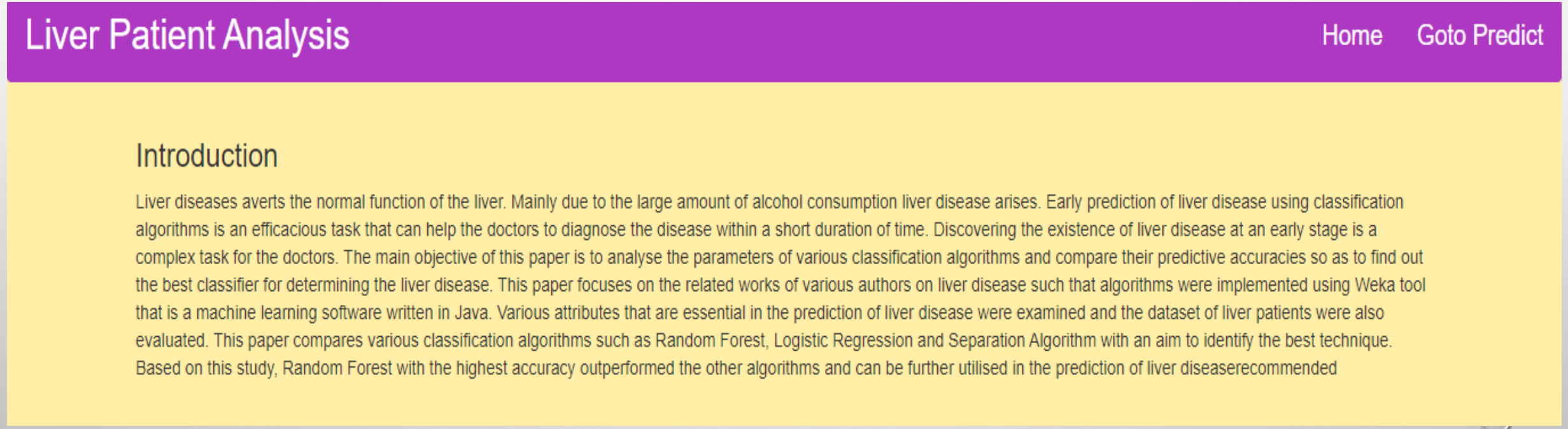


# IDEATION & BRAINSTROMING MAP

- Ideation is a process of forming ideas from conception to implementation, in a business setting
- Brainstorming map is a technique that can be used to organize thoughts and ideas



# RESULT


Liver Patient Analysis
Home
Goto Predict
Introduction
Liver diseases averts the normal function of the liver. Mainly due to the large amount of alcohol consumption liver disease arises. Early prediction of liver disease using classification algorithms is an efficacious task that can help the doctors to diagnose the disease within a short duration of time. Discovering the existence of liver disease at an early stage is a complex task for the doctors. The main objective of this paper is to analyse the parameters of various classification algorithms and compare their predictive accuracies so as to find out the best classifier for determining the liver disease. This paper focuses on the related works of various authors on liver disease such that algorithms were implemented using Weka tool that is a machine learning software written in Java. Various attributes that are essential in the prediction of liver disease were examined and the dataset of liver patients were also evaluated. This paper compares various classification algorithms such as Random Forest, Logistic Regression and Separation Algorithm with an aim to identify the best technique. Based on this study, Random Forest with the highest accuracy outperformed the other algorithms and can be further utilised in the prediction of liver diseaserecommended

# FINAL OUTPUT

## Liver Patient Prediction

Age:

Gender:

Enter 0 as male, 1 as female

Total_Bilirubin:

Direct_Bilirubin:

Alkaline_Phosphotase:

Alamine_Aminotransferase:

Aspartate_Aminotransferase:

Total_Protiens:

Albumin:

Albumin_and_Globulin_Ratio:

Predict

## Liver Patient Prediction

You have a liver desease problem, You must and should consult a doctor. Take care

# ADVANTAGES & DISADVANTAGES

## ADVANTAGES

- ✓ Reduce the high cost of liver disease diagnosis
- ✓ It detects patterns of specific liver diseases
- ✓ It can alert clinicians to any irregularities to assess a patient's health based on knowledge collected from large data sets.
- ✓ It shows improved accuracy , efficiency and decision-making
- ✓ It helps physicians to identify best treatment for particular liver disease
- ✓ It can produce fast analysis report, operational efficiency and reduce operational cost

## DISADVANTAGES

- ✓ Acquisition in Data
- ✓ Human Interface is Eliminated
- ✓ Nature of the Jobs in being replaced by Machines

# APPLICATIONS

- Liver Disease Monitoring
- Liver Disease Risk Prediction
- Discoveries in Disease
- Diagnosis and Detection of Disease
- Epidemic Outbreak Prediction
- Medical Research
- Image Analysis
- EMR Scans

# CONCLUSION

Liver disease is a serious condition that threatens human life and requires urgent medical attention. Health professionals are based on pathological methods to make a medical report concerning a patient's condition. ML models, such as Random Forest, Decision Tree, Logistic Regression, KNN and ANN, were evaluated in terms of Accuracy, Precision, Recall, F-Measure and AUC, in order to predict liver disease occurrence. From the experimental results, Random Forest with the highest accuracy outperformed the other algorithms and can be further utilised in the prediction of liver disease and can be recommended to the user.

# FUTURE SCOPE

In future work, we aim to re-consider the liver disease manifestation methodology following, first, the ROPE (region of practical equivalence) analysis to test whether a feature is significant (in the sense of important enough for the liver disease risk prediction) and, secondly, extend the machine learning framework by using deep learning methods and comparing the results on the aforementioned metrics.