# STATISTICAL MACHINE LEARNING APPROACHES TO LIVER DISEASE PREDICTION

**PROBLEM STATEMENT:**

Alex is a 55-year-old man. He is a social drinker and has been drinking for over 30 years. He suffers from symptoms indicative of liver disease.

- Alex wants to know if he is prone to liver disease
- He wishes to know the intensity of the issue
- He intends to know more about the associated risks
- He needs instant and immediate medical assistance

We aim to examine data from liver patients concentrating on relationships between a list of liver enzymes, proteins, age, and gender, using them to try and predict the likelihood of the occurrence of a liver disease. The main objective of this project is to analyse the parameters of various classification algorithms and compare their predictive accuracies to find the best classifier for determining liver disease.

| | |
|---|---|
| Who does the problem affect? | Persons with liver disease symptoms caused by drinking and other conditions |
| What are the boundaries of theproblem? | People who are indicative of liver disease symptoms |
| What is the issue? | With a growing trend of sedentary life which promotes lack of physical activities, diseases related to the liver have become a common encounter nowadays. Liver diseases have caused millions of deaths every year. There are about 100 different types of liver infections. Liver diseases are not easily discovered in an early stage as even after being affected and undergoing partial damage, it will be functioning normally. |

| | |
|---|---|
| When does the issue occur? | The liver mainly gets affected due to intake of alcohol. Intake of pain killer tablets and unusual food habits etc also contribute to liver damage. |
| Where does the issue occur? | Liver diseases disturb the normal functioning of the liver.<br>Most urban city dwellers face this problem. |
| Why is it important that we fix the problem? | In human beings, the liver is one of the most important parts of the body that performs many functions including the production of bile, excretion of bilirubin, metabolism of proteins and carbohydrates, activation of enzymes, storing vitamins, glycogen, and minerals etc. |
| What solution to solve this issue? | Early prediction of liver disease using classification algorithms is a beneficial task that can help the doctors to diagnose the disease within a short period of time. This method is cost-effective and saves time by predicting at early stages, preventing further liver damage. |
| What methodology used to solve the<br>issue? | Machine Learning techniques are used to identify liver diseases and suggest precautions that can be taken for prevention and further treatment for the same. |