STATISTICAL MACHINE LEARNING APPROACHES TO LIVER DISEASE PREDICTION

PROBLEM STATEMENT:

Alcohol consumption among Indians has risen in all age groups, meta-analysis by Lancet showed. It is highest in the age group of 40-64 years where alcohol consumption increased by **5.63%** since 1990, followed by 15-39 age group with a jump of **5.24%**. For elderly (above 65 years), it has increased by **2.88%** since 1990.

- Rahul is a 25 year old white-Collar Worker working in a MNC.
- He is addicted to alcohol for the past few years.
- He is a very busy person who can barely spend time to take care of himself.
- He wants to know whether he has a liver disease.
- He intends to know more about the associated risks.
- He needs instant and immediate medical assistance.

Severity of issue: Liver disease accounts for approximately 2 million deaths per year worldwide, 1 million due to complications of cirrhosis and 1million due to viral hepatitis and hepatocellular carcinoma. The Liver cirrhosis is a common liver disease and is the sixth most common cause of death among adults in Western countries. Persons with advanced liver cirrhosis report poor quality of life, in comparison with other chronic diseases. However, knowledge regarding day-to-day life during earlier stages of the disease is lacking. In other chronic diseases, the suffering process is well explored, while in liver cirrhosis, suffering is insufficiently investigated.

Statement : The purpose of our study is to examine data from liver patients to determine if there is a relationship between liver enzymes, proteins, age, and gender that can be used to predict the likelihood of liver disease occurrence. 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 ,Obesity and other health conditions.
What is the issue?	With the increasing number of Alcohol consumers in the world, the unhealthy lifestyle people are living the people suffering from liver diseases is drastically increasing.
When does the issue occur?	The liver mainly gets affected due to intake of alcohol. Intake of pain killer tablets and unusual food habits, obesity, etc also contribute to liver damage.
Where does the issue occur?	Liver diseases disturb the normal functioning of the liver and damage it leading to cirrhosis overtime.
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 and hence saving lives.
What methodology used to solve the issue?	Statistical Machine Learning techniques are used to identify liver diseases and suggest precautions that can be taken for prevention and further treatment for the same.