Project Design Phase-I
Proposed Solution Template

Date	19 September 2022
Team ID	PNT2022TMID35432
Project Name	Project - Statistical Machine Learning Approaches to Liver Disease
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Liver diseases avert 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 problem at hand 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.
2.	Idea / Solution description	Through this project, we can successfully develop and validate a risk prediction model and subsequent user-friendly scoring tool, the Algorithm for Liver Function Investigations, for liver condition diagnosis in patients with no obvious liver condition at the time of incident liver function testing in primary care. Upon early diagnosis of the liver condition, the severity would reduce and so does the cost of appropriate treatment methodologies. Hence, this project will help reduce the financial as well as biological impact. Liver cirrhosis is a leading cause of death and affects millions of people in the United States. Early mortality prediction among patients with cirrhosis might give healthcare providers more opportunity to effectively treat the condition.
3.	Novelty / Uniqueness	This Project examines data from liver patients concentrating on relationships between a key list of liver enzymes, proteins, age and gender using them to try and predict the likeliness of liver disease. Here we are building a model by applying various machine learning algorithms find the best accurate model. And integrate to flask-based web application. User can predict the disease by entering parameters in the web application. We have tried to minimize the number of False Negative predictions.
4.	Social Impact / Customer Satisfaction	This project helps in early risk identification and thus increasing the chance of recovery of the patient as medical attention is given early on. No prior knowledge of Medical Sciences and Liver Diseases is needed as we only need the medical report and we need to enter them in the GUI. The results are instantaneous thus reducing the time of diagnosis. The system predicts the result with high accuracy thus it is trustworthy at a large scale.

5.	Business Model (Revenue Model)	This could be made as a Proprietary Software and could be sold to hospital chains i.e., integrate this Liver Disease Prediction system to their main frame. So before sending the samples to the lab the hospital could eliminate False Negative Prediction and could start the medication course before the test results arrive saving valuable time. This could also be made available to the general public and if a patient has the symptoms of a liver disease, they could get a clear idea of their condition by using the web app, thus giving us valuable market penetration.
6.	Scalability of the Solution	The Liver Disease Prediction System is integrated into a flask-based web application. Thus, many people could use it simultaneously thus increasing the impact of our project. As there is a user-friendly GUI, the project will be accessible to a large audience regardless of their educational background.