**A Classification Model to Predict Liver Patients**

**Abstract**

Scientists believe the liver is responsible for up to 500 separate vital functions in the human body, including fighting infections, dividing food into energy and helping the body dispose of waste. However, the liver is at risk from a range of factors, from poor diet and alcohol use to infections and other genetic factors, each of which can lead to liver disease (LD), and if not detected early, severe damage can occur. Patients with chronic viral hepatitis are at risk of cirrhosis, which can later develop into liver failure or cancer. When the patient reaches this stage, liver transplantation is the only option left to save his life. Therefore, early diagnosis of hepatitis offers wider treatment options and may eliminate the need of liver transplantation.

The goal of this project is to predict the liver patient based on 10 features already available in the dataset. The model will help doctors to early diagnose the patient and propose a treatment.

**DATA**

The data that going to be used is obtained from keggle community. There are 10 features that can be used that includes age, gender, Bilirubin, protein, albumin, alkaline phosphatase and more. The goal is to create a model that can predicted the possible liver patient. To reach this conclusion, I used classification and apply all the required procedures to achieve my goal.

**Features**

In order to understand the dataset, I needed to go throw the medical terminology of the columns name and understand the relation of them to the result (target). After that I scaled my data and made sure that it is balanced by visualizing. And found that patients with LD is approximately 71%.

**ML Algorithm**

For this project I used KNN, Random Forest and logistic regression. I found that my best model was KNN with a score of 0.97 and a K of 1.

In the end of this project, I have created a model that can predict the Liver patients in early stages of liver damage based on factors.