INTRODUCTION

Hepatocellular carcinoma (HCC) is the most common type of primary liver cancer in adults and it is the most common cause of death in people with cirrhosis, accounting for an estimated 500,000 deaths annually. HCC occurs due to liver inflammation and is most closely linked to chronic viral hepatitis infection (hepatitis B or C) or exposure to toxins such as alcohol or aflatoxin. The majority of HCC is prevalent in Southeast Asia and sub-Sahara Africa, the incidence of HCC has doubled in the United States over the past 25 years, and incidence and mortality rates are likely to double over the next 10–20 years.

These days data-driven statistical research has become an attractive complement for clinical research. Survival prediction is one of the most challenging tasks among these medical researches. These statistical prediction helps the analysis of the physician and also saves huge resources. These researches are done with the help of some computational techniques/methods such as ANN,SVM,KNN as mentioned here. These techniques are able to model unknown/complex relationships which are non-linear or noisy and are difficult to analyze.

Artificial Neural Network (ANN) can be considered as the mere replica of the biological neurons present in the human brain. The human brain is the most complex and powerful functional unit present in our world. Its capable of handling complex relations and taking important decisions in less than a fraction of second. Its capable of modeling complex/ unknown functional relationships with interconnected processing units (artificial neurons). That’s the reason for the interest of replicating this enormous powerful model of computing and this gave birth to ANN. ANN is different for traditional hardcoded algorithms. These learn the functional relationships from a given dataset during its learning(training) stage.

Support Vector Machine(SVM)

Here the variables are mapped on a 3d/2d plane using some mapping functions and an optimal hyperplane is drawn to classify the variables. This hyperplane is drawn by considering the worst type of variables of different kinds. Therefore this model is more robust as this takes into account the worst conditions. The variables are classified on the basis of their location inside/outside the kernel, or on the side of the hyperplane.

k-NN (k-Nearest Neighbor) is a non-parametric method used for classification and regression problems in machine learning. Here a new variable is categorized by comparing the distance (mainly Euclidian Distance) between that point and other points of different categories. The category having the maximum number of neighboring variables (or maximum number of variables with least distance) with that new variable is termed as the type of that variable.