**Topic: Heart Disease Prediction**

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**Problem Statement:**

Many hospital information systems are designed to support patient billing, inventory management and generation of simple statistics. Some hospitals use decision support systems, but they are largely limited. They can answer simple queries like “What is the average age of patients who have heart disease?”, “How many surgeries had resulted in hospital stays longer than 10 days?”, “Identify the female patients who are single, above 30 years old, and who have been treated for cancer.” However, they cannot answer complex queries like “Identify the important preoperative predictors that increase the length of hospital stay”, “Given patient records on cancer, should treatment include chemotherapy alone, radiation alone, or both chemotherapy and radiation?”, and “Given patient records, predict the

probability of patients getting a heart disease.” Clinical decisions are often made based on doctors’ intuition and experience rather than on the knowledge-rich

data hidden in the database. This practice leads to unwanted biases, errors and excessive medical costs which affects the quality of service provided to patients.

Integration of clinical decision support with computer-based patient records could reduce medical errors, enhance patient safety, decrease unwanted practice

variation, and improve patient outcome. This suggestion is promising as data modelling and analysis tools, e.g., data mining, have the potential to generate a

knowledge-rich environment which can help to significantly improve the quality of clinical decisions.

**Introduction:**

Heart is an important organ of the human body. It pumps blood to

every part of our anatomy. If it fails to function correctly, then the

brain and various other organs will stop working, and within few

minutes, the person will die. Change in lifestyle, work related

stress and bad food habits contribute to the increase in rate of

several heart related diseases.

Heart diseases have emerged as one of the most prominent cause

of death all around the world. According to World Health

Organisation, heart related diseases are responsible for the taking

17.7 million lives every year, 31% of all global deaths. In India

too, heart related diseases have become the leading cause of

mortality . Heart diseases have killed 1.7 million Indians in

2016, according to the 2016 Global Burden of Disease Report,

released on September 15,2017. Heart related diseases increase

the spending on health care and also reduce the productivity of an

individual. Estimates made by the World Health Organisation

(WHO), suggest that India have lost up to $237 billion, from

2005-2015, due to heart related or Cardiovascular diseases [2].

Thus, feasible and accurate prediction of heart related diseases is

very important.

Medical organisations, all around the world, collect data on

various health related issues. These data can be exploited using

various machine learning techniques to gain useful insights. But

the data collected is very massive and, many a times, this data can

be very noisy. These datasets, which are too overwhelming for

human minds to comprehend, can be easily explored using various

machine learning techniques. Thus, these algorithms have become

very useful, in recent times, to predict the presence or absence of

heart related diseases accurately.

**Motivation:**

A major challenge facing healthcare organizations

(hospitals, medical centers) is the provision of quality

services at affordable costs. Quality service implies

diagnosing patients correctly and administering treatments

that are effective. Poor clinical decisions can lead to

disastrous consequences which are therefore unacceptable.

Hospitals must also minimize the cost of clinical tests.

They can achieve these results by employing appropriate

computer-based information and/or decision support

systems.

Most hospitals today employ some sort of hospital

information systems to manage their healthcare or patient

data . These systems typically generate huge amounts

of data which take the form of numbers, text, charts and

images. Unfortunately, these data are rarely used to

support clinical decision making. There is a wealth

wealth of

hidden information in these data that is largely untapped.

This raises an important question: “How can we turn data

into useful information that can enable healthcare

practitioners to make intelligent clinical decisions?” This

is the main motivation for this research.

**Objectives:**

The main objective of this research is to develop a heart prediction system. The system can discover and extract hidden knowledge associated with diseases from a historical heart data set.

Heart disease prediction system aims to exploit data mining and machine learning techniques on medical data set to assist in the prediction of the heart diseases.

**Methodology:**

In this system we are implementing effective heart attack prediction system using MLP and KPCA. We can give the input as a CSV file. The csv file contains fields that contain data about the patient, like their age, sex, if they smoke cigarettes or not, etc. All the data that would help predict if the person may or may not have a heart disease. After taking input

the algorithms apply on that input that is MLP. After accessing data set the operation is

performed the result is produced.

The proposed system will add some more parameters significant to heart attack with their weight, age and the priority levels are by consulting expertise doctors and the medical experts.

MLP:

KPCA:

Tools used for development, Software Requirements are:

Operating System

Any OS with clients to access the internet

Network

Wi-Fi Internet or cellular Network

Google Chrome

Anaconda and various pandas libraries

**Results:**

**Applications:**

**Conclusion:**

**References:**

**Screenshots of The Mini Project:**



**MIT-World Peace University (MIT-WPU)**

**Faculty of Engineering**

**School of Computer Engineering & Technology**

**CERTIFICATE**

This is to certify that Ms. Mitali Kasurde of B.Tech., School of Computer Engineering & Technology, Trimester – IX /X, PRN. No. 1032171247 , has successfully completed project on

Heart Disease Prediction

To my satisfaction and submitted the same during the academic year

2020 - 2021 towards the partial fulfillment of degree of Bachelor of Technology in School of Computer Engineering & Technology under Dr. Vishwanath Karad MIT- World Peace University, Pune.

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