

Predicting the Unpredictable: A General Disease Forecasting System

Ideation

Silicon Institute of Technology

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

May 8, 2023



Table of Contents

- Introduction
- How it Works
- Types
- Diabetes Prediction System
- Heart Disease Prediction System
- Breast Cancer Prediction System
- Lung Cancer Prediction System
- Benefits
- Challenges
- Future Developments
- Conclusion



Introduction

The General Disease Prediction System is an innovative technology that uses advanced artificial intelligence algorithms to predict the occurrence of diseases in individuals.

This system is designed to analyze various factors such as age, medical history, lifestyle habits, and environmental conditions to provide accurate predictions



How it Works

The General Disease Prediction System works by collecting and analyzing large amounts of data from various sources such as medical records, genetic testing, and environmental sensors. The system then uses machine learning algorithms to identify patterns and correlations between different variables to accurately predict the likelihood of developing certain diseases.



General Disease Prediction System

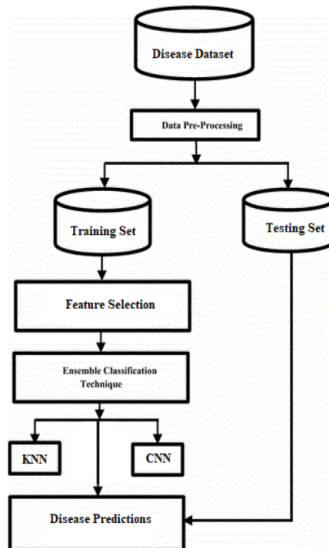


General Disease Prediction System

Artificial Intelligence made computer more intelligent and can enable the computer to think. AI study consider machine learning as subfield in numerous research work. Different analysts feel that without learning, insight can't be created. There are numerous kinds of Machine Learning Techniques like Unsupervised, Semi Supervised, Supervised, Reinforcement, Evolutionary Learning and Deep Learning. These learnings are used to classify huge data very fastly. So we use K-Nearest Neighbor (KNN) and Convolutional neural network (CNN) machine learning algorithm for fast classification of big data and accurate prediction of disease. Because medical data is increasing day by day so usage of that for predicting correct disease is crucial task but processing big data is very crucial in general so data mining plays very important role and classification of large dataset using machine learning becomes so easy.



System Architecture



Types



Types of Prediction System

- Diabetes Prediction System
- Lung Cancer Prediction System
- Breast Cancer Prediction System
- Heart Disease Prediction System



Diabetes Prediction System



Diabetes Prediction System

■ Internet



Lung Cancer Prediction System



Lung Cancer Prediction System

- Lung cancer is a harmful disease that causes a huge number of deaths globally. The primal encounter of lung cancer is necessary to decrease the mortality rate of patients. Thus it is a great challenge encountered by doctors and researchers to detect and diagnose lung cancer. Detection of lung cancer can be done by using medical images such as computed tomography, chest X-ray; MRI scans, etc., ML approaches recognize the main characteristics of complex lung cancer datasets. A CAD (Computer-Aided Diagnosis) was developed in the early 1980s to enhance the survival rate and efficiency that aid the doctors in interpreting medical images. Some of the machine learning algorithms that have a profound impact in health care are decision trees, linear regression, random forest, SVM, naive Bayes, K-nearest neighbors and so



Working Principle

- A prototype lung cancer disease prediction system is developed using data mining classification techniques.
- The system extracts hidden knowledge from a historical lung cancer disease database.
- The most effective model to predict patients with Lung cancer disease appears to be Naïve Bayes followed by IF-THEN rule, Decision Trees and Neural Network.
- Decision Trees results are easier to read and interpret.
- The drill through feature to access detailed patients' profiles is only available in Decision Trees



Heart Disease Prediction System



Heart Disease Prediction System

- A prototype



Working Principle

- For predicting heart attack, significantly 15 attributes are listed and with basic data mining technique other approaches e.g. ANN, Time Series, Clustering and Association Rules, soft computing approaches etc. can also be incorporated.
- The outcome of predictive data mining technique on the same dataset reveals that Decision Tree outperforms and some time Bayesian classification is having similar accuracy as of decision tree but other predictive methods like KNN, Neural Networks, Classification based on clustering are not performing well.
- Decision Tree and Bayesian Classification further improves after applying genetic algorithm to reduce the actual data size to get the optimal subset of attribute sufficient for heart disease prediction.

