

# Disease Prediction and Drug Recommendation System Using Machine Learning

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**Abstract**—In this project the disease is accurately predicted by looking at the symptoms of the patient where the patient can input his/her symptom and the system will predict the disease patient is suffering from. Classification Algorithms like the Naïve Bayes (NB), Random Forest, Logistic Regression and KNN have been broadly utilized to anticipate the Disease, where different accuracies were obtained.

**It enable patient care, reduce treatment costs and improve clinical outcomes through timely and accurate medical intervention**

## I. INTRODUCTION

In today's rapidly evolving society, health and pharmaceuticals have gained paramount importance.

Factors such as lifestyle choices and environmental conditions expose individuals to a myriad of health issues.

Human disease prediction and drug recommendation using ML have garnered significant attention due to their potential to enhance healthcare delivery and reduce medical errors.

By considering factors such as disease severity, drug efficacy, potential side effects, and patient preferences, ML-based drug recommendation systems can assist patient and healthcare providers in making informed decisions to optimize patient care.

## II. OBJECTIVE

The objective of my project is to improve healthcare efficiency, accuracy and personalization.

These systems aim to assist patients and clinicians in decision-making and improve health outcomes.

Predict disease before symptoms become severe, enabling timely interventions.

Prioritize high-risk patient for early testing and treatment.

Recommend the most effective drugs based on the symptoms entered by the patient.

## III. MOTIVATION

Early prediction helps in reducing mortality rates, health care costs and burden on healthcare systems.

Proactive disease prediction and effective drug recommendations save costs for patients.

Prediction models encourage individuals to adopt healthier lifestyles and seek preventive measures based on risk assessments.

These systems educate and empower patients with insights into their health, enabling them to make informed decisions.

## IV. LITERATURE SURVEY

*Effect of clinical decision support at community health centers on the risk of cardiovascular disease*

For the last couple of years, setting up a CDSS at community health centers through the deployment of "Point of care CDSS"

In order to improve the health condition and reverse the risks of CVD among high-risk patients.

The point of care CDSS is deployed and only accessible at a few community health centers.

Further, this “Point of care” is helpful after post-diagnosis of heart risk in individuals

*GDSS: a Web-based decision support system to facilitate the efficient and effective use of clinical practice guidelines*

This is a Web-based “Graphical Decision Support System (GDSS)” for “National Comprehensive Cancer Network (NCCN).

Provides context-Specific recommendations to facilitate clinical practice guidelines developed for breast cancer.

It is customized tool for NCCN and is not freely accessible to individuals.

#### V. EXISTING SYSTEM

In the existing system only have the specific disease prediction framework which predicts the disease based on medical parameters and not on the symptoms.

There models trained on the datasets are quite old and not easily accessible everywhere so in most of the areas only the tradition health care systems exist.

Drug recommendation system is not available with the prediction system and only a limited number of user can access at a time as the User Interface is not effective.

#### VI. PROPOSED SYSTEM

My project is a solution of these problems.

I am going to develop web based application to predict the disease and to recommend the drug based on the symptoms entered by the patient

In multiple disease prediction, there is possible to predict more than one disease at a time.

So by which user doesn't need to go for multiple systems which will save the time and money.

I will discover most of the regular illnesses in individual wellbeing.

I have introduced in one application with expectation of the Diseases by examining the symptoms gathered

from the patient's record and taking the Reliable dataset from different Hospitals.

#### VII. DATA COLLECTION AND PRE PROCESSING

Gather and prepare data from various sources like Electronic Health Records (EHRs), medical imaging, genomic data, or user-entered symptoms.

Data integration from sources such as hospital databases.

It ensures that the input data is clean, structured and suitable for machine learning.



#### VII. DISEASE PREDICTION MODULE

Use machine learning or rule-based approaches to predict potential diseases based on patient data Machine Learning Algorithms like Naïve Bayes algorithm, Random Forest, Logistic regression and KNN are used for disease classification.

#### IX. DRUG RECOMMENDATION MODULE

Provide personalized drug suggestions based on patient profiles, diseases, and comorbidities.

Recommender systems to suggest drugs based on similar patient profiles.

#### X. DECISION SUPPORT SYSTEM

Assist healthcare professionals in making decisions by presenting disease risks and drug options User-friendly interfaces for doctors and patients.

#### XI. EVALUATION AND FEEDBACK MODULE

Continuously evaluate the system's accuracy and update models based on feedback.

Feedback integration: Patient and doctor inputs for iterative model improvement

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## XII. INPUT DESIGN MODULE

- Doctor Login
- Patient Login
- Disease Prediction
- Search Doctor

## XIII. CONCLUSION

The main aim to develop this system is to help such people with their health.

Also, this system can be used by small scale doctors or dispensaries to predict the disease and decrease the rush at hospitals and reduce the workload on medical staff.

This ensures that the system is not affecting doctor's profession and ensures safety of patients along with increase gain of patients in the prediction system.

## XIV. REFERENCE

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