**A Synopsis**

**On**

**“AI Multi Disease Predictor”**

Submitted in partial fulfillment of the requirements for the award of the Degree of

**Bachelor of Technology**

**of**

**Poornima University, Jaipur**

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1. **Abstract**

The project implements 3 linear models and one deep learning model: Naïve Bayes, Support Vector Machine, and K-Nearest Neighbors network to investigate their performance on diabetes, heart, and Parkinson’s disease datasets obtained from the UCI data repository.

In addition to the comparison of the algorithms, each algorithm has been integrated into a prediction engine.

The project also includes a web platform to facilitate collaboration among researchers and doctors.

As the results show, our prediction engine is capable of recognizing the presence of the disease and also predicting it accurately. Performance improvements could also be achieved by using complex deep learning methods.



1. **Introduction**

In this digital world, data is an asset, and enormous data was generated in all the fields. Data in the healthcare industry consists of all the information related to patients.

Here a general architecture has been proposed for predicting disease in the healthcare industry.

Many of the existing models are concentrating on one disease per analysis. Like one analysis for diabetes analysis, one for heart analysis, one for parisons diseases like that. There is no common system present that can analyze more than one disease at a time.

Thus, we are concentrating on providing immediate and accurate disease predictions to the users about the symptoms they enter along with the disease predicted.

So, we are proposing a system which used to predict multiple diseases by using a python web app.

In this system, we are going to analyze Diabetes, Heart, and parisons disease analysis.

Later many more diseases can be included. To implement multiple disease prediction systems, we are going to use machine learning algorithms and deep learning.

Python pickling is used to save the behavior of the model.

The importance of this system analysis is that while analyzing the diseases all the parameters which cause the disease are included so it is possible to detect the disease efficiently and more accurately.

The final model's behavior will be saved as a python pickle file.

1. **Motivation / Aim / Objective**

A lot of analyses of existing systems in the health care industry considered only one disease at a time.

For example, one system is used to analyze diabetes, another is used to

analyze diabetes retinopathy, and another system is used to predict heart disease.

Maximum systems focus on a particular disease. When an organization wants to analyze their patient’s, health reports then they have to deploy many models.

The approach in the existing system is useful to analyze only particular diseases. In a multiple disease prediction system, a user can analyze more than one disease on a single website.

The user doesn’t need to traverse different places in order to predict whether he/she has a particular disease or not. In multiple disease prediction, in the system, the user needs to select the name of the particular disease, enter its parameters and just click on submit.

The corresponding machine learning model will be invoked and it would predict the output and display it on the screen.

1. **Technical details: Software & Hardware requirement**

**4.1 Hardware Requirement**

|  |  |
| --- | --- |
| **Name of Equipment** | **Quantity** |
| PC with 8 GB or greater RAM | 2 |
| Size of GPU: 4 GB or higher | 1 |
| Processor: i5 or higher/ AMD 5th gen | 2 |

**4.2 Software Requirement**

|  |  |  |
| --- | --- | --- |
| **Technology name** | **Platform** | **Used for** |
| Python (3.10.5) | VS Code | Backend |
| Pickel | Google Colab | Backend |
| Flask | VS Code | Front end |
| CSV (datasets) | VS Code | Database |
| HTML | VS Code | Front end |
| Canva | Canva | Designing |

1. **Proposed Method / Usefulness of the project**

Many of the existing machine learning models for health care analysis are concentrating on one disease per analysis. For example, the first is for liver analysis, one for cancer analysis, and one for lung diseases like that.

If a user wants to predict more than one disease, he/she has to go through different sites. There is no common system where one analysis can perform more than one disease prediction.

Some of the models have lower accuracy which can seriously affect patients’ health.

When an organization wants to analyze their patient’s health reports, they have to deploy many models which in turn increases the cost as well as time.

Some of the existing systems consider very few parameters which can yield false results.

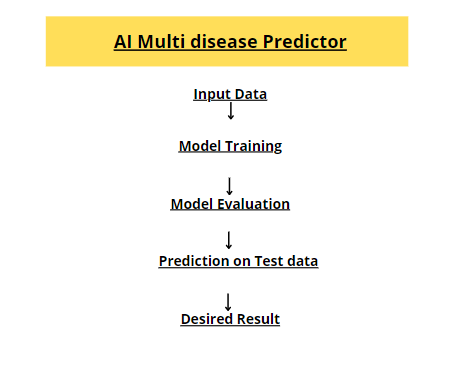
So, the aim of this analysis was to invent a system that can help the patient to predict different diseases with accurate results.

Here they used mainly 4 main algorithms Decision Tree, Naïve Bayes, and SVM algorithms, and compared their accuracy, which is 85%,77%, and 77.3%.

We also used the ANN algorithm after the training process to see the reactions of the network which states whether the disease is classified properly or not.

**Advantages:**

1. Prediction of multiple diseases- diabetes, heart, Parkinson’s, liver, breast cancer, malaria, pneumonia, and liver diseases under one – machine learning-based web app.
2. High accuracy, as a result of various different models, and rigorous training.

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1. **Market Potential and Competitive Edge**

A lot of analyses of existing systems in the health care industry considered only one disease at a time. For example, one system is used to analyze diabetes, another is used to analyze diabetes retinopathy, and another system is used to predict heart disease.

Maximum systems focus on a particular disease.

When an organization wants to analyze their patient’s, health reports then they have to deploy many models. The approach in the existing system is useful to analyze only particular diseases.

In a multiple disease prediction system, a user can analyze more than one disease on a single website.

The user doesn’t need to traverse different places in order to predict whether he/she has a particular disease or not.

In multiple diseases prediction system, the user needs to select the name of the particular disease, enter its parameters and just click on submit. The corresponding machine learning model will be invoked and it would predict the output and display it on the screen

This model can be used as a pre-hospitalization approach, or knowing beforehand the danger of any possible disease instantly using some parametric measures.

This can prevent serious illness, by predicting any circumstances at an early stage.

1. **Plan of work / Workflow diagram**

A workflow diagram is a visual representation of an overall process. The diagram represents the various tasks that constitute the workflow through symbolic shapes, each indicating the condition or trigger required at the given stage.

1. **Team members**

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| --- | --- | --- | --- |
| **S. No.** | **Name** | **Branch** | **Role** |
|  | **Tushar Khete** | Btech CSE AI 7th Sem | Front End,  Backend |
|  | **Pritam Jain** | Btech CSE AI 7th Sem | Database preprocessing, Designing, Documentation |

1. **Guide Name & Designation**

|  |  |  |
| --- | --- | --- |
| **Name** | **Designation** | **Institutional Address with Phone no.** |
| **Ms. Anuradha Raheja** | HOD, Dept. of Computer Engineering, Poornima University, Jaipur (303905) | Poornima University  IS-2027 to 2031, Ramchandrapura, P.O. Vidhani Vatika, Sitapura Extension, Jaipur-303905  Phone:0141-6500250 |

1. **References**

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