Introduction

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1. INTRODUCTION

1.1.PURPOSE

A lot of analysis over existing systems in the health care industry considered only one disease at a time. For example, one system is used to analyse diabetes, another is used to analyse diabetes, and another system is used to predict heart disease. Maximum systems focus on a particular disease. When an organization wants to analyse their patient's, health reports then they have to deploy many models. The approach in the existing system is useful to analyse only particular diseases. In multiple diseases prediction system, a user can analyse 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.

1.2.DOCUMENT CONVENTIONS

- Entire document should be justified.
- Entire document should be 1.5 line spacing.
- Convention for main title and sub title:
  - Font Face: Times New Roman.
  - Font Style: Bold.
  - Font Size: 32.
- Convention for body:
  - Font Face: Times New Roman.
  - Font Style: Normal.
  - Font Size: 11.

1.3.INTENDED AUDIENCE AND READING SUGGESTIONS

This document is intended for an individual participating in and/or supervising the Multiple Disease Prediction project. A brief overview of a product is focus in a Section 1 of the document (Introduction), as well as Section 2 of the document (Overall Description), which provide a brief overview of each aspect of the project as a whole. System Features for a detail of a system is discussed in Section 3 which expands upon the information laid out in the main overview. Section 4 (External Interface Requirements) offers further technical details, including information on the user interface as well as the hardware and software platforms on which the application will run. The non-technical aspects of the project id discussed in Section 5, which covers performance, safety, security, and various other attributes that will be important to users

1.4.PRODUCT SCOPE

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

1.5. REFERENCES

a) Priyanka Sonar, Prof. K. JayaMalini," DIABETES PREDICTION USING DIFFERENT MACHINE LEARNING APPROACHES", 2019 IEEE ,3rd International Conference on Computing Methodologies and Communication (ICCMC)

b) Archana Singh ,Rakesh Kumar, "Heart Disease Prediction Using Machine Learning Algorithms", 2020 IEEE, International Conference on Electrical and Electronics Engineering (ICE3)

c)A.Sivasangari, Baddigam Jaya Krishna Reddy,Annamareddy Kiran, P.Ajitha," Diagnosis of Liver Disease using Machine Learning Models" 2020 Fourth International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC)

2. OVERALL DESCRIPTION

2.1 PRODUCT PERSPECTIVE

Machine Learning is the domain that uses past data for predicting. Machine Learning is the understanding of computer system under which the Machine Learning model learn from data and experience. The machine learning algorithm has two phases: 1) Training & 2) Testing. To predict the disease from a patient's symptoms and from the history of the patient, machine learning technology is struggling from past decades. Healthcare issues can be solved efficiently by using Machine Learning Technology. We are applying complete machine learning concepts to keep the track of patient's health.

ML model allows us to build models to get quickly cleaned and processed data and deliver results faster. By using this system doctors will make good decisions related to patient diagnoses and according to that, good treatment will be given to the patient, which increases improvement in patient healthcare services. To introduce machine learning in the medical field, healthcare is the prime example. To improve the accuracy of large data, the existing work will be done on unstructured or textual data.

2.2 PRODUCT FUNCTIONS

- The main purpose of this project is to reduce the error in prediction
- In multiple diseases prediction system, a user can analyse more than one disease on a single website.
- Functions: 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.

2.3 USER CLASSES AND CHARACTERISTICS

- The user should be familiar with the medical report related terminology like bp, diabetic etc.
- The user should be familiar with the Internet

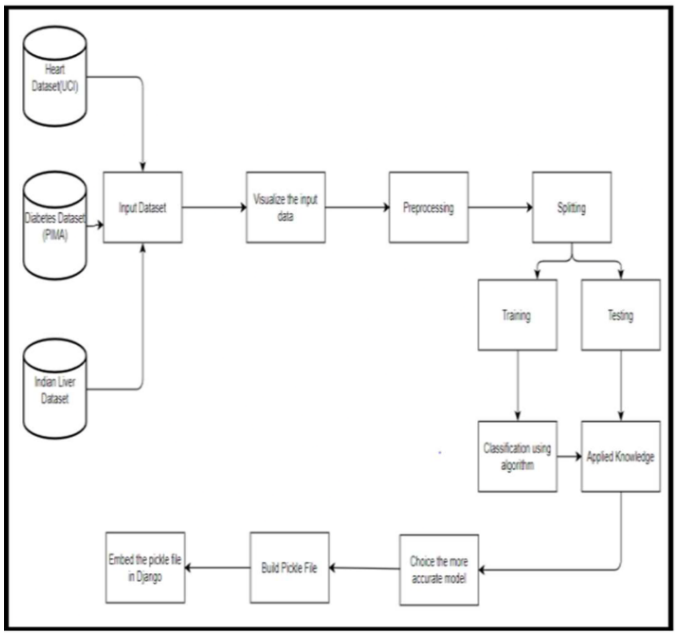
2.4 OPERATING ENVIRONMENT

The product will be operating in windows environment. Multiple Disease Prediction system is a website and shall operate in all famous browsers, for a model we are talking Microsoft Internet Explorer, Google Chrome and Mozilla Firefox. Also, it will be compatible with the IE 6.0. Most of the features will be compatible with the Mozilla Firefox and Opera 7.0 or higher version. The only requirement to use this online product would be the internet connection.

The hardware configuration includes Hard Disk: 40GB, Monitor: 15-inch Colour monitor, Keyboard: 122 keys. The basic input devices required are keyboard, mouse and output devices are monitor etc

2.5 DESIGN AND IMPLEMENTATION CONSTRAINTS

Multiple Disease Prediction Website is a virtual system on the Internet where users can browse the website and 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. Usually, the user will be asked to fill or select a disease parameter. An e-mail notification is sent to the user as soon as the prediction is completed.



2.6 User Documentation

The product will include user manual. The user manual will include product overview, complete configuration of the used software (such as SQL server), technical details, backup procedure and contact information which will include email address. There will be no online help for the product at this moment. The product will be compatible with the Internet Explorer 6.0 or higher. The databases will be created in the MySQL.

2.7 Assumptions and Dependencies

The assumptions are: -

1) The coding should be error free.

2) The system should be user friendly so that it is easy to use for the users.

3) The system should have more capacity and provide fast access to the database.

4) The system should provide search facility and support quick transactions.

5) The Multiple Disease Prediction Website is running twenty-four hours a day.

6) Users may access from any computer that has internet browsing capabilities and an internet connection.

7) user must have their correct usernames and passwords to enter into them online accounts and do actions.

The dependencies are: -

1) The specific hardware and software due to which the product will be run.

2) On the basis of listing requirements and specification the project will be develop and run.

3) The end users (admin) should have proper understanding to the product.

4) The system should have the general report store.

5) The information of all users must be stored in a database that is accessible by Multiple Disease Prediction Website.

3. External Interface Requirements

3.1. User Interfaces

- Admin can View, Edit and Delete everything on the website.
- User can select the name of the particular disease, enter its parameters and just click on submit; user can view prediction result.
- User can give symptoms to systems and view predicted disease

3.2. Hardware Interfaces

The application can be used on any personal computer, laptop, smartphones or any similar device. It does not require any specialized hardware for its working.

3.3. SOFTWARE INTERFACES

- XAMPP
- VS code
- Jupyter notebook
- Front end: HTML, CSS, JavaScript , bootstrap , Reactjs
- Back end: Django python framework
- Database: MySQL

3.4. COMMUNICATIONS INTERFACES

A web browser is the basic requirement for this application. Various communication standards such as HTTP, FTP, Video Conferencing protocols are used.

4. SYSTEM FEATURES

- The website authority should ensure the customer provide maximum Accuracy
- Customer support is available from the authority
- Customer information security confirm.
- To increase efficiency of managing the authority work

5. OTHER NON-FUNCTIONAL REQUIREMENTS

5.1. PERFORMANCE REQUIREMENTS

There is no performance requirement in this system because the server request and response are depended on the end user internet connection

5.2. SAFETY REQUIREMENTS

The database may get crushed at any certain time due to virus or operating system failure. There for it is required to take the database backup so that the database is not lost. Proper UPS/ Inverter facility should be there in case of power supply failure. The system is secure enough such that personal health data may not be disclosed inappropriately or unauthorized.

5.3. SECURITY REQUIREMENTS

- System will use secured database.
- Normal users can just read information but they cannot edit or modify anything except their personal and some other information.
- System will have different types of users and every user has access constraints.

5.4. SOFTWARE QUALITY ATTRIBUTES

- There may be multiple admin's creating the project, all of them will have the right to create changes to the system. But the members or other users cannot do changes.
- The project should be open source.
- The quality of the database is maintained in such a way so that it can be very user friendly to all the users of the database.
- The user be able to easily download and install the system.

5.5. BUSINESS RULES

A business rule is anything that captures and implements business policies and practices. A rule can enforce business policy, make a decision, or infer new data from existing data. This includes the rules and regulations that the system users should abide by. This includes the cost of the project and the discount offers provided. The users should avoid illegal rules and protocols. Neither admin nor members should cross the rules and regulations

6. OTHER REQUIREMENTS.

Multiple Disease Prediction Website shall handle expected and non-expected errors in ways that prevent loss in information and long downtime period