

PROJECT TITLE: DIAGONISIS 360

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Abstract:

Several of the machine learning models for health care analysis now in use target on just one disease at a time. One analysis cannot forecast more than one disease using a same framework, but we are providing a platform to anticipate several numbers of disease. Tensor flow , Flask API, and machine learning techniques were used to accomplish numerous illness analysis. The significance of this analysis is examine the most diseases, in order to keep track of patients' conditions and alert them in advance to reduce mortality rates. The significance of this subsection analysis is that all the factors that contribute to the sickness are taken into account while analysing it, making it possible to identify the disease's full range of potential Impacts.

Introduction:

Data is a valuable resource in our digital age, and large amounts of it were produced across all industries. All patient-related information is included in the data used in the healthcare sector. Here, a general architecture for disease prediction in the healthcare sector has been proposed. Several of the current models focus on just one disease for each analysis. One analysis for each of those conditions, such as one each for cancer, diabetes, and skin illnesses. There is currently no method that can analyse multiple diseases simultaneously. As a result, we are focusing on providing users with rapid and accurate disease forecasts that take into account both the symptoms they enter

and the expected condition. We will examine the diseases of malaria, diabetes, and the heart in this system. Later, a lot more illnesses could be included. The significance of this system analysis is that it considers all the factors that contribute to the development of the diseases under study, making it possible to detect them more effectively and precisely. A pickle file in Python will be used to store the behaviour of the final model.

1) Heart Disease Prediction : In comparison to the brain, which takes precedence in the human body, the heart is the next important organ. It circulates blood throughout the body's organs and pumps blood. It takes tremendous effort to predict the emergence of cardiac illnesses in the medical industry. Data analytics is important for making predictions based on additional information, and it aids medical centres in making illness predictions. On a monthly basis, a sizeable amount of patient-related data is maintained. One of the common diseases that might shorten a person's lifetime nowadays is heart disease. Heart disease claims the lives of 17.5 million individuals worldwide every year [1]. Because the heart is an essential component of our bodies, its proper operation is essential to life. Heart function is impacted by heart disease, which is a disease.

The saved information can be used as a source for making future illness predictions. Heart disease may be predicted using several data mining and machine learning approaches, including Artificial Neural Networks (ANN), Decision Trees, Fuzzy Logic, K-Nearest Neighbour (KNN), Naive Bayes, and Support Vector Machines (SVM). This essay offers an

2) Diabetes Prediction: In recent years, diabetes has become one of the top causes of death in developing nations. Both the government and private citizens are funding research efforts to discover a cure for the serious disease. Diabetes is a condition in which there is insufficient insulin, which impairs blood sugar metabolism and causes blood sugar levels to keep rising. Patients with diabetes are unable to efficiently convert the eaten carbs into the glucose sugar needed to fuel daily activities. As a result, the blood sugar level gradually rises. Thus, glucose doesn't reach all of the body's cells and instead stays in the circulation. Thus, because it incorporates several aspects, it is still difficult to anticipate.

Many predictive, quantitative, and statistical models are used to predict and identify illness. Diabetes has recently risen to the top of the list of fatal diseases in emerging nations. The following disciplines of study have received funding to support mainstream research, which is motivated by an emotional need for immediate fixes. One of the most common diseases, diabetes is brought on by having too much blood sugar or glucose in the body.

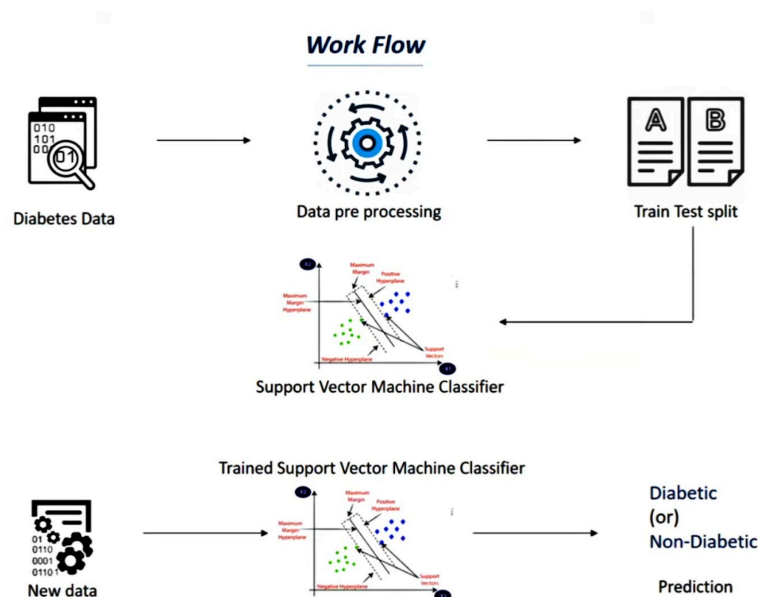
3) Breast Cancer: Breast cancer prediction using neural networks involves training a neural network model on a dataset of breast cancer patients to predict the likelihood of a patient having breast cancer. The dataset typically includes various attributes such as age, family history, tumor size, and other clinical characteristics. The neural network model consists of an input layer, one or more hidden layers, and an output layer. The input layer takes in the attributes of the patient, while the hidden layers process this information and extract relevant features. Finally, the output layer produces the probability of the patient having breast cancer.

There are two main types of breast cancer cells: malignant and benign. Malignant breast cancer cells are abnormal cells that grow uncontrollably and invade surrounding tissue. These cells can spread to other parts of the body through the lymphatic system or bloodstream, leading to metastatic breast cancer. Malignant breast cancer cells are typically more aggressive and require more aggressive treatment than benign breast cancer cells. In terms of mortality, breast cancer is the fifth leading cause of cancer death globally. In 2020, there were an estimated 685,000 deaths from breast cancer, accounting for about 6.9% of all cancer deaths. A study published in the journal Breast Cancer Research and Treatment reported an accuracy of 81% for a machine learning model that predicted the risk of breast cancer recurrence using gene expression data.

Block Diagram Technologies:

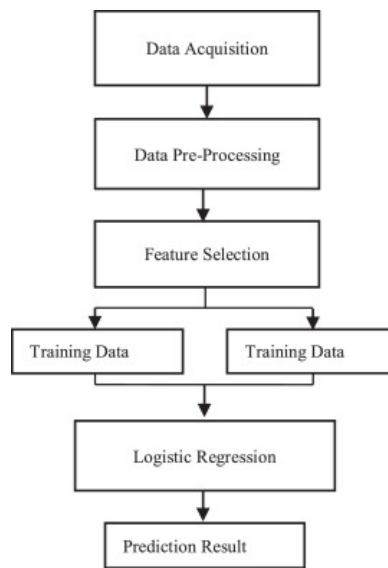
1) **Symptom Checker Decision Tree Algorithm:** Based on the symptoms, a disease is diagnosed using the Decision Tree method. The method takes the provided symptoms dataset to build a tree structure, and then uses this tree to forecast the disease from the user-entered symptoms.

2) **Diabetes SVM:** The widely used classification technique Support Vector Machine (SVM) has been applied in many fields, including the prediction of diabetes. Using a hyperplane that maximises the margin between the classes, SVM divides the data into classes.



WORK FLOW OF DIABETES PREDICTION

3) Logistic Regression Heart Disease Prediction: Heart disease has been predicted using the widely-used classification technique known as logistic regression. Based on the input variables, logistic regression calculates the likelihood of an event occurring.



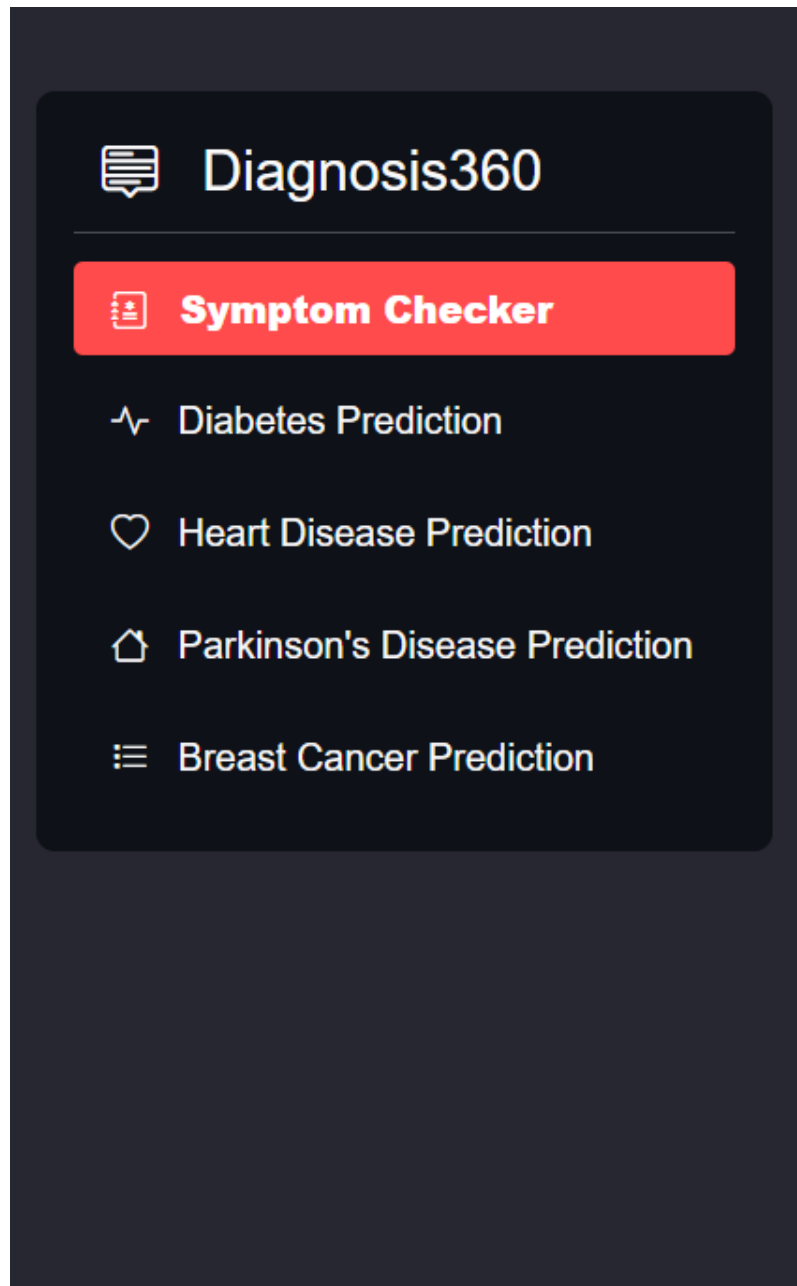
WORK FLOW OF HEART DISEASE PREDICTION

4) Neural Networks for Breast Cancer Prediction: Machine learning models can predict breast cancer by analyzing patterns and relationships in large datasets of breast cancer patient information. Breast Cancer Research and Treatment reported an accuracy of 81% for a machine learning model that predicted the risk of breast cancer recurrence using gene expression data.

5) SVM-based Parkinson's Disease Prediction: Parkinson's disease is predicted using the Support Vector Machine (SVM). In this experiment, SVM was used to predict Parkinson's disease based on patient data. The Parkinson's Disease dataset was used to train the SVM algorithm to forecast Parkinson's disease. A 94.29% accuracy rate was achieved with the SVM method.

Results:

1) HOME PAGE:



2) SYMPTOM CHECKER

* INITIAL

Diagnosis360

Symptom Checker

Diabetes Prediction

Heart Disease Prediction

Parkinson's Disease Prediction

Breast Cancer Prediction

☐ abdominal_pain

☐ acute_liver_failure

☐ back_pain

☐ bladder_discomfort

☐ bloody_stool

☐ brittle_nails

☐ chest_pain

☐ coma

☐ continuous_feel_of_urine

☐ cramps

☐ depression

☐ distention_of_abdomen

☐ enlarged_thyroid

☐ family_history

☐ fluid_overload

☐ high_fever

☐ increased_appetite

☐ abnormal_menstruation

☐ altered_sensorium

☐ belly_pain

☐ blister

☐ blurred_and_distorted_vision

☐ bruising

☐ chills

☐ congestion

☐ continuous_sneezing

☐ dark_urine

☐ diarrhoea

☐ dizziness

☐ excessive_hunger

☐ fast_heart_rate

☐ foul_smell_of_urine

☐ hip_joint_pain

☐ acidity

☐ anxiety

☐ blackheads

☐ blood_in_sputum

☐ breathlessness

☐ burning_micturition

☐ cold_hands_and_feets

☐ constipation

☐ cough

☐ dehydration

☐ dischromic_patches

☐ drying_and_tingling_lips

☐ extra_marital_contacts

☐ fatigue

☐ headache

☐ history_of_alcohol_consumption

* AFTER SELECTING SYMPTOM

Diagnosis360

Symptom Checker

Diabetes Prediction

Heart Disease Prediction

Parkinson's Disease Prediction

Breast Cancer Prediction

☒ sinus_pressure

☐ slurred_speech

☐ spotting_urination

☒ stomach_pain

☐ swelled_lymph_nodes

☐ swollen_blood_vessels

☒ throat_irritation

☐ unsteadiness

☐ watering_from_eyes

☒ weight_gain

☐ yellow_urine

☐ itching

☐ shivering

☐ skin_peeling

☐ small_dents_in_nails

☐ stiff_neck

☒ sunken_eyes

☐ swelling_joints

☒ swollen_extremities

☒ toxic_look_(typhos)

☐ visual_disturbances

☐ weakness_in_limbs

☐ weight_loss

☒ yellowing_of_eyes

☐ rusty_sputum

☐ silver_like_dusting

☐ skin_rash

☒ spinning_movements

☒ stomach_bleeding

☐ sweating

☐ swelling_of_stomach

☐ swollen_legs

☐ ulcers_on_tongue

☐ vomiting

☐ weakness_of_one_body_side

☒ yellow_crust_ooze

☒ yellowish_skin

Diagnose

You are diagnosed with : Hepatitis C

Please consult a doctor

3) DIABETES PREDICTON UI:

Diagnosis360

Symptom Checker

Diabetes Prediction

Heart Disease Prediction

Parkinson's Disease Prediction

Breast Cancer Prediction

Diabetes Prediction using ML

Number of Pregnancies	Glucose Level	Blood Pressure value
1	200	130
Skin Thickness value	Insulin Level	BMI value
30.70	120	12
Diabetes Pedigree Function value	Age of the Person	
12	56	

Diabetes Test Result

The person is diabetic

4) HEART DISEASE PREDICTION UI:

Diagnosis360

Symptom Checker

Diabetes Prediction

Heart Disease Prediction

Parkinson's Disease Prediction

Breast Cancer Prediction

Heart Disease Prediction using ML

Age	Sex	Chest Pain types
Resting Blood Pressure	Serum Cholestoral in mg/dl	Fasting Blood Sugar > 120 mg/dl
Resting Electrocardiographic results	Maximum Heart Rate achieved	Exercise Induced Angina
ST depression induced by exercise	Slope of the peak exercise ST segment	Major vessels colored by flourosopy

that: 0 = normal; 1 = fixed defect; 2 = reversable defect

Heart Disease Test Result

5) PARKINSON'S DISEASE PREDICTION UI:

Diagnosis360

Symptom Checker

Diabetes Prediction

Heart Disease Prediction

Parkinson's Disease Prediction

Breast Cancer Prediction

Parkinson's Disease Prediction using ML

MDVP(Hz)	MDVP(Hz)	MDVP(Hz)	MDVP(%)	MDVP(Abs)
12	13	0.221	0.33	311
MDVP	MDVP	Jitter	MDVP	MDVP(dB)
0.1313	0.132	0436	34	532
Shimmer	Shimmer	MDVP	Shimmer	NHR
5	675	532	235	253
HNR	RPDE	DFA	spread1	spread2
65	234	35	0.6	0.46
D2	PPE			
463	35			

Parkinson's Test Result

The person has Parkinson's disease

6) BREAST CANCER PREDICTION UI:

Diagnosis360

Symptom Checker

Diabetes Prediction

Heart Disease Prediction

Parkinson's Disease Prediction

Breast Cancer Prediction

Breast Cancer Prediction using ML

Clump Thickness	Uniformity of Cell Size	Uniformity of Cell Shape
Marginal Adhesion	Single Epithelial Cell Size	Bare Nuclei
Bland Chromatin	Normal Nucleoli	Mitoses

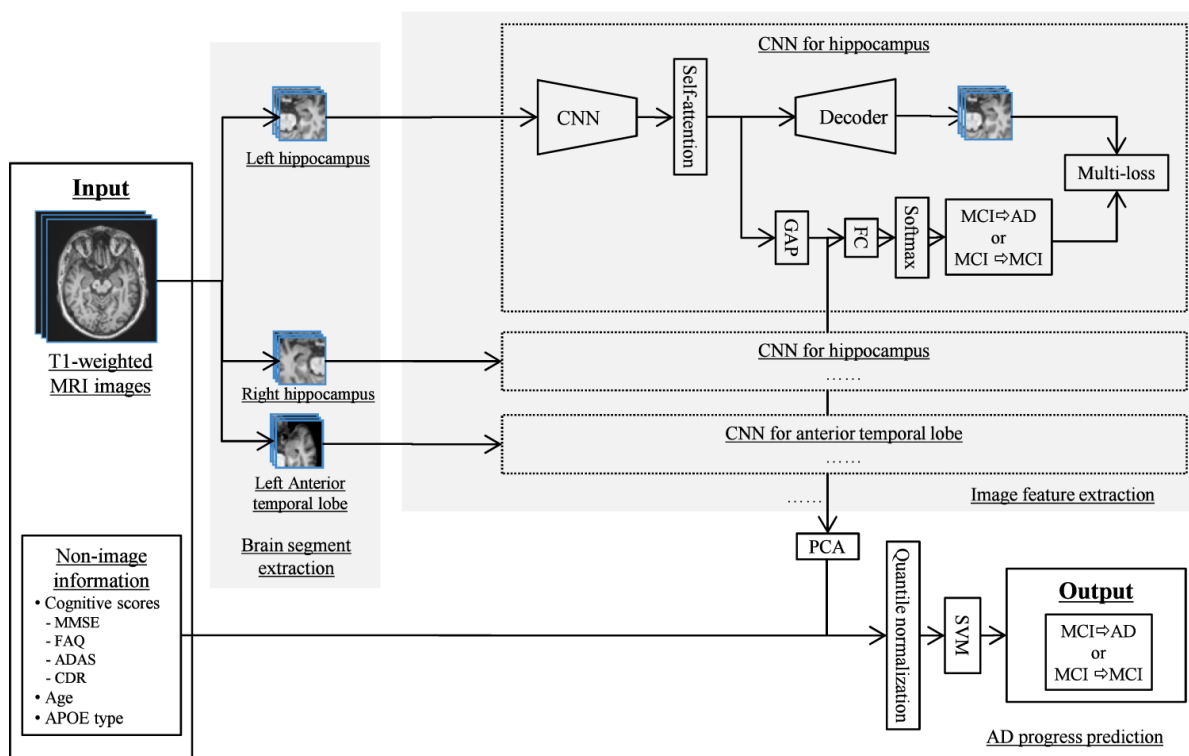
Breast Cancer Test Result

Conclusion:

The primary goal of our project is to develop a system that could accurately predict several diseases. The user doesn't have to navigate via several websites thanks to this project, which also saves time. Early diagnosis of diseases can both lengthen your life and spare you from financial hardship. To attain the highest level of accuracy, we have used a variety of machine learning techniques, including Random Forest, XGBoost, and K closest neighbour. We are submitting a new and innovative model using Machine Learning so that we can help and give something back to our society. Through our project we hope that we help a lot of patient and Doctors as well.

Future Scope:

- In the future, we can incorporate more illnesses into the current API.
- To lower the risk of death, we can aim to increase prediction accuracy.
- Make the system as user-friendly as possible and offer a chatbot for common questions.
- We are also planning to add a feature where the user can upload pics for prediction of allergies and skin disease.



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