

DISEASE DIAGNOSIS USING MACHINE LEARNING

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ABSTRACT

A diagnosis is made based on medical signs and patient-reported symptoms, rather than diagnostic tests. The whole program is done and executed in Python language mainly using file operations in Python and HTML for creating webpages. This project mainly deals with how the diagnosis is made by listing out all the symptoms faced by the patients from the given diseases on the website.

This project gives you the list of seven diseases spread over our country according to the WHO (World Health Organization). The seven diseases are Heart, Diabetics, Breast Cancer, Liver, Kidney, Malaria, and Pneumonia. So based on the patient gives details under a particular disease, it finds out whether the patient is having the disease or not. If the person is suffering from that particular disease it shows that person is positive with that particular disease and shows a warning that the person should consult the doctor. We also created a user-based login page where the user can create his login page, thereby creating an account that person can fill in the details. If the person is registered then that person can log in directly.

The health diagnosis website was designed by using web technology and languages such as HTML & CSS and python respectively.

*. If the person is not suffering from that particular disease and shows the result as great you are healthy.....!

* If a person is suffering from a particular disease then it shows the result as please consult the doctor.....!

1. INTRODUCTION

The topic is Health Diagnosis Using Machine Learning

A diagnosis is made based on medical signs and patient-reported symptoms, rather than diagnostic tests. The whole program is done and executed in Python language mainly using file operations in Python and HTML for creating webpages. This project mainly deals with how the diagnosis is made by listing out all the symptoms faced by the patients from the given diseases on the website.

The health diagnosis website was designed by using web technology and languages such as HTML & CSS and python respectively.

- *. If the person is not suffering from that particular disease and shows the result as great you are healthy....!
- * If a person is suffering from a particular disease then it shows the result as please consult the doctor.....!
- * Here we'll be having a login/signup page where a person can enroll on our website.
- * There is a homepage where a person can check the diseases on our website and can enter his symptoms for the particular disease.
- * By our website, the patient can save his time and Energy.
- * The person can stay safe and know whether he is suffering from a particular disease or not.

This project gives you the list of seven diseases spread over our country according to the WHO(World Health Organization). The seven diseases are Heart, Diabetics, Breast Cancer, Liver, Kidney, Malaria, and Pneumonia. So based on the patient gives details under a particular disease, it finds out whether the patient is having the disease or not. If the person is suffering from that particular disease it shows that person is positive with that particular disease and shows a warning that the person should consult the doctor. We also created a user-based login page where the user can create his login page, thereby creating an account that person can fill in the details. If the person is registered then that person can log in directly.

2 LITERATURE SURVEY

In a project report, a literature survey or literature review is the portion that highlights the numerous analyses and research done in the topic of your interest, as well as the results already published, while taking into account the project's many aspects and scope. It is the most significant portion of your report because it directs your research in the right way. It assists you in determining a goal for your analysis, resulting in your problem statement.

2.1 EXISTING SYSTEM

The current method can only diagnose one ailment. It can only assist in the analysis of one condition that they have already been diagnosed with. It's like it, but there's only one sickness, and the patient should fill out the form to find out if they have it or not.

2.2 PROPOSED SYSTEM

It is helping patients realize what are the possible diseases they are suffering from or trying to make them beware of the disease they may suffer with. They may also have them already. As going to the doctor immediately may not be possible, they can check in the possible disease they may suffer with by login into our page. With this system, they can also know if the disease is serious or not. The person should enter their symptoms in the given form. They should enter

under the disease that they might have or have been suffering from. This project is helpful for patients to try to create awareness among them with instant access.

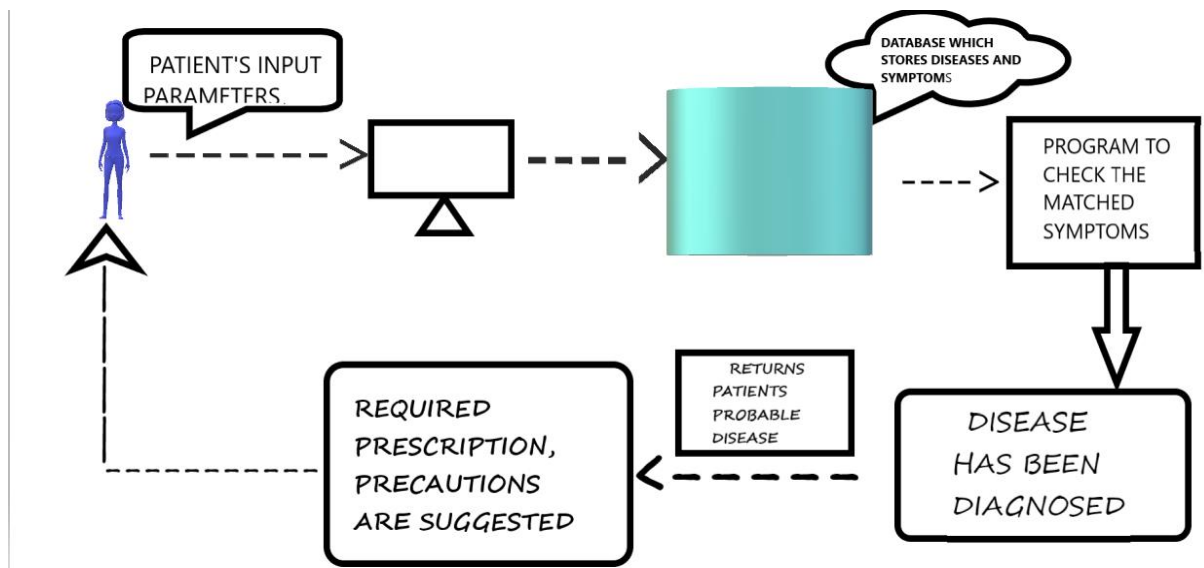


Fig.1. Architecture Diagram of the proposed system

3.1 Sample Code

```

from flask import Flask, render_template, request, flash, redirect
import pickle
import numpy as np
from PIL import Image
from tensorflow.keras.models import load_model

app = Flask(__name__)

def predict(values, dic):
    if len(values) == 8:
        model = pickle.load(open('models/diabetes.pkl', 'rb'))
        values = np.asarray(values)
        return model.predict(values.reshape(1, -1))[0]
    elif len(values) == 26:
        model = pickle.load(open('models/breast_cancer.pkl', 'rb'))
        values = np.asarray(values)
        return model.predict(values.reshape(1, -1))[0]
    elif len(values) == 13:
        model = pickle.load(open('models/heart.pkl', 'rb'))
        values = np.asarray(values)
        return model.predict(values.reshape(1, -1))[0]
    elif len(values) == 18:
        model = pickle.load(open('models/kidney.pkl', 'rb'))
        values = np.asarray(values)
        return model.predict(values.reshape(1, -1))[0]
    elif len(values) == 10:
        model = pickle.load(open('models/liver.pkl', 'rb'))
        values = np.asarray(values)
        return model.predict(values.reshape(1, -1))[0]

@app.route("/")
def home():
    return render_template('login.html')

@app.route("/logincheck", methods=['GET', 'POST'])
def logincheck():
    if request.method == "POST":
        username = request.form['username']

```

3.2 PURPOSE

The major goal of this initiative is to help patients understand what diseases they may be suffering from or to make them aware of diseases they may be suffering from. They might already have them. Making a webpage for a user to check and identify their problems. If required, issue a warning to the patient to prevent future deterioration.

The major motivation for completing this project is that it is difficult to get an appointment with a doctor on the spot after experiencing any symptoms or receiving the results of diagnostic tests. Some people do not get an appointment even after waiting in the waiting area for a long

time. It is a complete waste of time. It can be difficult when dealing with youngsters and the elderly. As a result, our website can help them figure out what illness they have. Or whether they are suffering from the disease.

3.3 SCOPE

This project is helpful for patients to try to create awareness among them with instant access. As going to the doctor immediately may not be possible, they can check in the possible disease they may suffer with by login into our page. With this system, they can also know if the disease is serious or not. The technological advancements come in handy for health purposes.

The diagnostic process proceeds as follows: First, a patient experiences a health problem. The patient is likely the first person to consider his or her symptoms. The person should enter their symptoms in the given form. They should enter under the disease that they might have or have been suffering from. This helps the patients to get to know the disease they are suffering from. With this system, they can also know if the disease is serious or not.

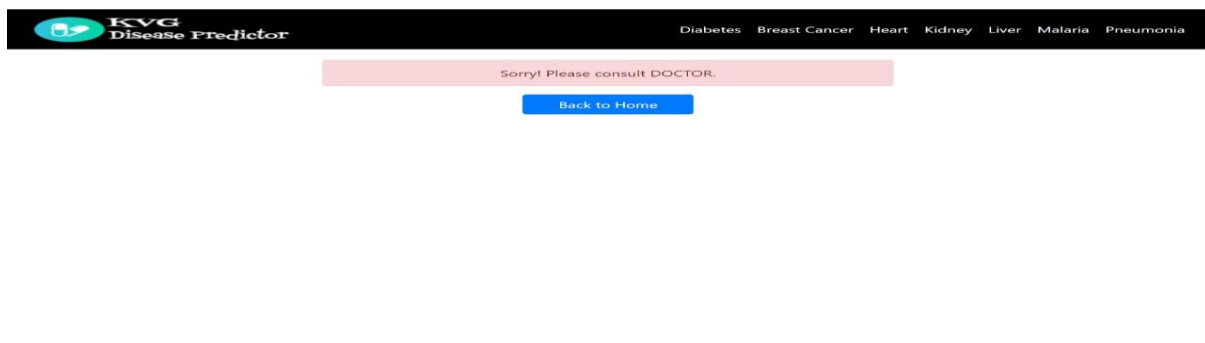
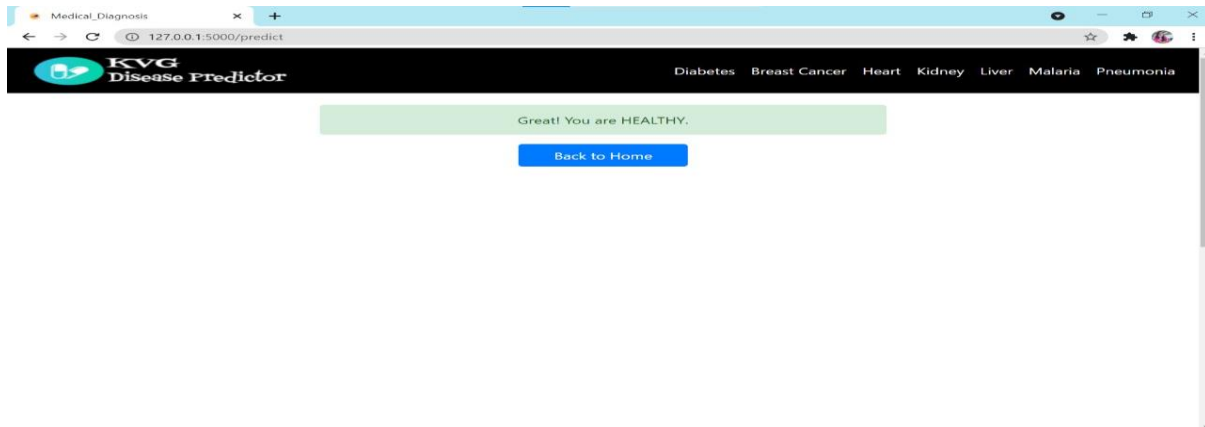
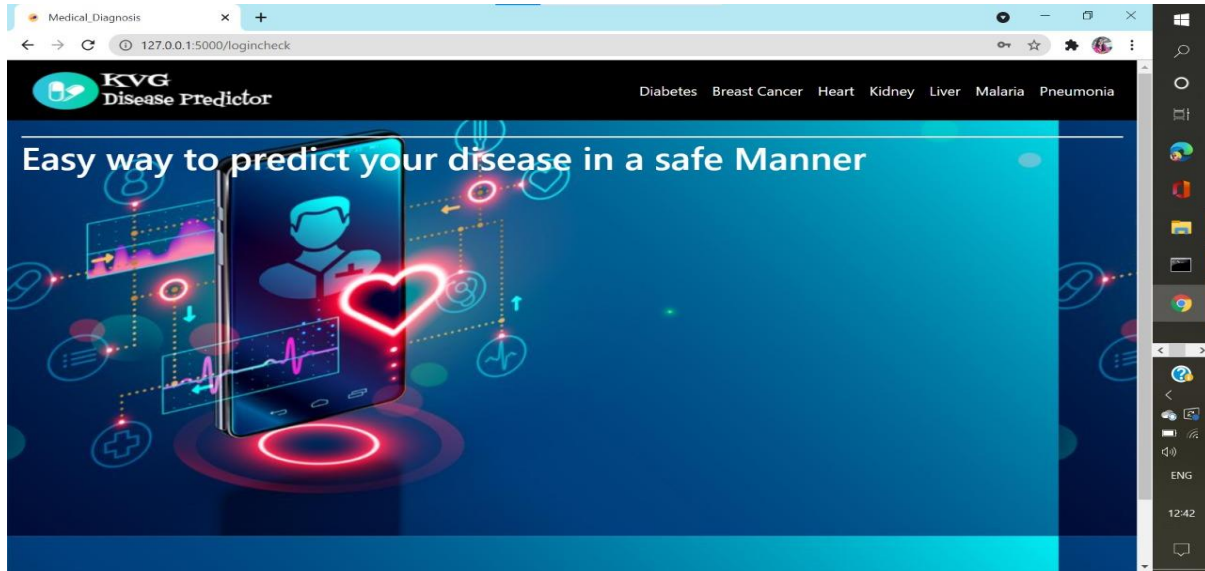
3.4 IMPLEMENTATION

All activities that take place to transition from the old to the new system are included in implementation. The old system uses manual processes that are much more complex to use than the suggested method. To deliver a reliable system that meets the organization's requirements, proper implementation is required.

RESULT ANALYSIS

PC/Laptop and RAM are the hardware requirements in this paper (minimum of 4GB). Python Language, Jupyter Notebook (IDE), and Pandas, NumPy, learn, and matplotlib are the software requirements utilised in this paper.





The screenshot shows the 'Diabetes Predictor' page of the KVG Disease Predictor application. The browser address bar shows '127.0.0.1:5000/diabetes'. The navigation menu includes 'Diabetes', 'Breast Cancer', 'Heart', 'Kidney', 'Liver', 'Malaria', and 'Pneumonia'. The main content area is titled 'Diabetes Predictor' and contains a form with the following input fields and labels:

- Number of Pregnancies eg. 0
Number of times pregnant
- Glucose (mg/dL) eg. 80
Plasma glucose concentration a 2 hours in an oral glucose tolerance test
- Blood Pressure (mmHg) eg. 80
Diastolic blood pressure (mm Hg)
- Skin Thickness (mm) eg. 20
Triceps skin fold thickness (mm)
- Insulin Level (IU/mL) eg. 80
2-Hour serum insulin (mu U/ml)
- Body Mass Index (kg/m²) eg. 23.1
Body mass index (weight in kg/(height in m)²)

The screenshot shows the 'Breast Cancer Predictor' page of the KVG Disease Predictor application. The browser address bar shows '127.0.0.1:5000/cancer'. The navigation menu includes 'Diabetes', 'Breast Cancer', 'Heart', 'Kidney', 'Liver', 'Malaria', and 'Pneumonia'. The main content area is titled 'Breast Cancer Predictor' and contains a grid of input fields with descriptive labels:

- radius_mean: mean of distances from center to points on the perimeter
- texture_mean: standard deviation of gray-scale values
- perimeter_mean: mean size of the core tumor
- area_mean
- smoothness_mean: mean of local variation in radius lengths
- compactness_mean: mean of perimeter² / area - 1.0
- concavity_mean: mean of severity of concave portions of the contour
- concave_points_mean: mean for number of concave portions of the contour
- symmetry_mean
- radius_se
- perimeter_se
- area_se
- compactness_se
- concavity_se
- concave_points_se
- fractal_dimension_se
- radius_worst
- texture_worst

The screenshot shows the 'Heart Disease Predictor' page of the KVG Disease Predictor application. The browser address bar shows '127.0.0.1:5000/heart'. The navigation menu includes 'Diabetes', 'Breast Cancer', 'Heart', 'Kidney', 'Liver', 'Malaria', and 'Pneumonia'. The main content area is titled 'Heart Disease Predictor' and contains a form with the following input fields and labels:

- age: age in years eg: 29-77
- sex(Male:1, female:0)
- chest pain type: 0 to 3 as worst
- resting blood pressure in mi
- serum cholestorl in mg/dl: serum cholestorl in mg/dl
- fasting blood sugar 120 mg, (fasting blood sugar 120 mg/dl) (1 = true; 0 = false)
- resting electrocardiographic: 0, 1
- maximum heart rate achieve: eg: 71- 202
- exercise induced angina (1 -
- ST depression induced by ex:
- the slope of the peak exerci: 3 = normal; 6 = fixed defect
- number of major vessels (0-

A 'Predict' button is located at the bottom of the form.

Medical_Diagnosis x +
127.0.0.1:5000/kidney

KVG Disease Predictor Diabetes Breast Cancer Heart Kidney Liver Malaria Pneumonia

Kidney Disease Predictor

<input type="text" value="age"/> Age(numerical) in years	<input type="text" value="bp"/> Blood Pressure(numerical) in mm/Hg	<input type="text" value="al"/> Albumin(nominal)-(0,1,2,3,4,5)
<input type="text" value="su"/> Sugar(nominal)-(0,1,2,3,4,5)	<input type="text" value="rbc"/> Red Blood Cells(nominal)-(normal,abnormal)	<input type="text" value="pc"/> Pus Cell (nominal)-(normal,abnormal)
<input type="text" value="pcc"/> Pus Cell clumps(nominal)-(present,notpresent)	<input type="text" value="ba"/> Bacteria(nominal)-(present,notpresent)	<input type="text" value="bgr"/> Blood Glucose Random(numerical) in mgs/dl
<input type="text" value="bu"/> Blood Urea(numerical) in mgs/dl	<input type="text" value="sc"/> Serum Creatinine(numerical) in mgs/dl	<input type="text" value="pot"/> Potassium(numerical) in mEq/L
<input type="text" value="wc"/> White Blood Cell	<input type="text" value="htn"/> Hypertension(nominal)-(yes,no)	<input type="text" value="dm"/> Diabetes Mellitus(nominal)-

Medical_Diagnosis x +
127.0.0.1:5000/liver

KVG Disease Predictor Diabetes Breast Cancer Heart Kidney Liver Malaria Pneumonia

Liver Disease Predictor

<input type="text" value="Age"/>	<input type="text" value="Total Bilirubin"/>
<input type="text" value="Direct Bilirubin"/>	<input type="text" value="Alkaline Phosphotase"/>
<input type="text" value="Alamine Aminotransferase"/>	<input type="text" value="Aspartate Aminotransferase"/>
<input type="text" value="Total Protiens"/>	<input type="text" value="Albumin"/>
<input type="text" value="Albumin and Globulin Ratio"/>	<input type="text" value="Gender(Male: 1, Female: 0)"/>

Medical_Diagnosis x +
127.0.0.1:5000/pneumonia

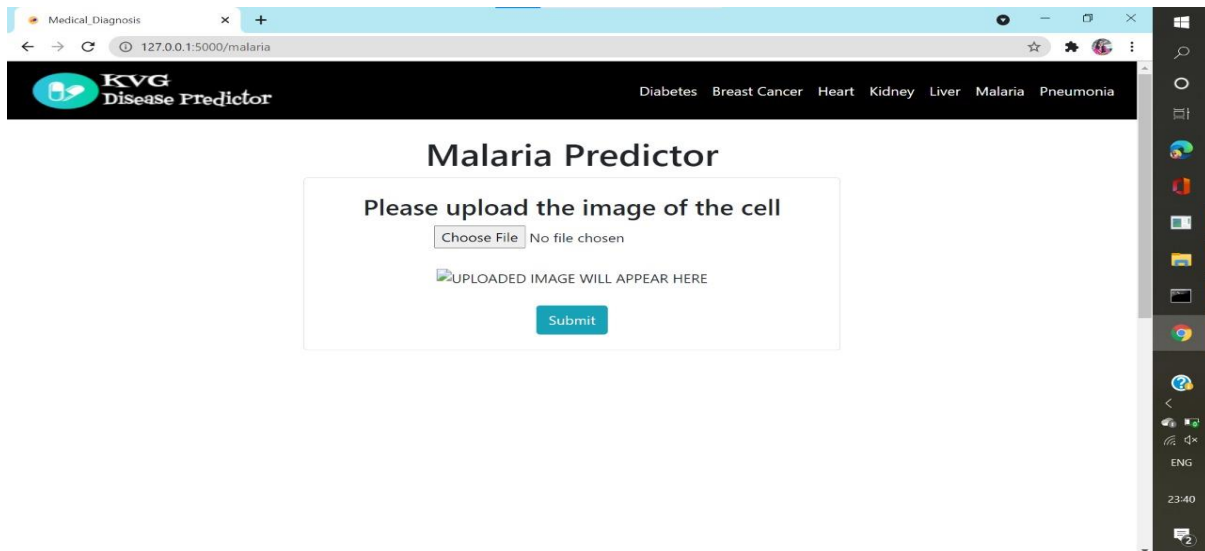
KVG Disease Predictor Diabetes Breast Cancer Heart Kidney Liver Malaria Pneumonia

Pneumonia Predictor

Please upload the X-Ray of Person

No file chosen

UPLOADED IMAGE WILL APPEAR HERE



CONCLUSION AND FUTURE SCOPE

Conclusion

- Disease diagnosis helps the patient to the immediate knowledge of which disease they may suffer with.
- This helps save time by going to the preferred doctor with a given warning.
- We hope our current project helps people in general with their well-being.
- It is much more useful for old-age people. Through this website, they can diagnose their disease easily.

Future scope

- Healthcare is the only industry that constantly deals with emergencies, and technology improvements are especially useful in this field.
- The healthcare industry's backbone is improved services for both indoor and outdoor patients.
- Traditionally, physicians or doctors used a risk calculator to calculate the potential of illness development. • The modern approach to healthcare aims to prevent disease with early intervention rather than go for treatment after diagnosis.

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