DETECTING PARKINSON'S DISEASE

Using IBM Watson Machine Learning Model

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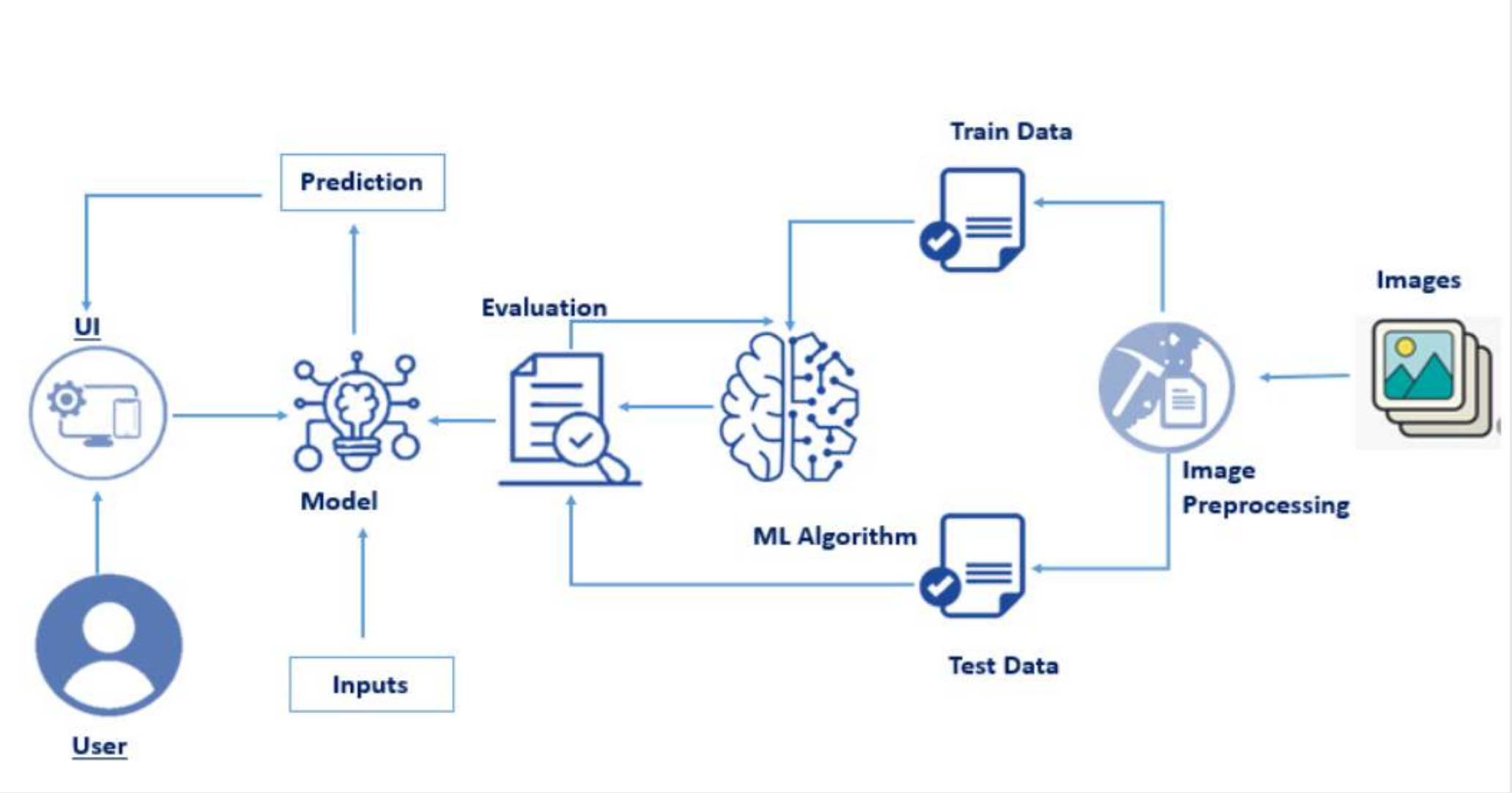
INTRODUCTION

- More than 10 million people are living with Parkinson's Disease worldwide, according to the Parkinson's Foundation.
- While Parkinson's cannot be cured, early detection along with proper medication can significantly improve symptoms and quality of life.
- The researchers found that the drawing speed was slower and the pen pressure is lower among Parkinson's patients.
- One of the indications of Parkinson's is tremors and rigidity in the muscles, making it difficult to draw smooth spirals and waves.
- It is possible to detect Parkinson's disease using the drawings alone instead of measuring the speed and pressure of the pen on paper.

PROBLEM STATEMENT:

- *TO DETECT PARKINSON'S DISEASE BY QUANTIFING THE SPIRALS AND WAVES DRAWN BY THEM.*
- Our goal is to quantify the visual appearance(using HOG method) of these drawings and then train a machine learning model to classify them.
- In this project, We are using, Histogram of Oriented Gradients (HOG) image descriptor along with a Random Forest classifier to automatically detect Parkinson's disease in hand-drawn images of spirals and waves.

Architecture:



STEPS FOR BUILDING THE MODEL::

DATA COLLECTION:

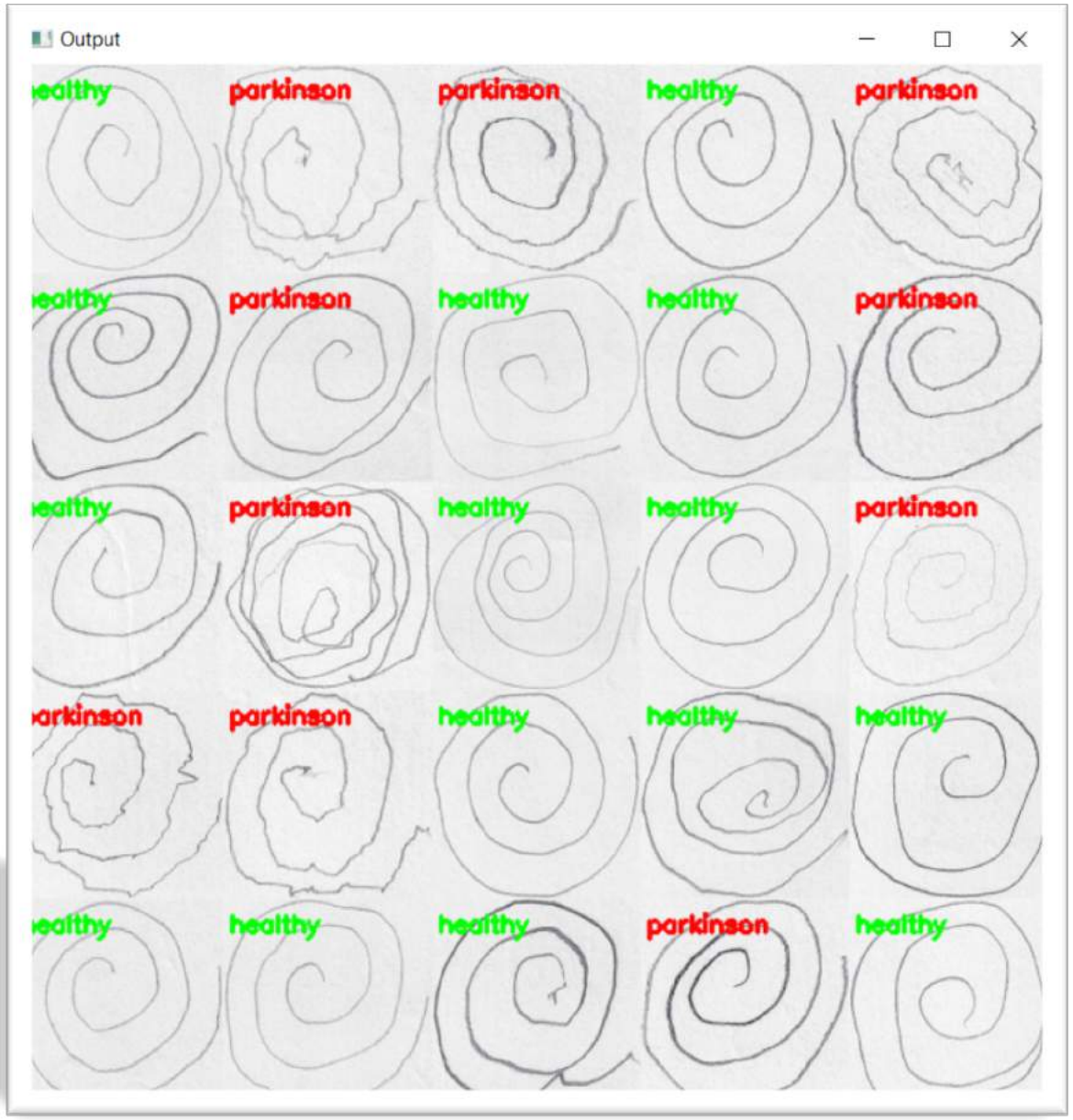
- Collect the required datasets of spirals and waves drawn by the Parkinson's Diseased effected people.

IMAGE PREPROCESSING:

- Load the required libraries for image processing
- Load the collected data sets and quantify the images to the required size.

MODEL BUILDING:

- Convert the data into binary format using Label Encoding
- Now split the sata into train and test and train the model
- Test the model using required cv2 and hog libraries
- Now save the model as pkl file



Output of the model building:

- This is the output of the model evaluation
- The output is displayed in the app used for model building
- (eg:spyder,jupyter notebook)

Application Building:

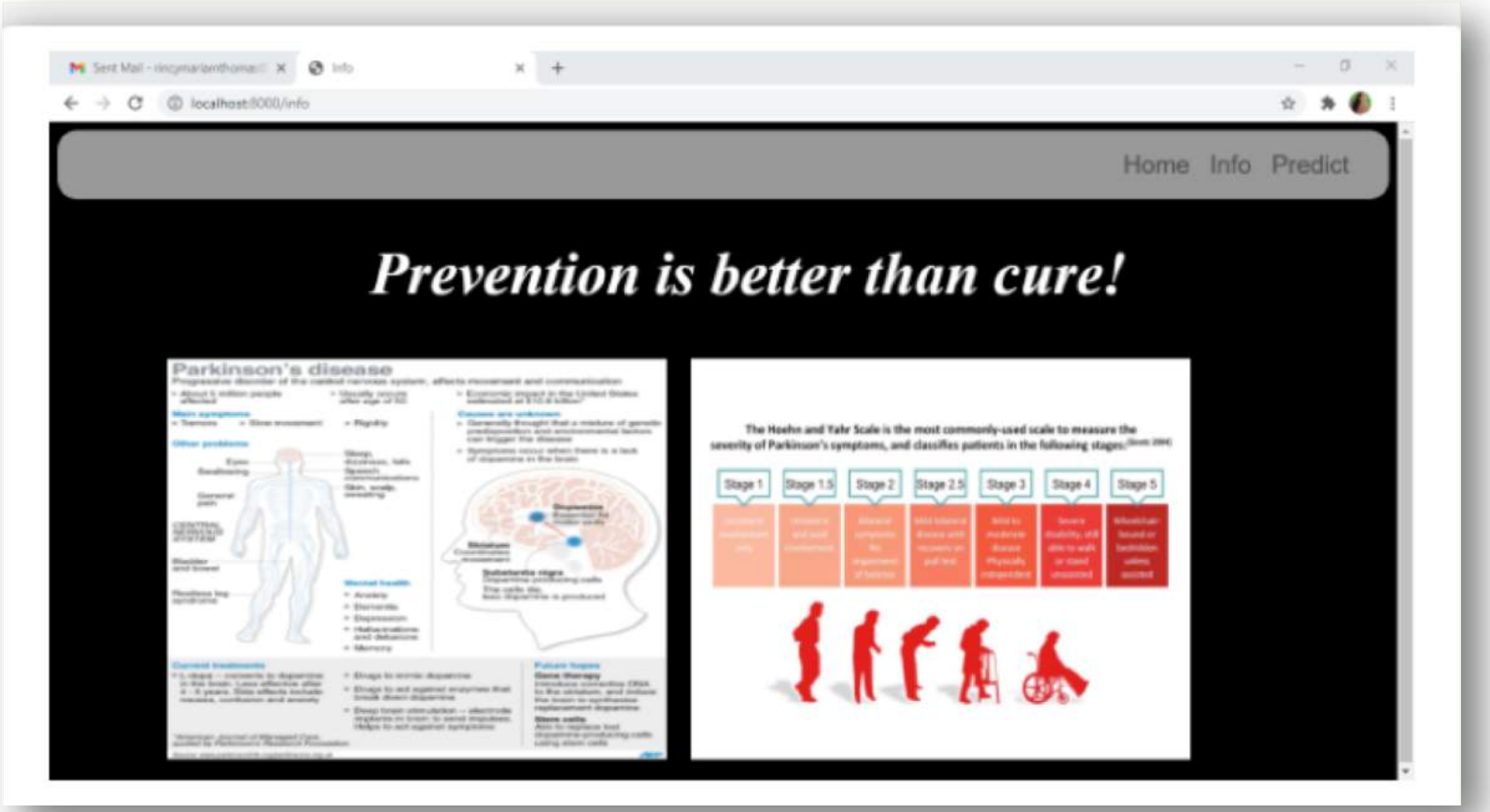
- Build the html pages for the web pages
- Build the css for styling
- Build the python code and connect the HTML and CSS files to the python code
- Save the python code
- Run the python code

Running the Python code:

- Open the anaconda prompt
- Navigate to the folder where your python code is saved
- Now type python file_name.py
- Python code will run and if there are no errors then the app.py will run in the port you have given in the code
- Now in the browser type localhost:port_number given in the code
- The web application for your trained model will open
- Now predict the output by giving new patient's observation images

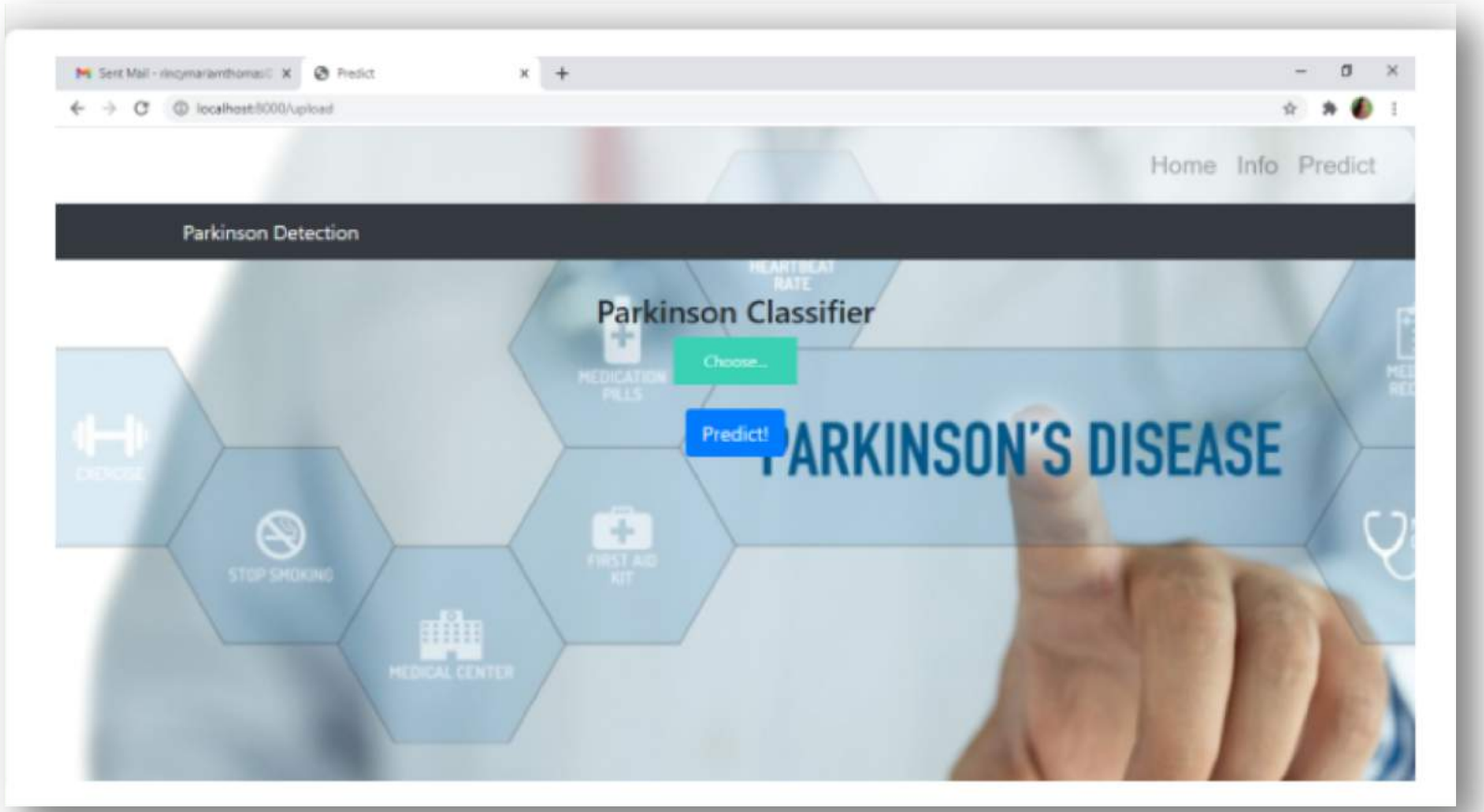
Home page

- This will be the demo home page when you redirect to the localhost port



Info page

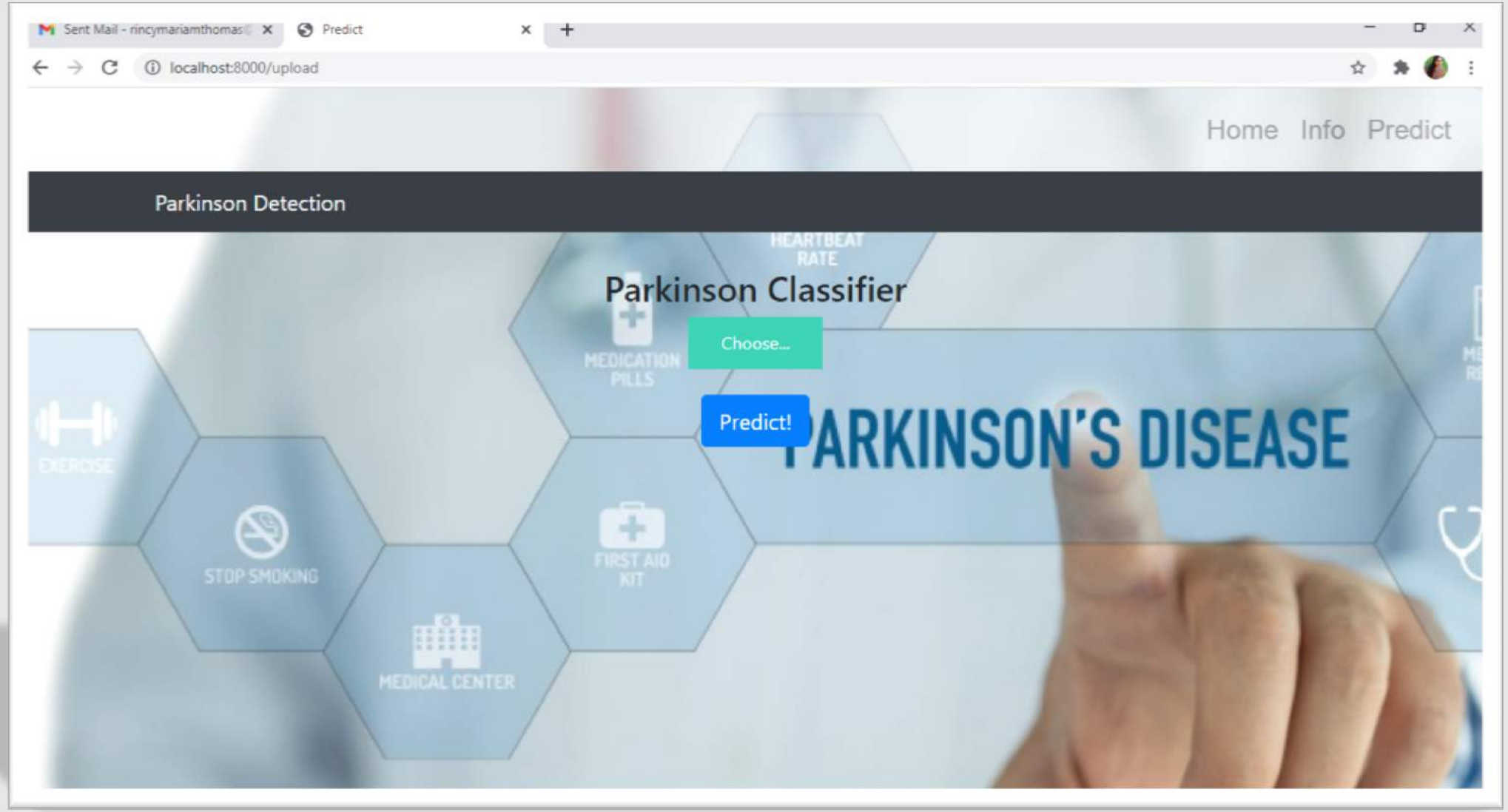
- When you click info on the hover panel in your home page this page will be opened



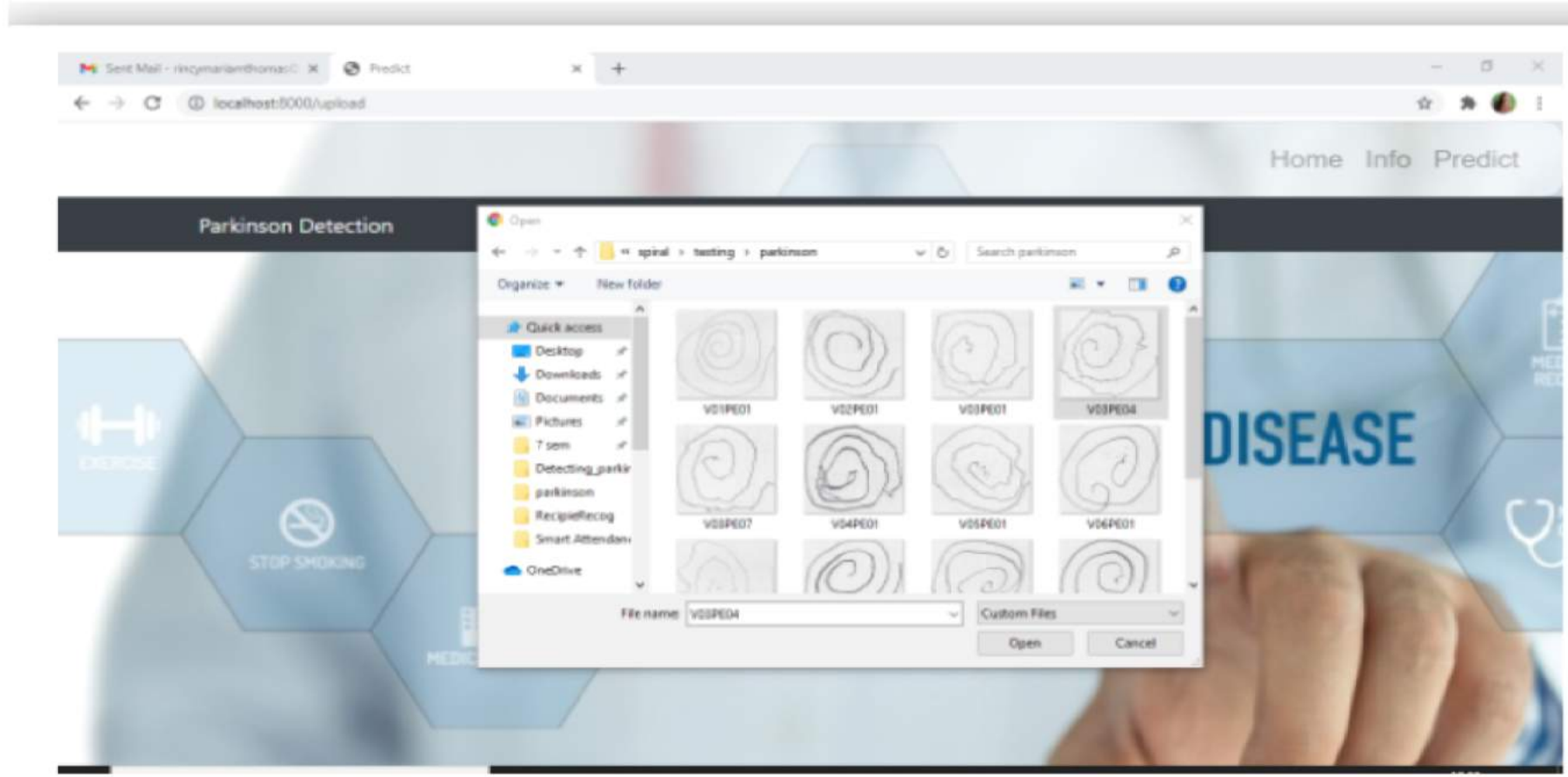
Predict page

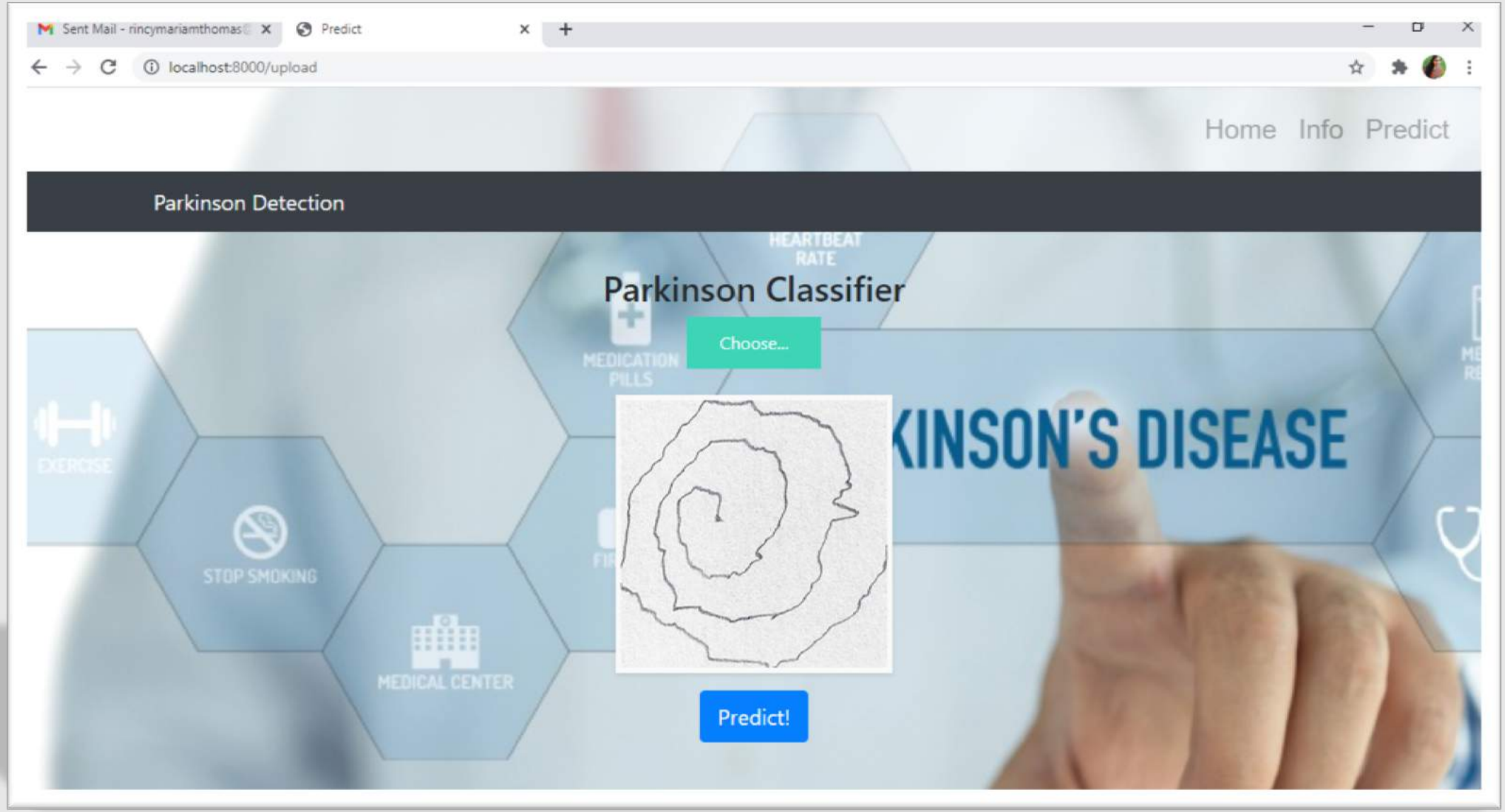
- This is predict page .
- When you click on predict on the hover panel at the top this will be opened
- In this page you will give the new patient's observation images and predict whether that patient is healthy or parkinson

Running the app:

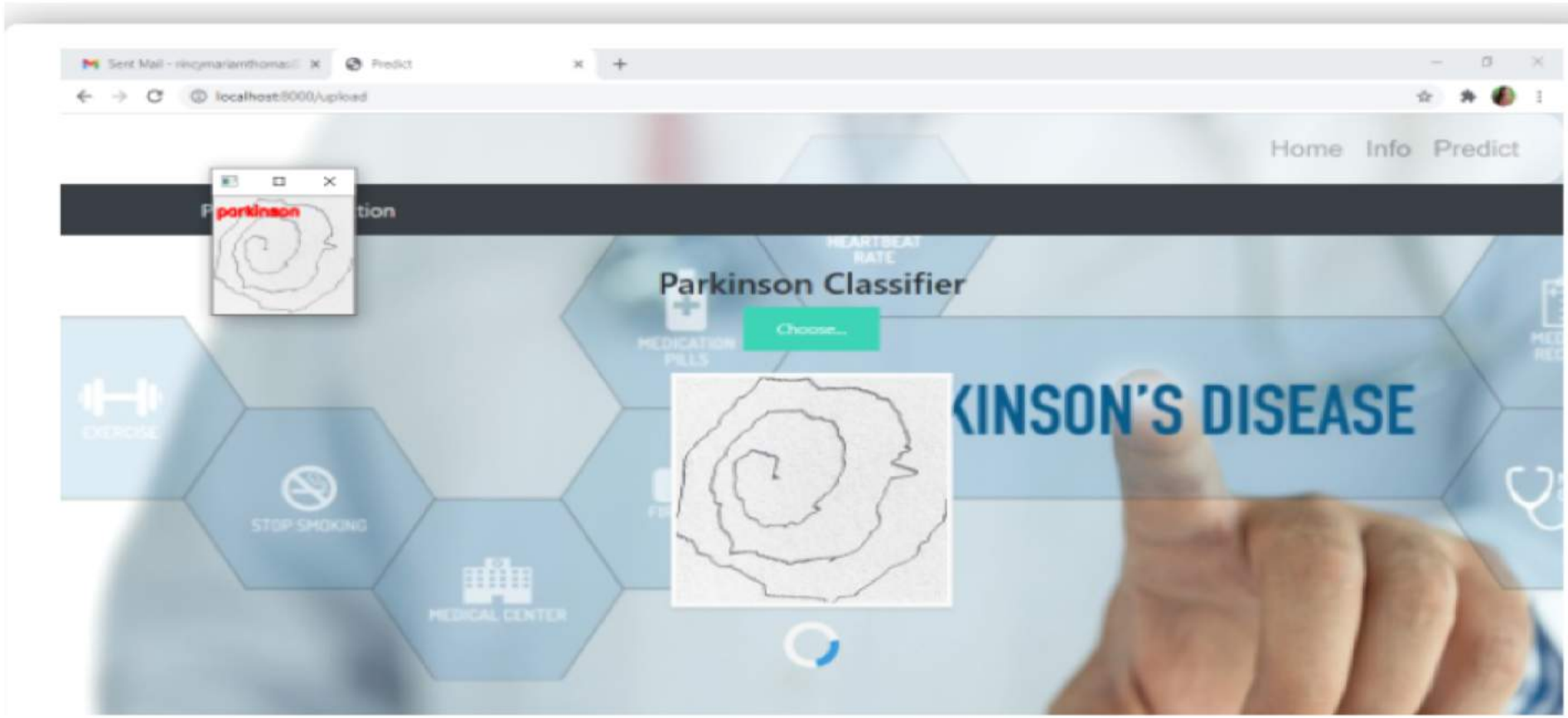


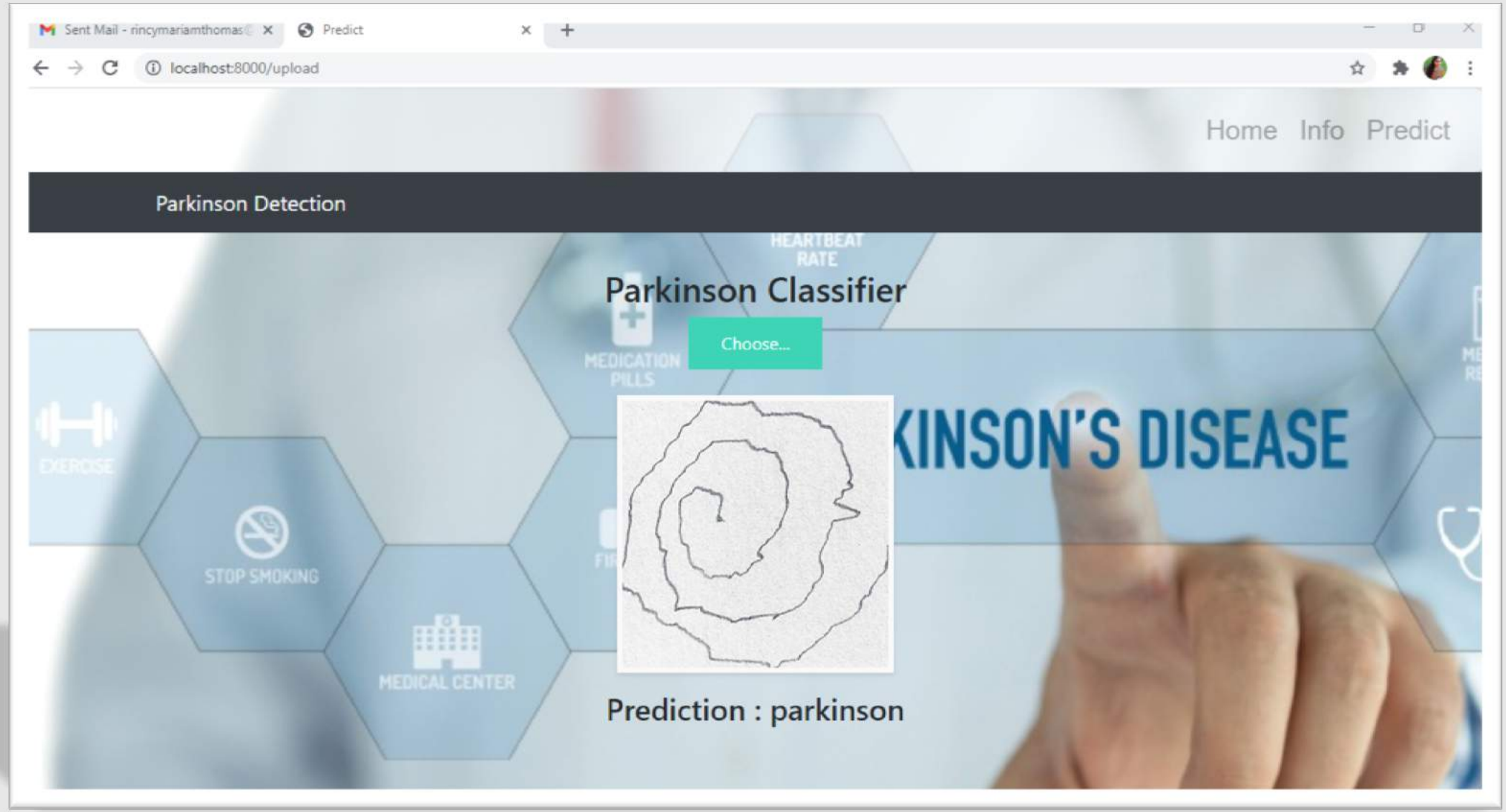
Click on choose and select the image and click on the “Predict!” button




Sent Mail - rincymariamthomas
Predict
localhost:8000/upload
Home
Info
Predict
Parkinson Detection
Parkinson Classifier
Choose...
Predict!
MEDICATION PILLS
HEARTBEAT RATE
EXERCISE
STOP SMOKING
MEDICAL CENTER
KINSON'S DISEASE

Finally, the output is displayed on predict.html




Sent Mail - rincymariamthomas
Predict
localhost:8000/upload
Home
Info
Predict
Parkinson Detection
Parkinson Classifier
Choose...
Prediction : parkinson

- ***Based on the result you can predict whether a person has Parkinson's disease or not.***

- ***And Finally,deploy your app on IBM cloud for https:// link***

- ***PROJECT DEMO VIDEO →>>***
  ---→https://us04web.zoom.us/j/74482083811?pwd=b2R1TlJrNVNIN01uQXNrdmFHNmd5QT09

- ***We cannot cure this disease but we can predict the disease based on the symptoms and proper care and treatment can be given to patients and prevent it.***

PREVENTION IS BETTER THAN CURE

THANK YOU