DEEPCAREX: AI BASED HEALTHCARE SYSTEM

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INTRODUCTION

Effective diagnosis of a disease is a significant need on a large scale. Some of these problems can be resolved by researchers, doctors, and patients thanks to machine learning (ML), a branch of artificial intelligence (AI).

Artificial intelligence (AI) in the medical field largely focuses on creating algorithms and methods to assess if a systems behaviour in diagnosing diseases is accurate. The sickness or disorders that account for a persons symptoms and indicators are identified by a medical diagnosis.

OBJECTIVES

The objectives of this project are:

1. One of the primary objectives is to identify diseases by analyzing symptoms.

2. Output will be generated based on these parameters and a person can also choose whether they wish to save their data or not.

3. Deep learning and machine learning models are used to distinguish between symptoms that are similar but could be caused by different diseases. By taking into account a variety of symptoms and their combinations, this purpose is to give precise and targeted outcome.

4. Giving the user choice to save the data for further use.

5. Receive feedback from users if any. Provision of weekly newsletter and other healthcare information.

METHODOLOGY

- **Data collection:** Data was collected from online resources. Mostly from Kaggle.com

- **Pre-processing:** Pre-processing was done on datasets that required it. Various data cleaning and encoding techniques were used.

METHODOLOGY

- **Model development**: Various machine learning models and ensemble models were used to predict the outcome for diseases. Some of the algorithms used in this project are XGBoost, Random Forest, Logistic Regression, CNN, etc. Transfer learning models like DenseNet201, ResNet152V2, and VGG19 were used.

- **Model Evaluation:** Evaluation metrics like accuracy, precision, recall and f1-score were used to evaluate the model performance.

EXPERIMENTAL SETUP

- Using HTML, Bootstrap and Flask, design 8 webpages were created for the diseases. Bootstrap offers a selection of JavaScript, CSS, and HTML building blocks that may be used to create web interfaces.

- Also, a sqlite3 database is added to store the information of the user.

TOOLS USED

IDE: Vscode, Jupyter Notebook

Platform: Anaconda

Browser: Microsoft Edge, Google browser (Tested On)

Languages: Python 3.9, HTML, CSS

Framework: Bootstrap v5.3.0-alpha, Tensorflow 2.9, Keras, Flask

Database: sqlite3

Libraries:

1. numpy
2. Pandas
3. scikit-learn
4. matplotlib
5. os
6. scipy
7. seaborn
8. Xgboost
9. joblib
10. pickle

FEATURES OF PROJECT

1. Home page with Register/Log-in.
2. Individual pages for each of the 8 diseases. The user can input the symptoms and get the r result as required.
3. On these pages, there is option to save one's data. This data will then be stored in database.
4. The result report will be displayed on the output page.
5. About Us page – where information in provided about this system.
6. Contact us page – To send queries.

INSTRUCTIONS TO RUN

1. Create the databses :

Navigate to : DeepCareX/Website/database

Run : database.py

Syntax : python3 database.py

2. Run The Application :

Navigate to : DeepCareX/Website

Run : main.py

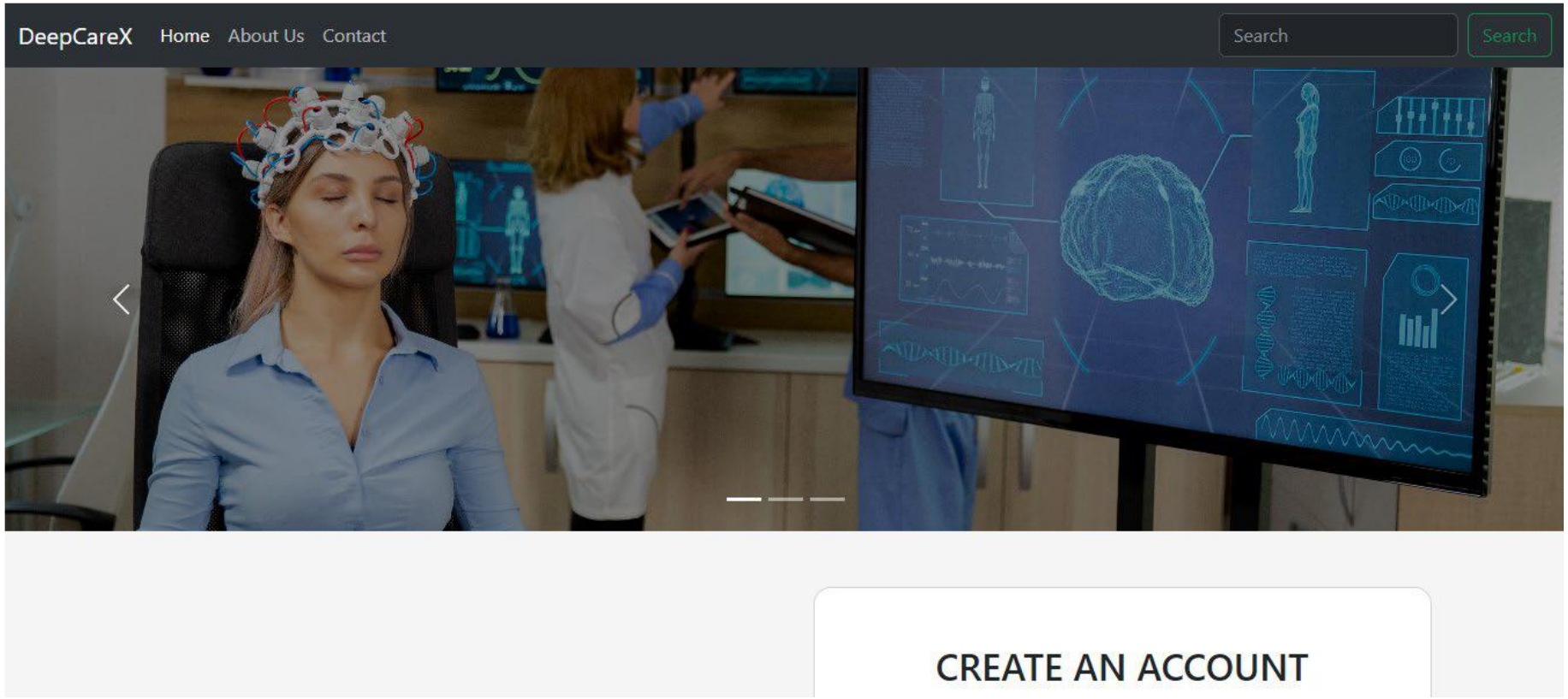
Syntax : python3 main.py

RESULTS

DISEASE	MODEL	TRAINING ACCURACY	TESTING ACCURACY
Breast Cancer	Random Forest	1	0.94
Diabetes	XGBoost Classifier	0.98	0.97
Hepatitis C	XGBoost Classifier	1	0.97
Heart Disease	Random Forest	1	0.99
Brain Tumor	VGG19	0.98	0.97
COVID-19	ResNet152V2	0.98	0.95
Alzheimer's	CNN	0.97	0.98
Kidney Disorder	CNN	0.99	0.97
Pneumonia	DenseNet201	0.98	0.83

USER INTERFACE OF SYSTEM

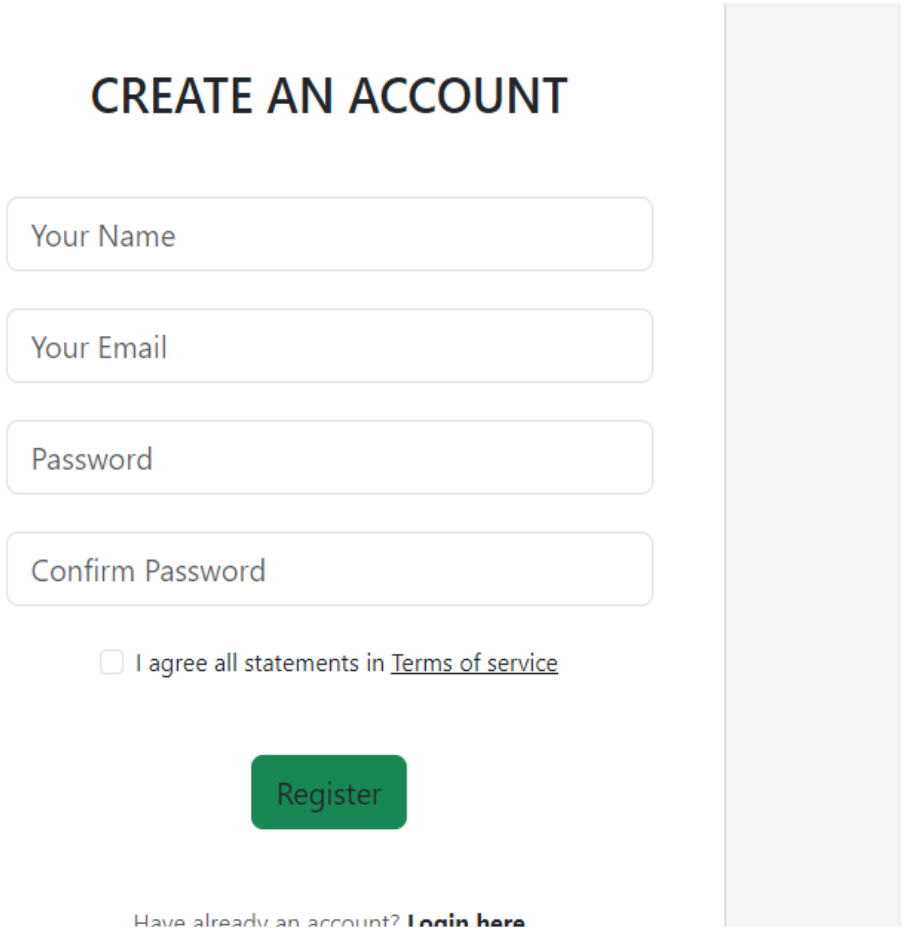
HOME PAGE

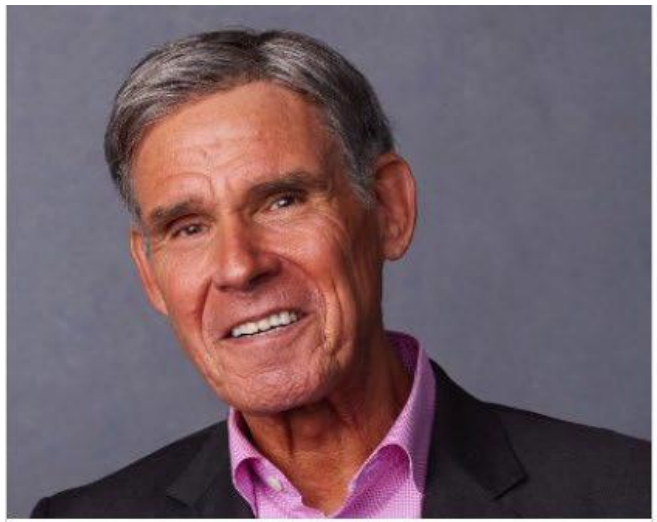


DeepCareX

One Step Ahead

Welcome to DeepCareX ,where we adhere to the philosophy that modern technology should be used in conjunction with caring treatment to enhance the lives of both patients and healthcare professionals. DeepCareX is a AI based heathcare system that will help you to generate report of your illness. We rely on your symptoms and past data to determine the result of your disease. We are using various pre-trained deep learning & machine learning models to get the result.





Dr. Eric Topol

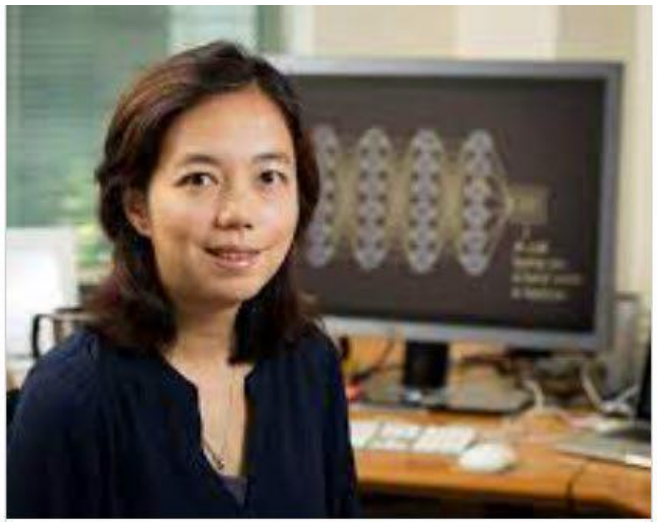
" The integration of artificial intelligence in healthcare will fundamentally change the way we practice medicine, and ultimately lead to better patient outcomes. "

Founder and Director, Scripps Research Translational Institute

Dr. Anthony Chang

"AI will empower doctors to focus on what they do best - treating patients - by doing what they do best - processing data."

Chief Intelligence and Innovation Officer at Children's Hospital of Orange County



Dr. Fei-Fei Li

" The greatest potential for AI is not replacing doctors, but rather augmenting their abilities and enabling them to focus on what they do best: providing compassionate and personalized care to their patients. "

Co-Director of the Stanford Institute for Human-Centered Artificial Intelligence.

ABOUT US

DeepCareX Home About Us Contact Search Search

About Us

We are, at our core, a group of passionate people that are committed to transforme the healthcare sector through the use of machine learning and deep learning.

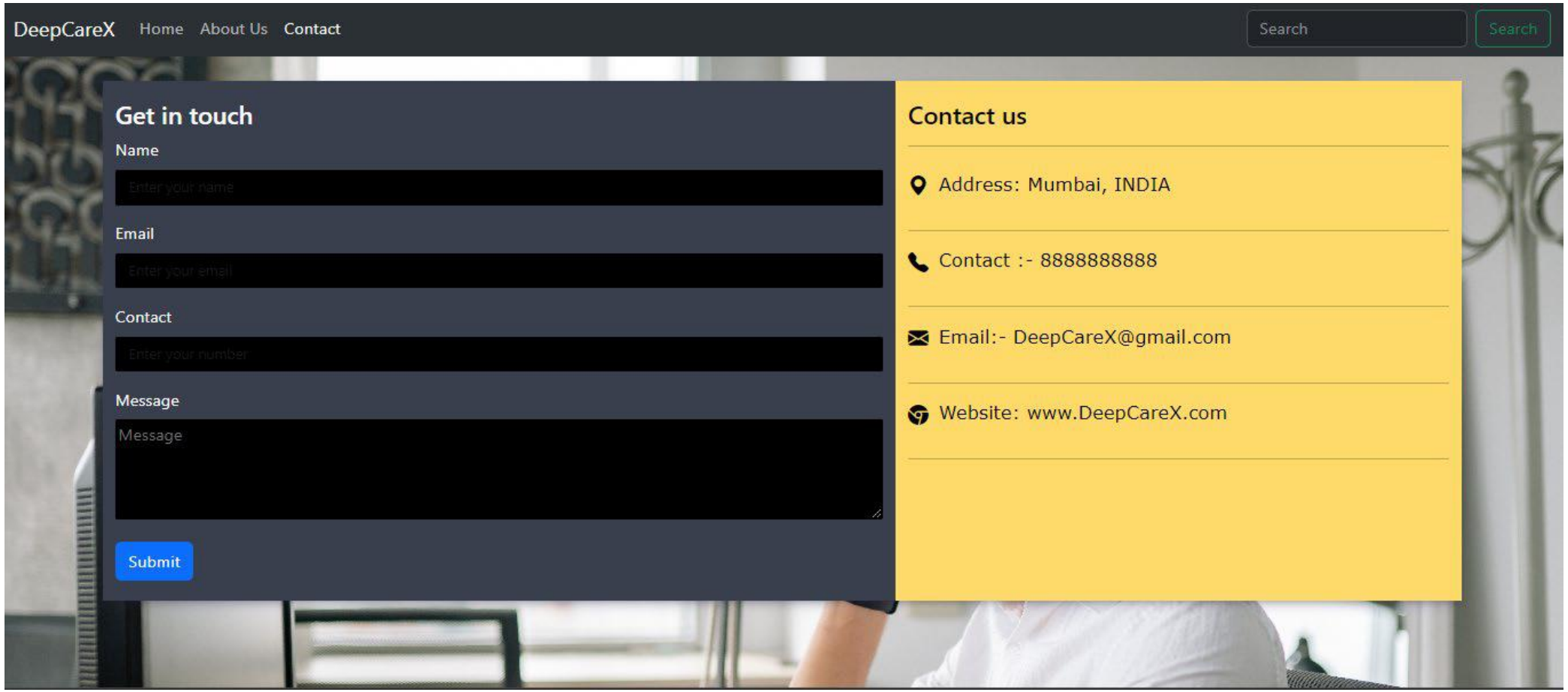
Our mission is to give healthcare professionals with the resources they need to offer patients with better, more individualised care while also arming people with the knowledge they need to make educated decisions about their health.

Our AI-powered products and services are created to be user-friendly, available, and efficient. We can assist you whether you're a patient looking for dependable health information or a healthcare professional wishing to improve your practise.

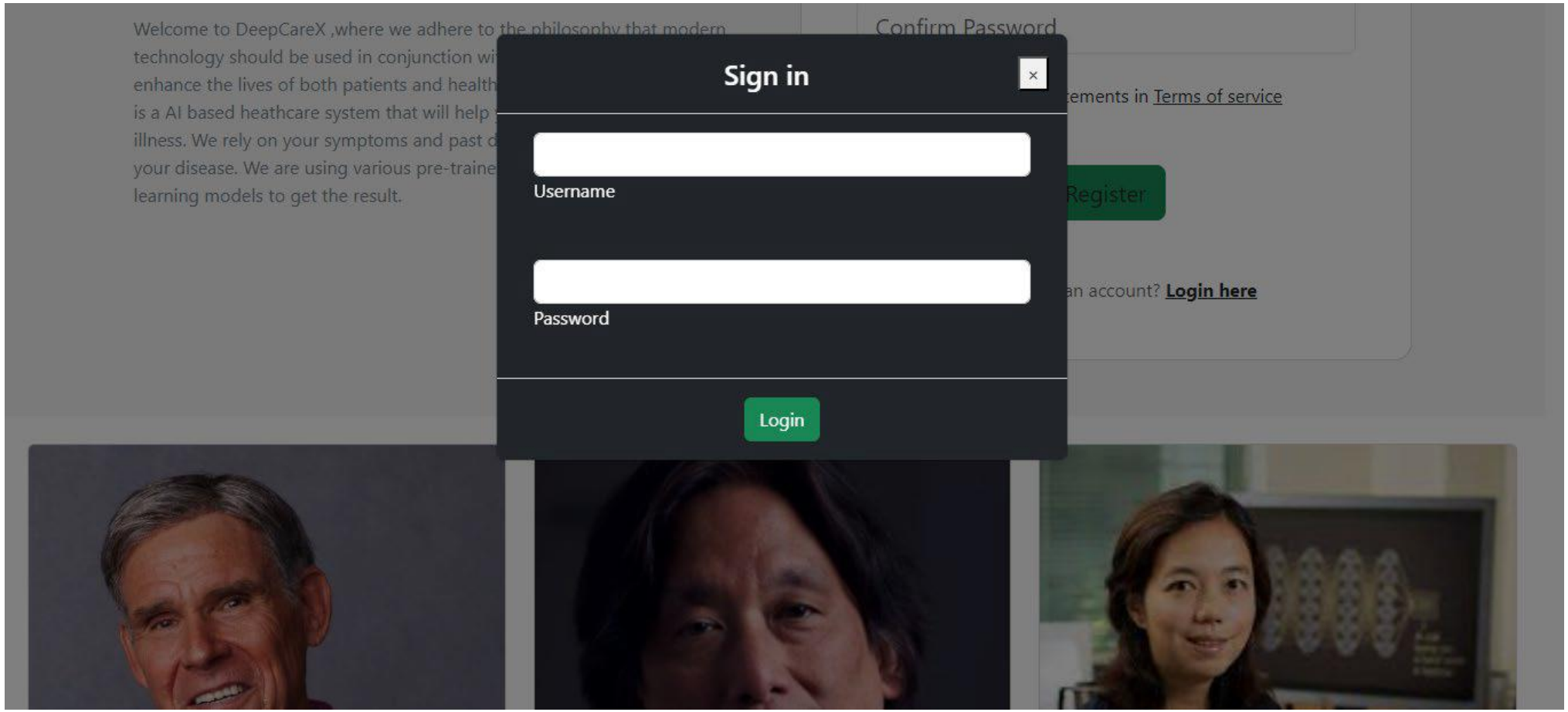
So why pick us? Simply put, we're dedicated to utilising cutting-edge technology to improve healthcare by making it more accessible, personalised, and efficient than before. We're here to assist you in navigating the complex world of healthcare with confidence and ease, whether you're seeking for information, medical test or support.

 Privacy Policy

CONTACT US


DeepCareX
Home
About Us
Contact
Search
Search
Get in touch
Name
Email
Contact
Message
Submit
Contact us
Address: Mumbai, INDIA
Contact :- 8888888888
Email:- DeepCareX@gmail.com
Website: www.DeepCareX.com

LOGIN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enhance the lives of both patients and health
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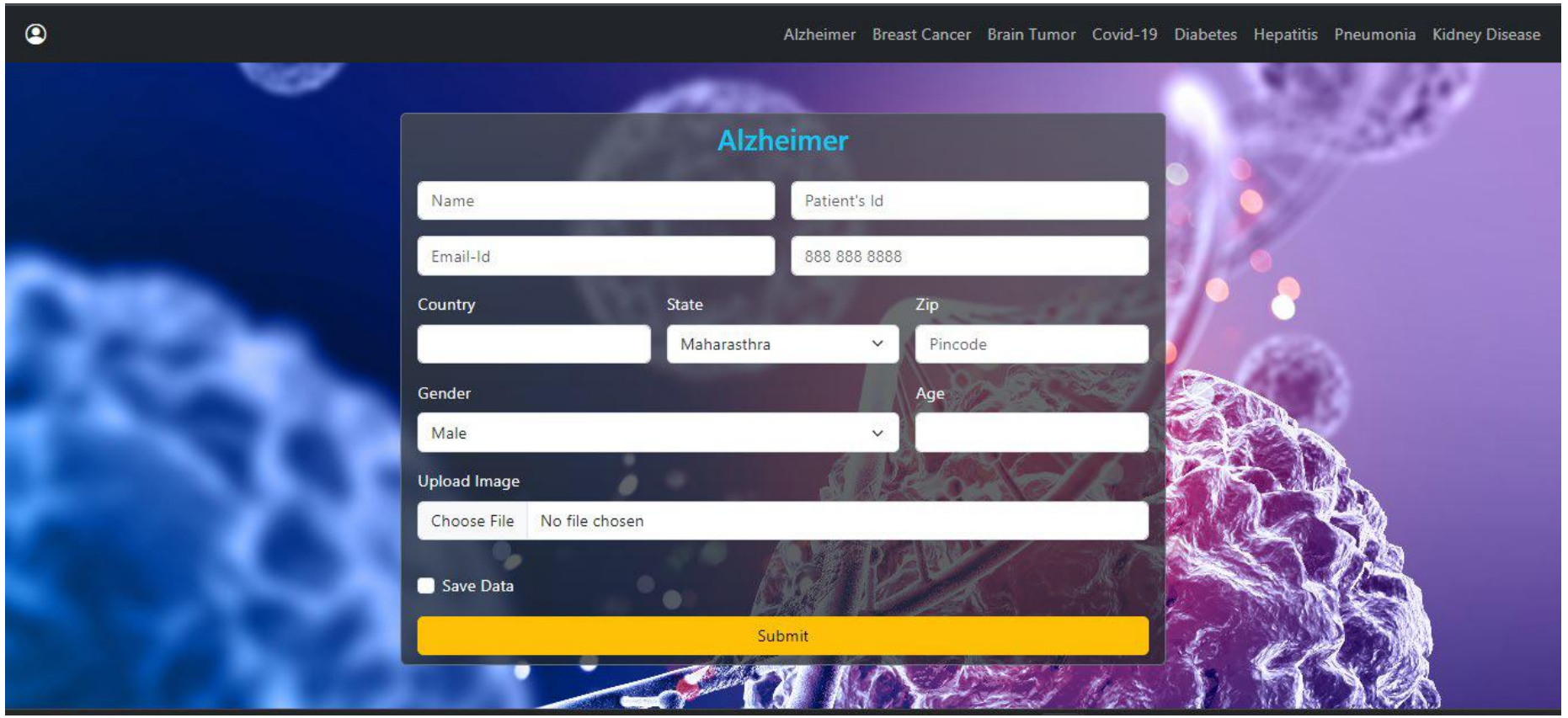
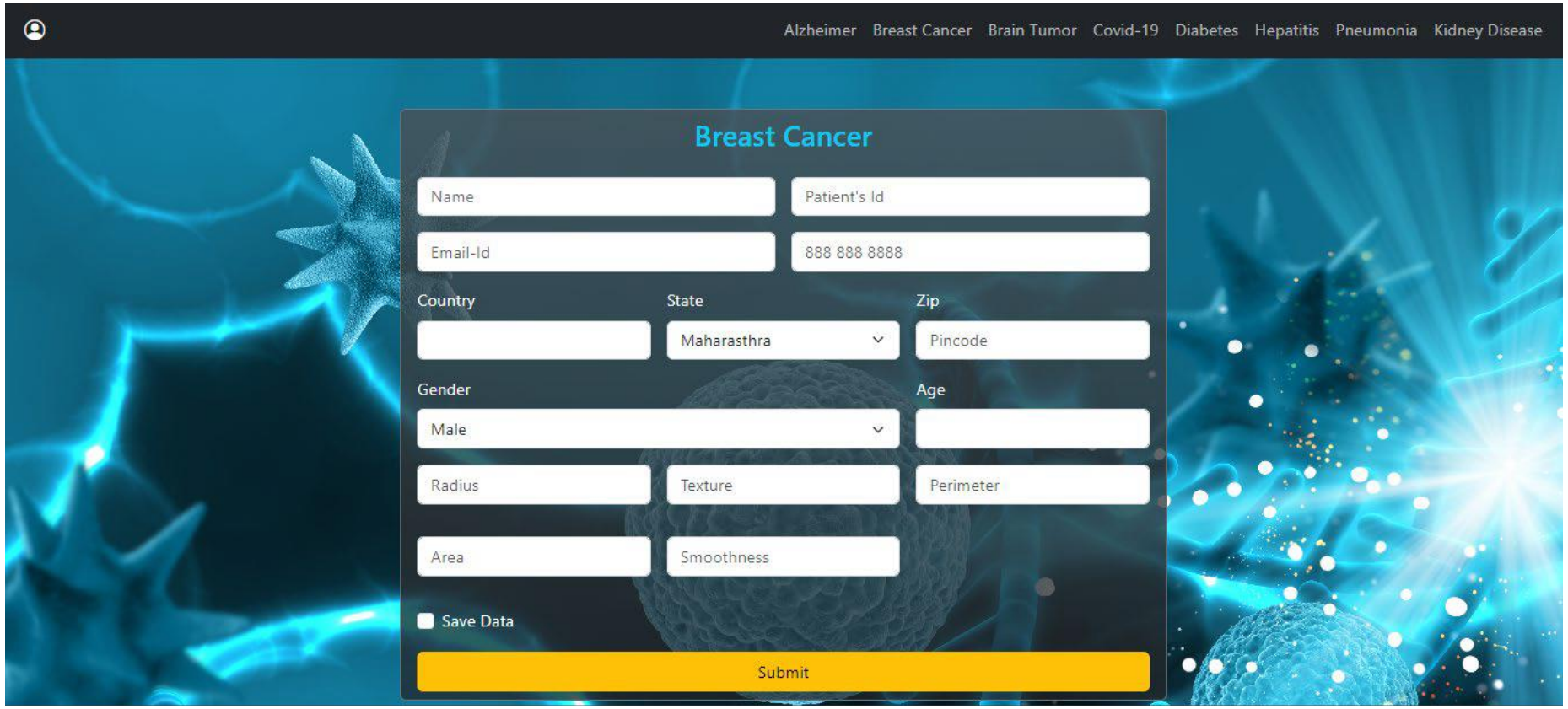
illness. We rely on your symptoms and past d
your disease. We are using various pre-traine
learning models to get the result.
Confirm Password
ements in Terms of service
Register
an account? Login here
Sign in
Username
Password
Login

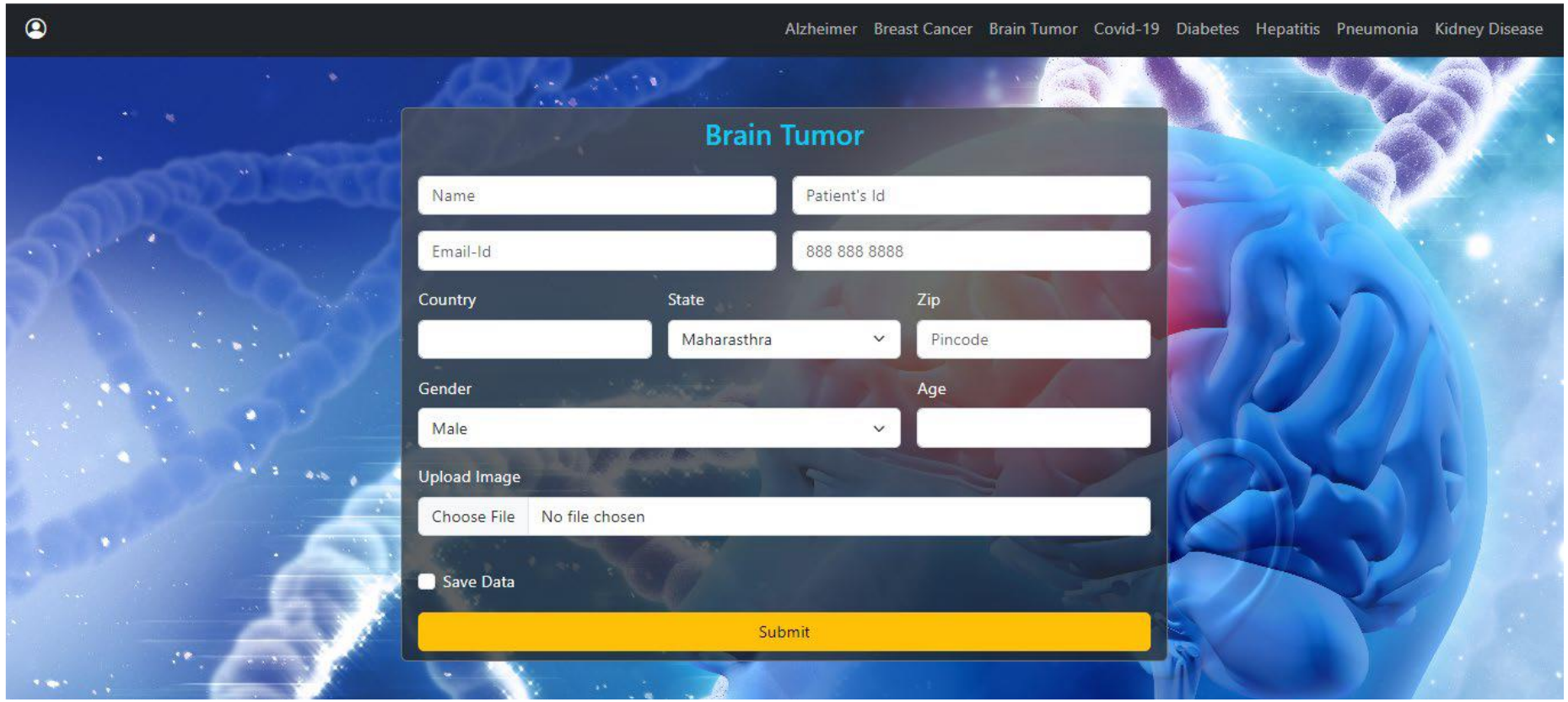
AFTER REGISTRATION/LOGIN ALZHEIMER'S



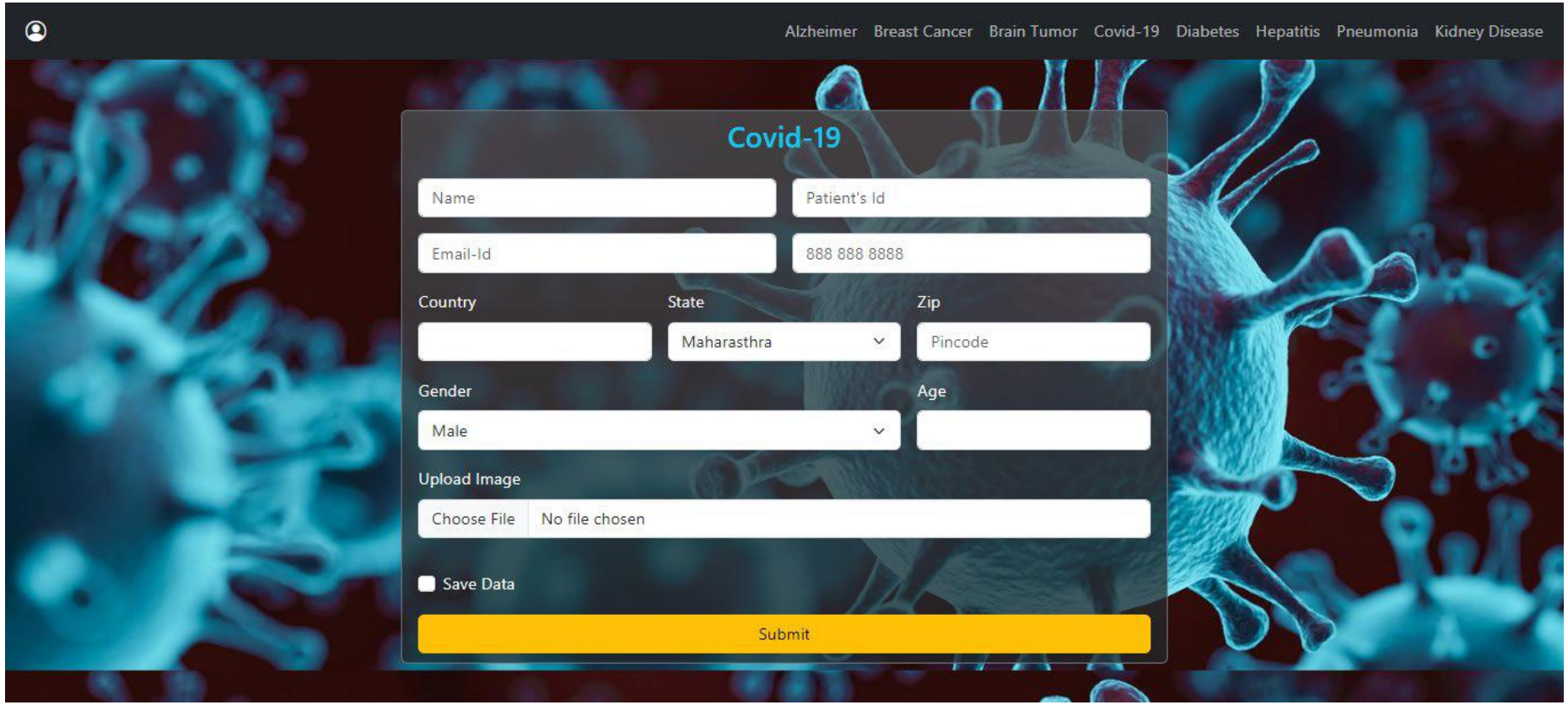
BREAST CANCER



BRAIN TUMOR


Alzheimer
Breast Cancer
Brain Tumor
Covid-19
Diabetes
Hepatitis
Pneumonia
Kidney Disease
Brain Tumor
Name
Patient's Id
Email-Id
888 888 8888
Country
State
Zip
Maharasthra
Pincode
Gender
Age
Male
Upload Image
Choose File
No file chosen
Save Data
Submit

COVID-19


Alzheimer
Breast Cancer
Brain Tumor
Covid-19
Diabetes
Hepatitis
Pneumonia
Kidney Disease
Covid-19
Name
Patient's Id
Email-Id
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Country
State
Zip
Maharasthra
Pincode
Gender
Age
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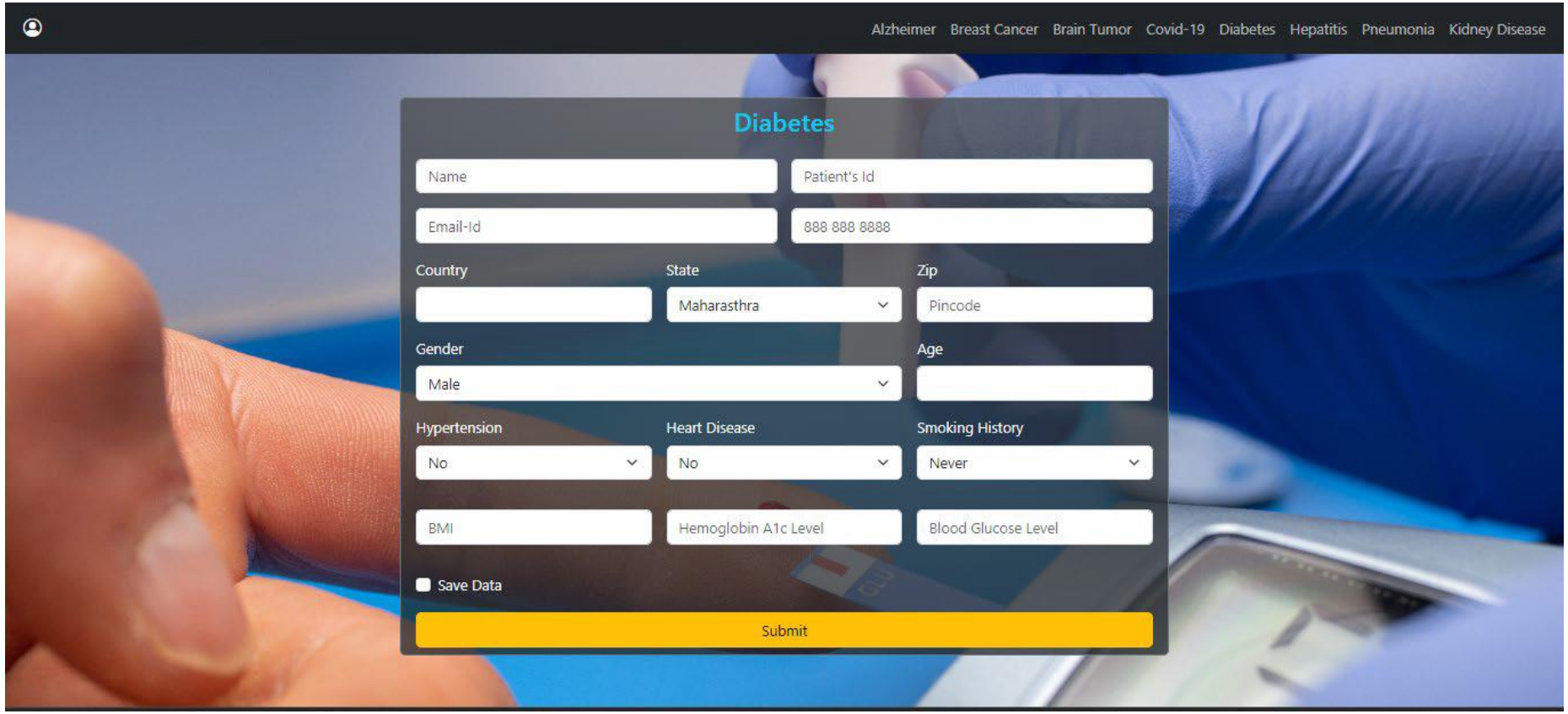
Upload Image
Choose File
No file chosen
Save Data
Submit

DIABETES


Alzheimer
Breast Cancer
Brain Tumor
Covid-19
Diabetes
Hepatitis
Pneumonia
Kidney Disease
Diabetes
Name
Patient's Id
Email-Id
888 888 8888
Country
State
Maharasthra
Zip
Pincode
Gender
Male
Age
Hypertension
No
Heart Disease
No
Smoking History
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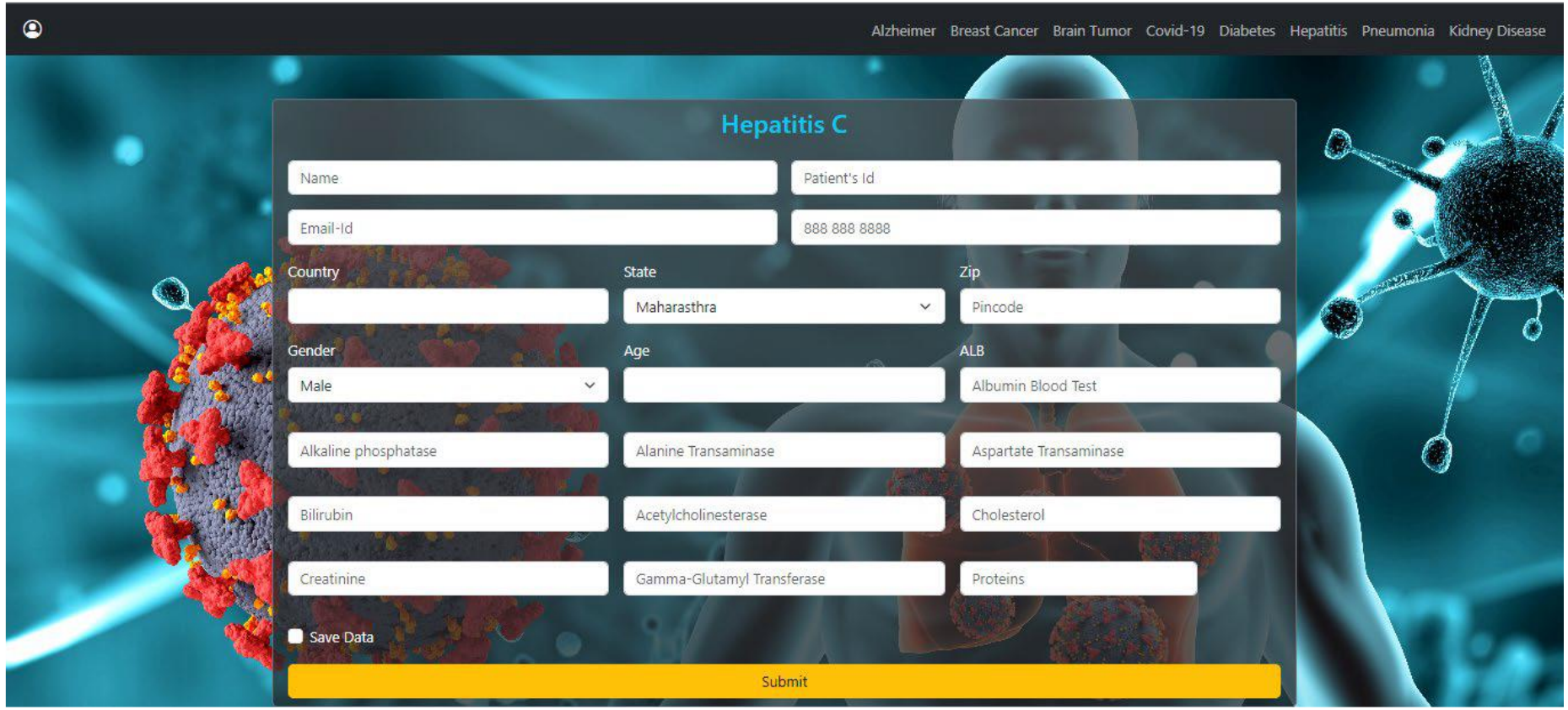
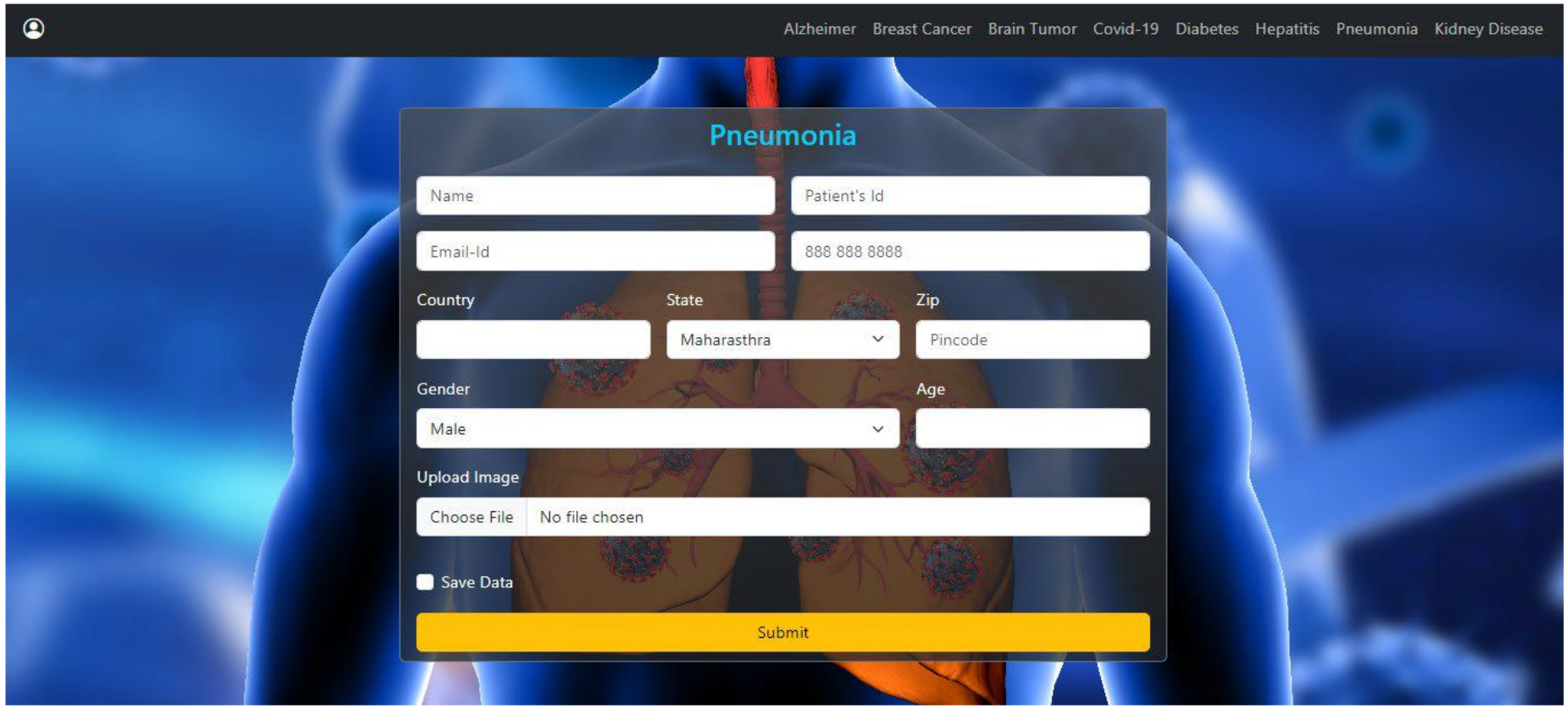
BMI
Hemoglobin A1c Level
Blood Glucose Level
Save Data
Submit

HEPATITIS C


Alzheimer
Breast Cancer
Brain Tumor
Covid-19
Diabetes
Hepatitis
Pneumonia
Kidney Disease
Hepatitis C
Name
Patient's Id
Email-Id
888 888 8888
Country
State
Maharasthra
Zip
Pincode
Gender
Male
Age
ALB
Albumin Blood Test
Alkaline phosphatase
Alanine Transaminase
Aspartate Transaminase
Bilirubin
Acetylcholinesterase
Cholesterol
Creatinine
Gamma-Glutamyl Transferase
Proteins
Save Data
Submit

PNEUMONIA


Alzheimer
Breast Cancer
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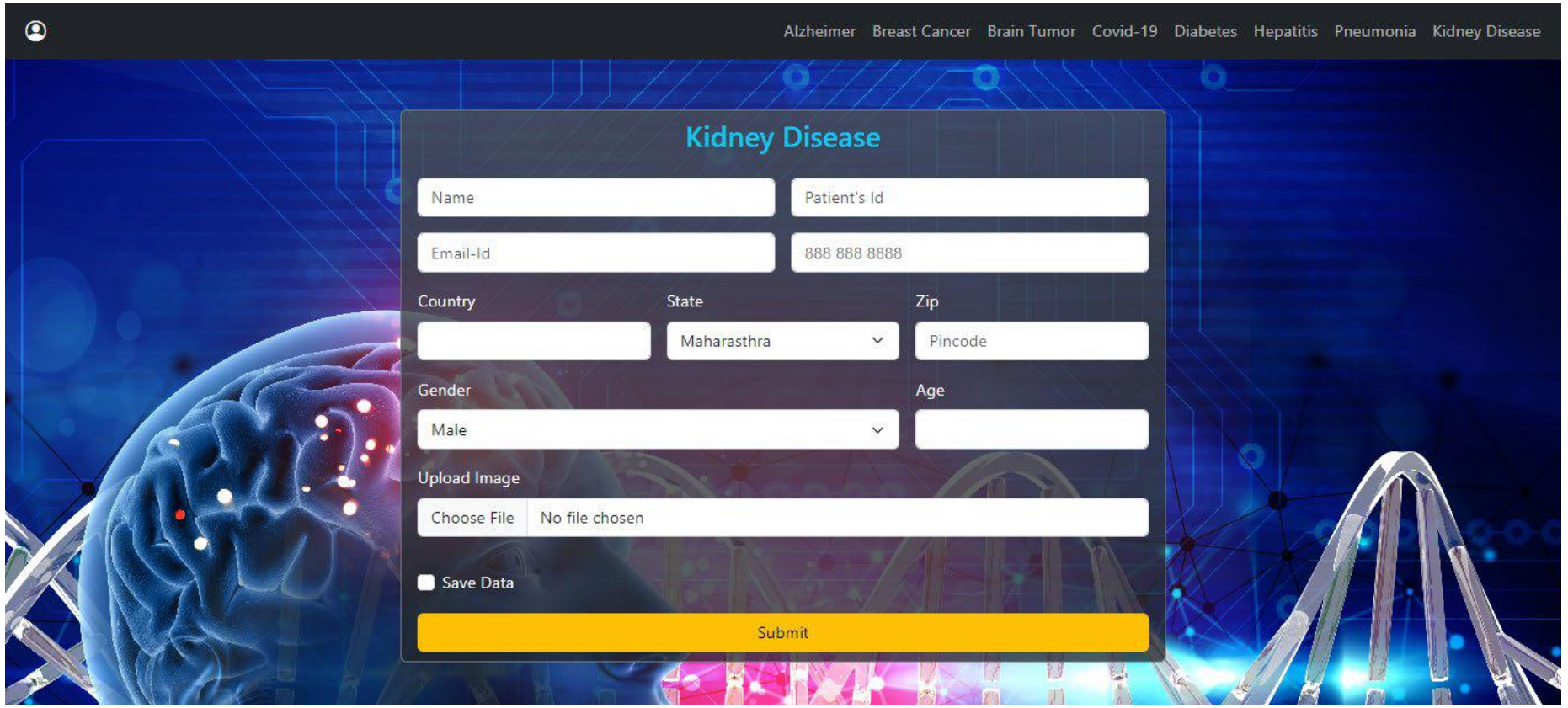
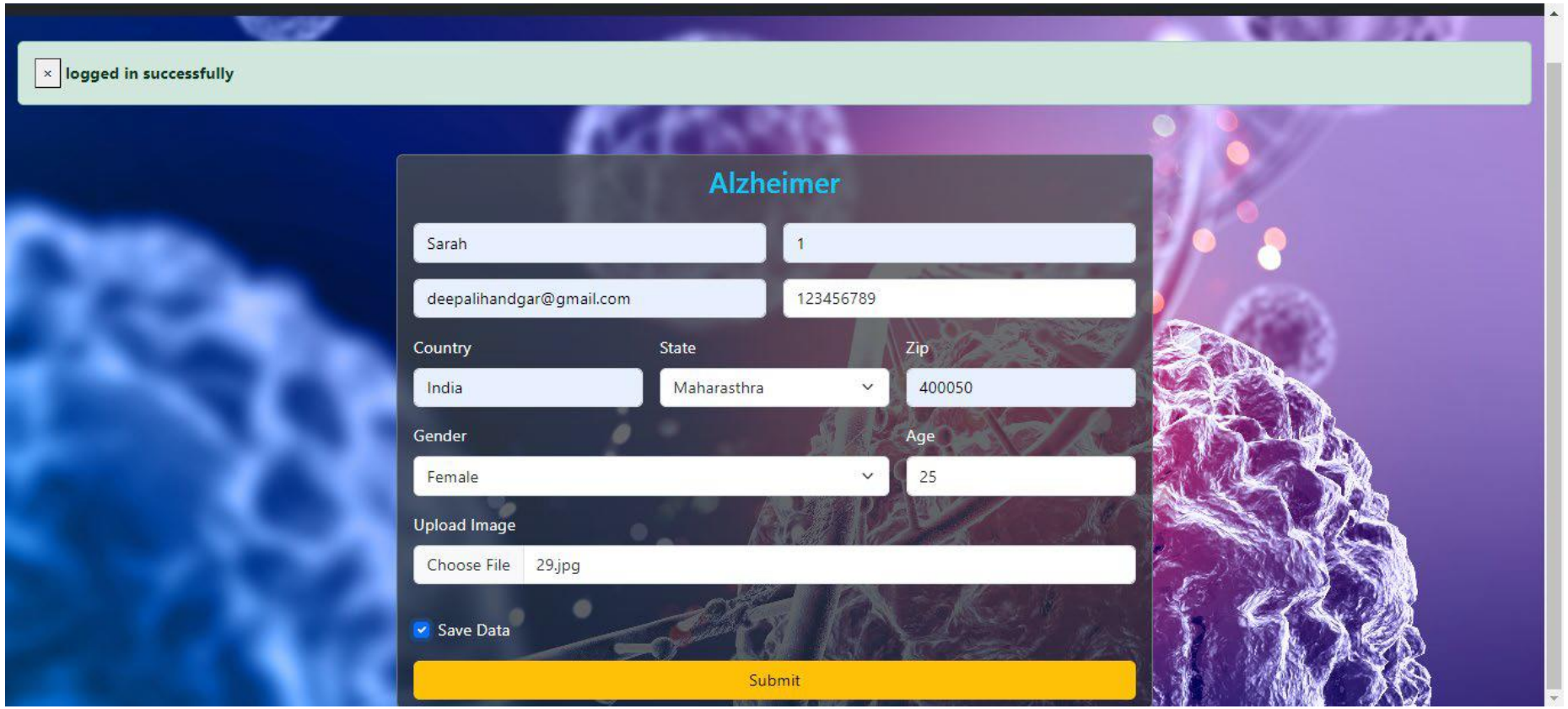
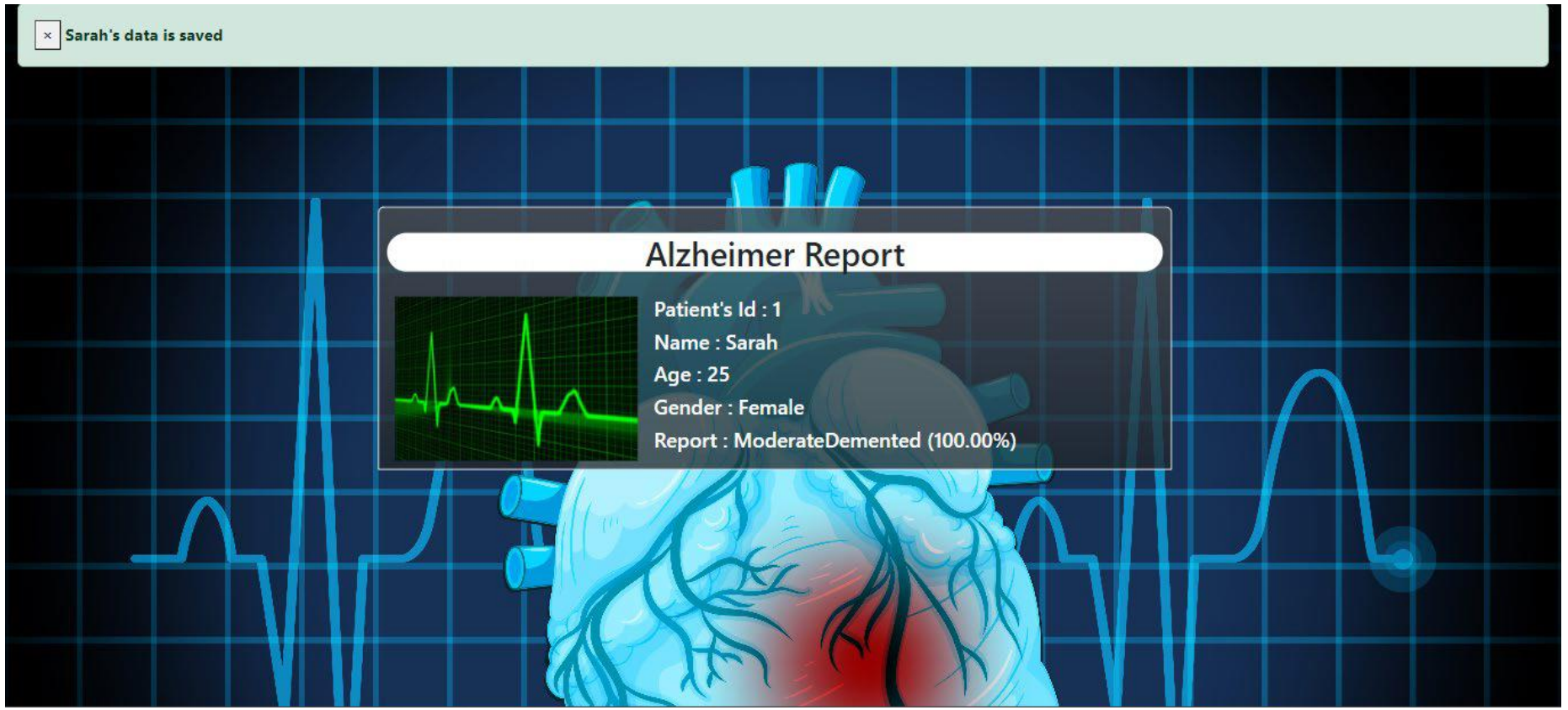
Covid-19
Diabetes
Hepatitis
Pneumonia
Kidney Disease
Pneumonia
Name
Patient's Id
Email-Id
888 888 8888
Country
State
Zip
Maharasthra
Pincode
Gender
Age
Male
Upload Image
Choose File
No file chosen
Save Data
Submit

KIDNEY DISEASE



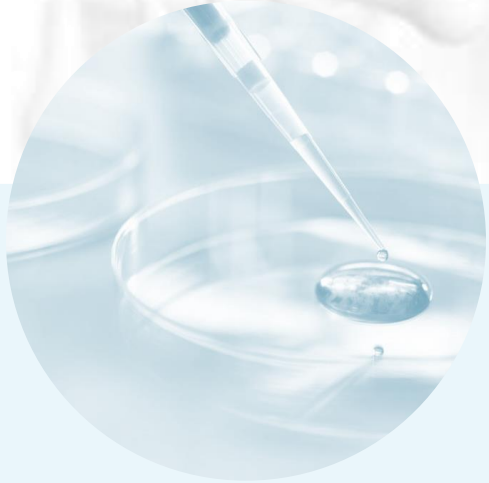
RESULT FOR ALZHEIMER'S




Sarah's data is saved
Alzheimer Report
Patient's Id : 1
Name : Sarah
Age : 25
Gender : Female
Report : ModerateDemented (100.00%)

FUTURE SCOPE

- There is a lot of room for improvement and growth with this project. The system may be made even more complete and beneficial for users by adding further functions. Here are some ideas about how to make the project better:
- Expanded Disease Database
- Integration with Healthcare Professionals
- Advanced Predictive Models
- Complete Diagnostic Reports
- Accessibility and user-friendly design
- Data Security and Privacy



THANK YOU