



# DEEPCAREX: AI BASED HEALTHCARE SYSTEM

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# INTRODUCTION

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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 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 is 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

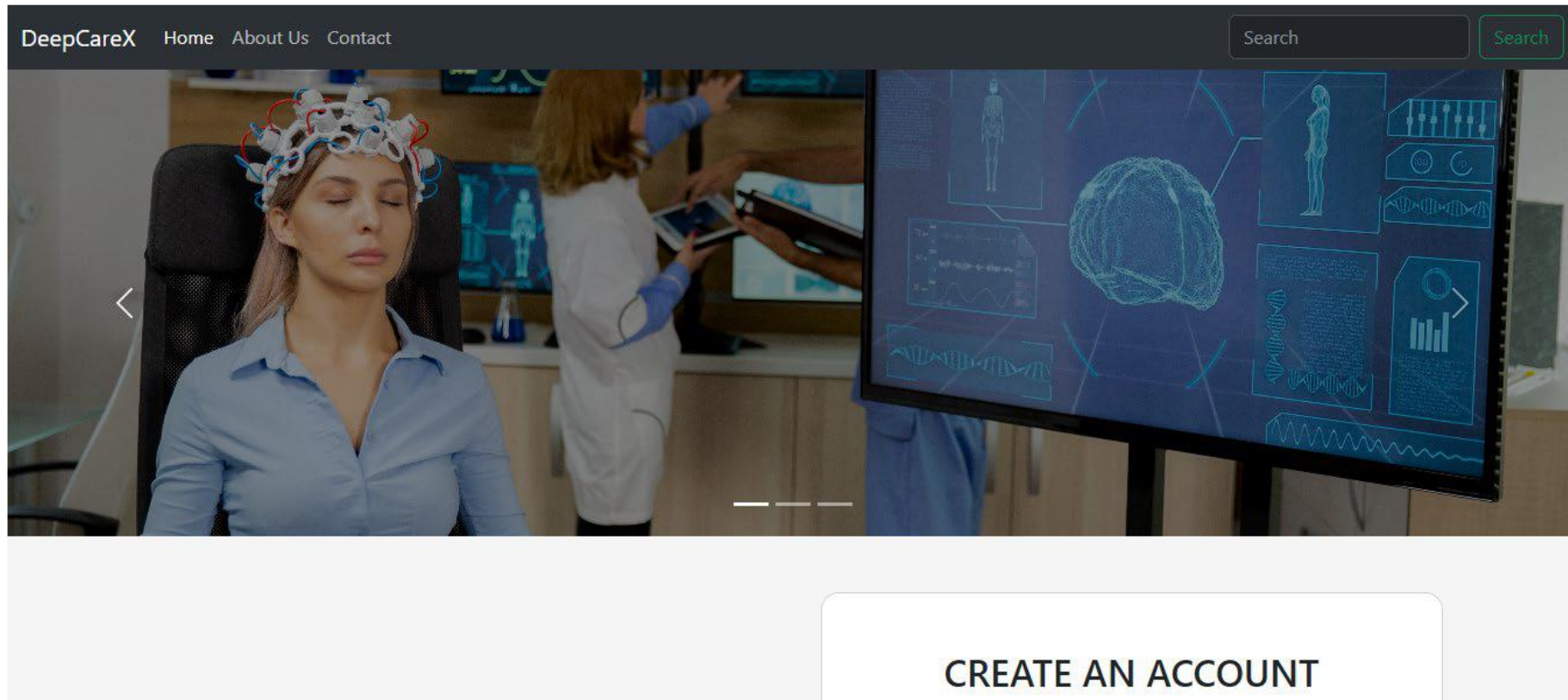
Syntax : python3 main.py

# 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

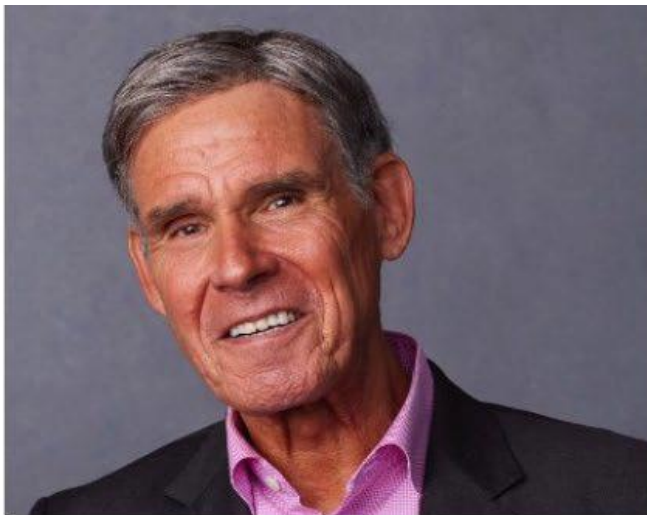
Welcome to DeepCareX ,where we adhere to the philosophy that modern technology should be used in conjunction with caring treatment to enhance the lives of both patients and healthcare professionals. DeepCareX is a AI based heathcare system that will help you to generate report of your illness. We rely 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.

## CREATE AN ACCOUNT

☐ I agree all statements in [Terms of service](#)

Register

Have already an account? [Login here](#)



**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."

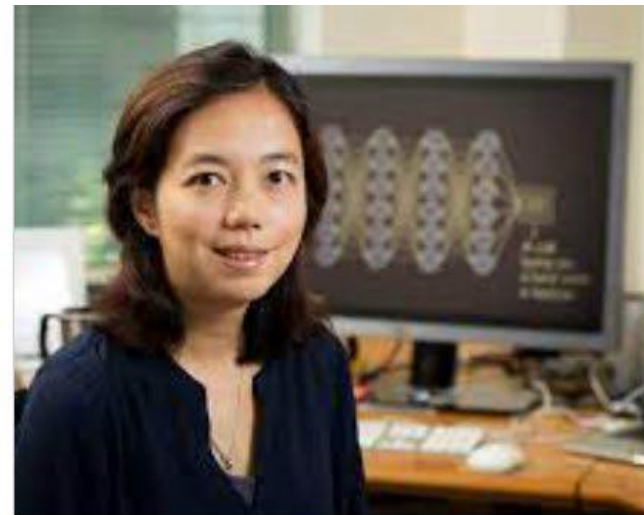
Founder and Director, Scripps Research Translational Institute



**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.

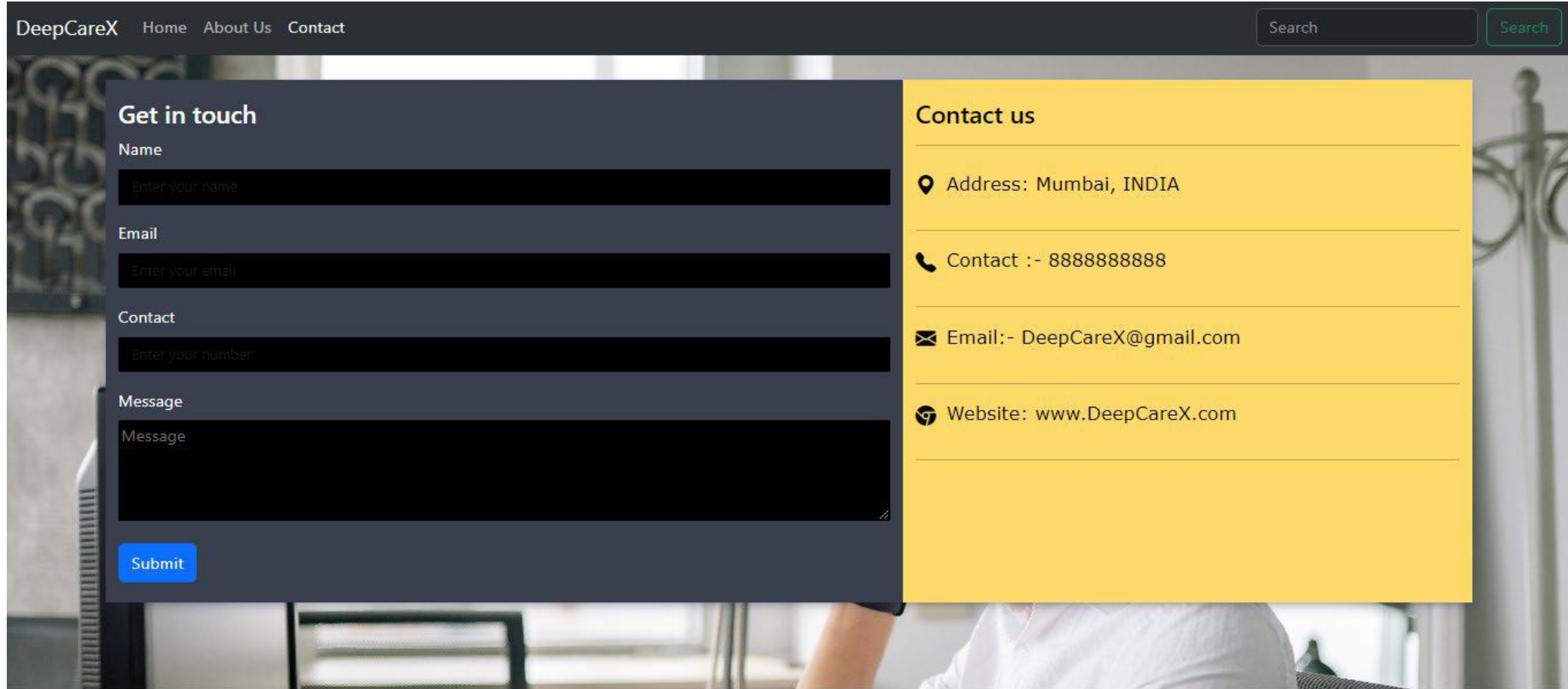
Our mission is to give healthcare professionals with the resources they need to offer patients with better, more individualised care while also arming people with the knowledge they need to make educated decisions about their health.

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.



# CONTACT US



DeepCareX Home About Us Contact Search Search

## Get in touch

Name  
Enter your name

Email  
Enter your email

Contact  
Enter your number

Message  
Message

Submit

## Contact us

Address: Mumbai, INDIA

Contact :- 8888888888

Email:- DeepCareX@gmail.com

Website: www.DeepCareX.com



# LOGIN

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

Confirm Password

agreements in [Terms of service](#)

Register


an account? [Login here](#)

Sign in

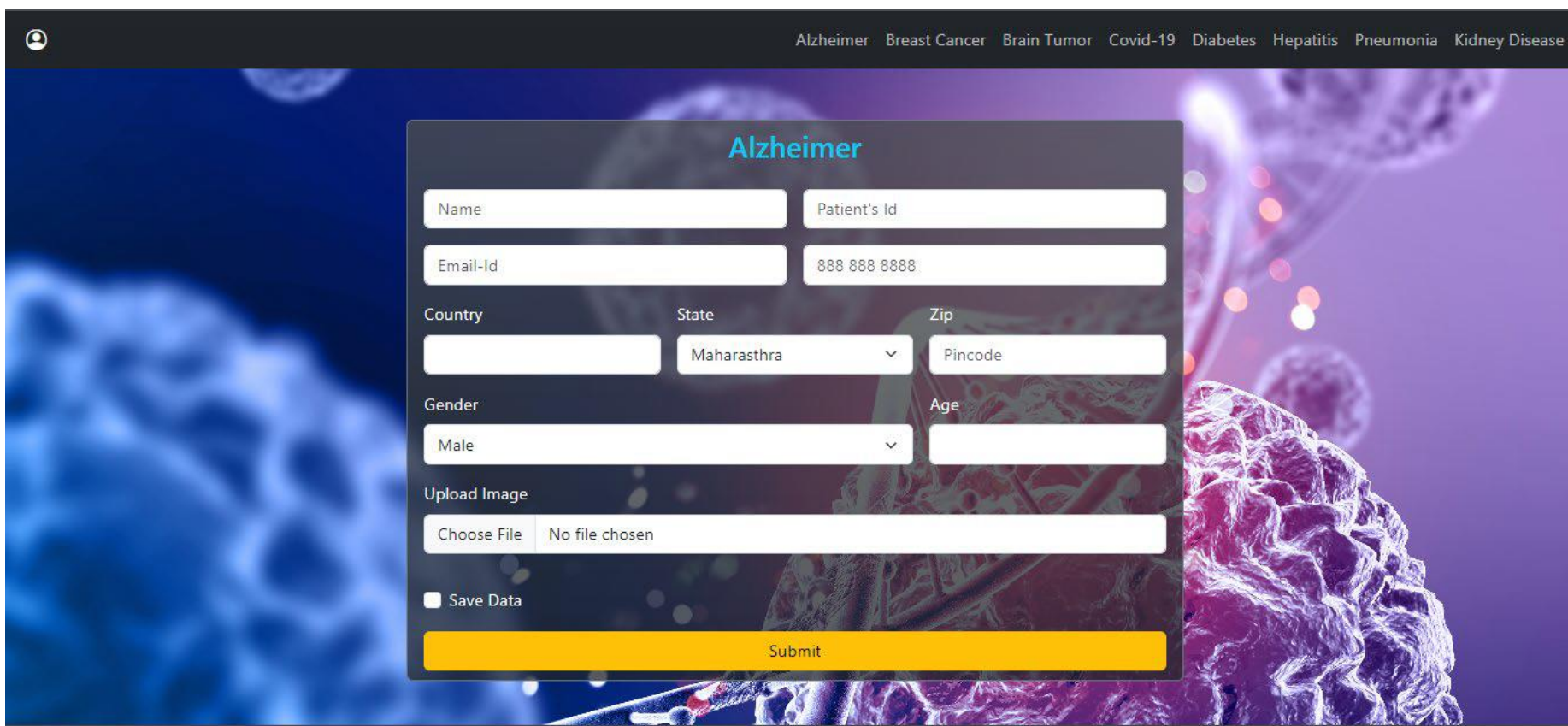
Username

Password

Login



# AFTER REGISTRATION/LOGIN ALZHEIMER'S



The screenshot displays a web application interface for the Alzheimer's section. At the top, a dark navigation bar contains a user profile icon and a list of medical conditions: Alzheimer, Breast Cancer, Brain Tumor, Covid-19, Diabetes, Hepatitis, Pneumonia, and Kidney Disease. The main content area features a large, semi-transparent form titled "Alzheimer" in blue text. The form includes several input fields: "Name", "Patient's Id", "Email-Id", and a pre-filled "888 888 8888". Below these are dropdown menus for "Country", "State" (set to "Maharashtra"), and "Gender" (set to "Male"). There are also input fields for "Zip" and "Pincode". An "Upload Image" section contains a "Choose File" button and a "No file chosen" status. At the bottom of the form, there is a "Save Data" checkbox and a prominent yellow "Submit" button. The background of the page is a vibrant purple and blue abstract image with bokeh light effects.

Alzheimer

Name Patient's Id

Email-Id 888 888 8888

Country State Zip

Pincode

Gender Age

Male

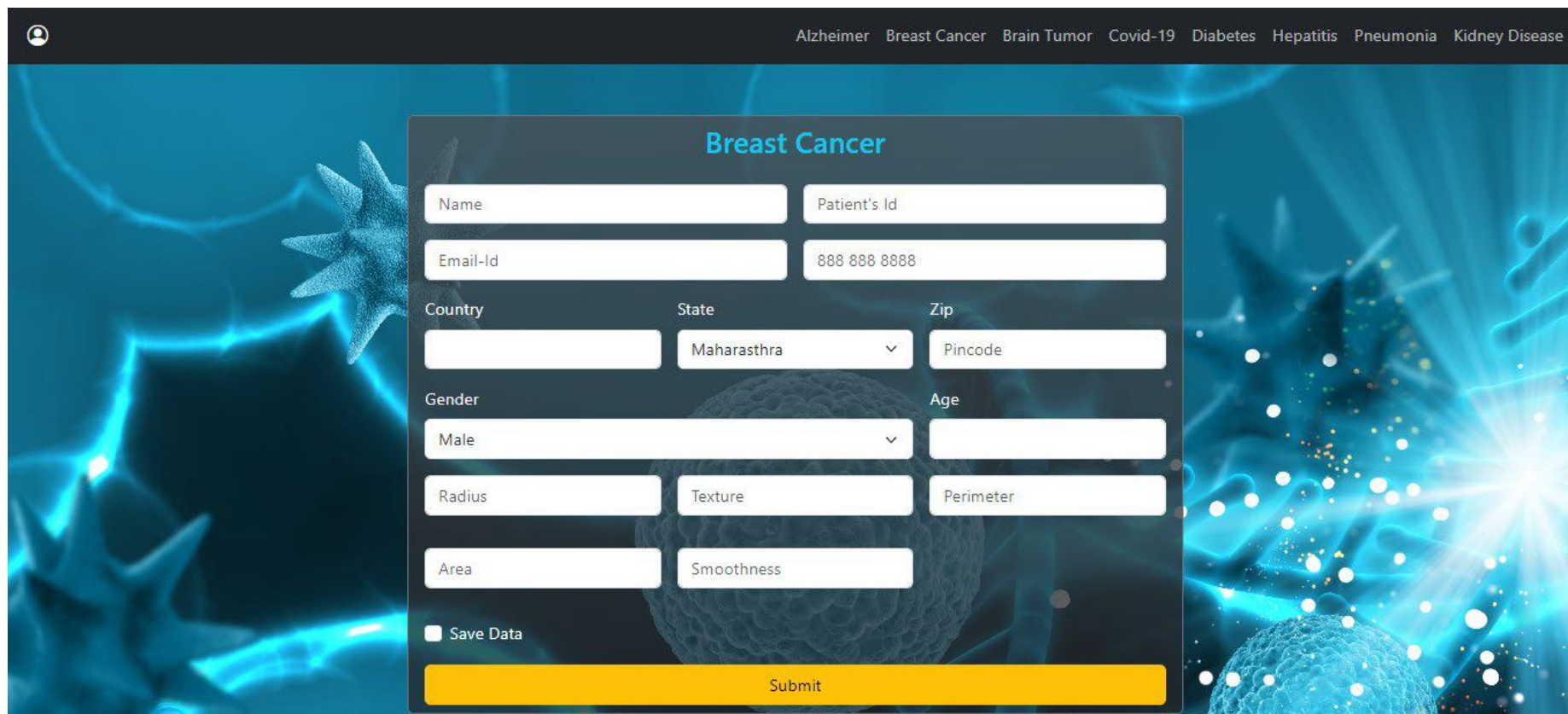
Upload Image

Choose File No file chosen

☐ Save Data

Submit

# BREAST CANCER

The image shows a web application interface for a breast cancer-related system. At the top, a dark navigation bar contains a user profile icon on the left and a list of medical conditions: Alzheimer, Breast Cancer, Brain Tumor, Covid-19, Diabetes, Hepatitis, Pneumonia, and Kidney Disease. The 'Breast Cancer' option is highlighted. The main content area has a blue, abstract background with glowing particles and a large, textured sphere. Centered on this background is a dark grey form titled 'Breast Cancer' in blue text. The form contains several input fields: 'Name' and 'Patient's Id' (top row), 'Email-Id' and a field containing '888 888 8888' (second row), 'Country' (third row), 'State' (a dropdown menu showing 'Maharashtra') and 'Zip' (fourth row), 'Pincode' (fifth row), 'Gender' (a dropdown menu showing 'Male') and 'Age' (sixth row), 'Radius' and 'Texture' (seventh row), 'Perimeter' (eighth row), 'Area' and 'Smoothness' (ninth row). At the bottom of the form is a checkbox labeled 'Save Data' and a large yellow 'Submit' button.

Alzheimer Breast Cancer Brain Tumor Covid-19 Diabetes Hepatitis Pneumonia Kidney Disease

## Breast Cancer

Name Patient's Id

Email-Id 888 888 8888

Country State Zip

Pincode

Gender Age

Male

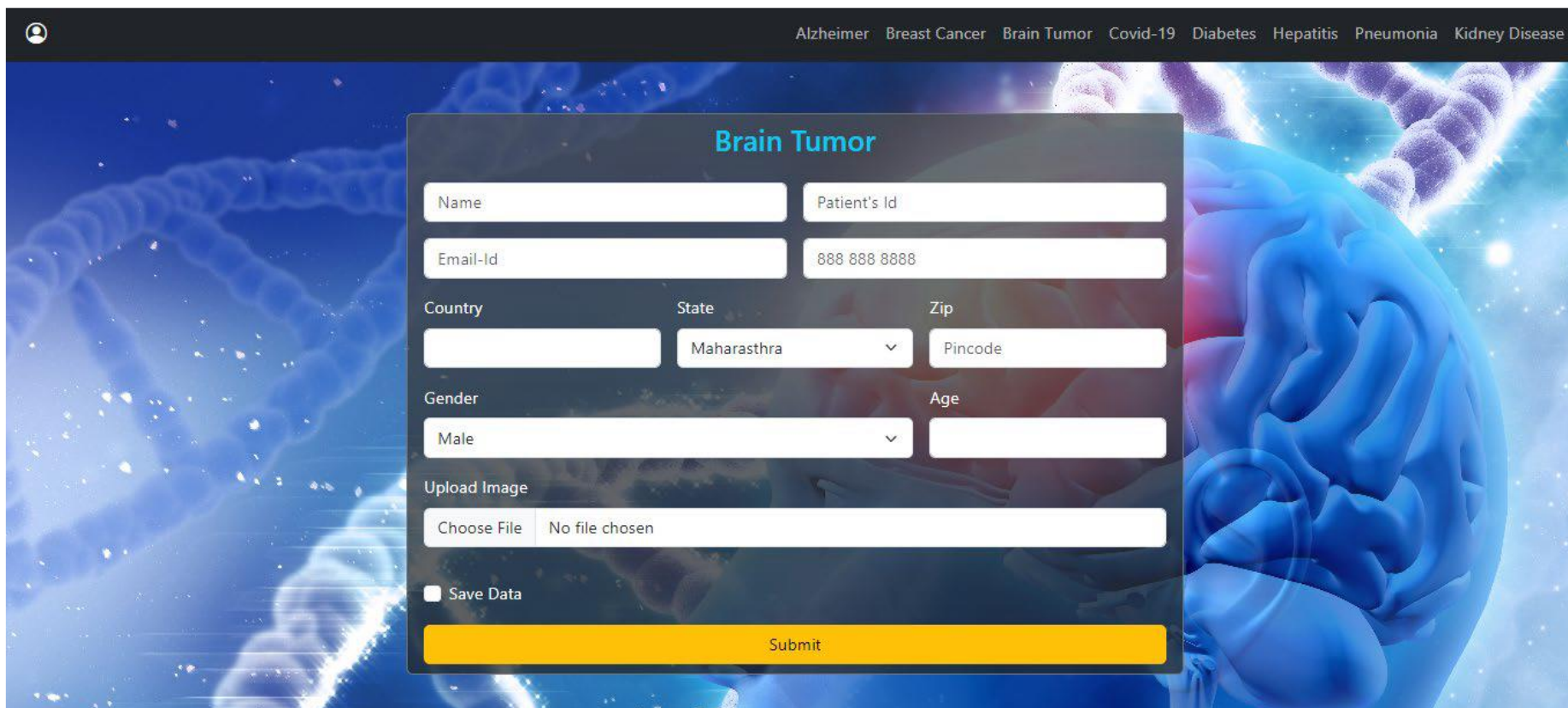
Radius Texture Perimeter

Area Smoothness

☐ Save Data

Submit

# BRAIN TUMOR



The screenshot displays the 'Brain Tumor' registration form within the DEEPCAREX AI-based Healthcare System. The interface features a dark blue header with a navigation menu including Alzheimer, Breast Cancer, Brain Tumor, Covid-19, Diabetes, Hepatitis, Pneumonia, and Kidney Disease. The background of the form is a vibrant blue and purple abstract design with glowing DNA helixes and a brain scan image. The form itself is a dark grey overlay with white text and input fields. It includes fields for Name, Patient's Id, Email-Id, and a pre-filled phone number 888 888 8888. There are also fields for Country, State (a dropdown menu currently showing 'Maharashtra'), Zip, and Pincode. Gender is set to 'Male' via a dropdown, and there is an empty field for Age. An 'Upload Image' section contains a 'Choose File' button and a 'No file chosen' status. At the bottom, there is a 'Save Data' checkbox and a prominent yellow 'Submit' button.

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

Gender  Age

Upload Image

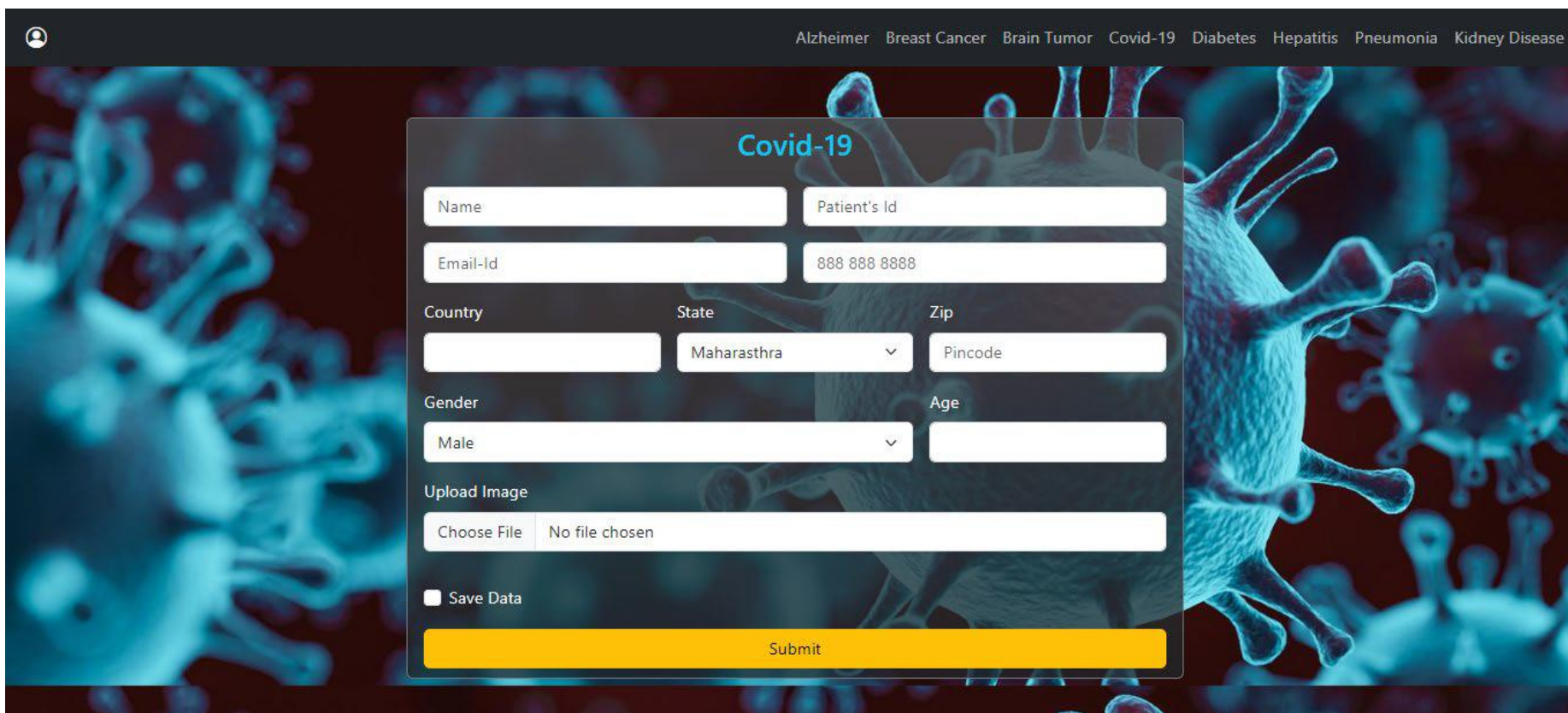
Choose File No file chosen

☐ Save Data

Submit



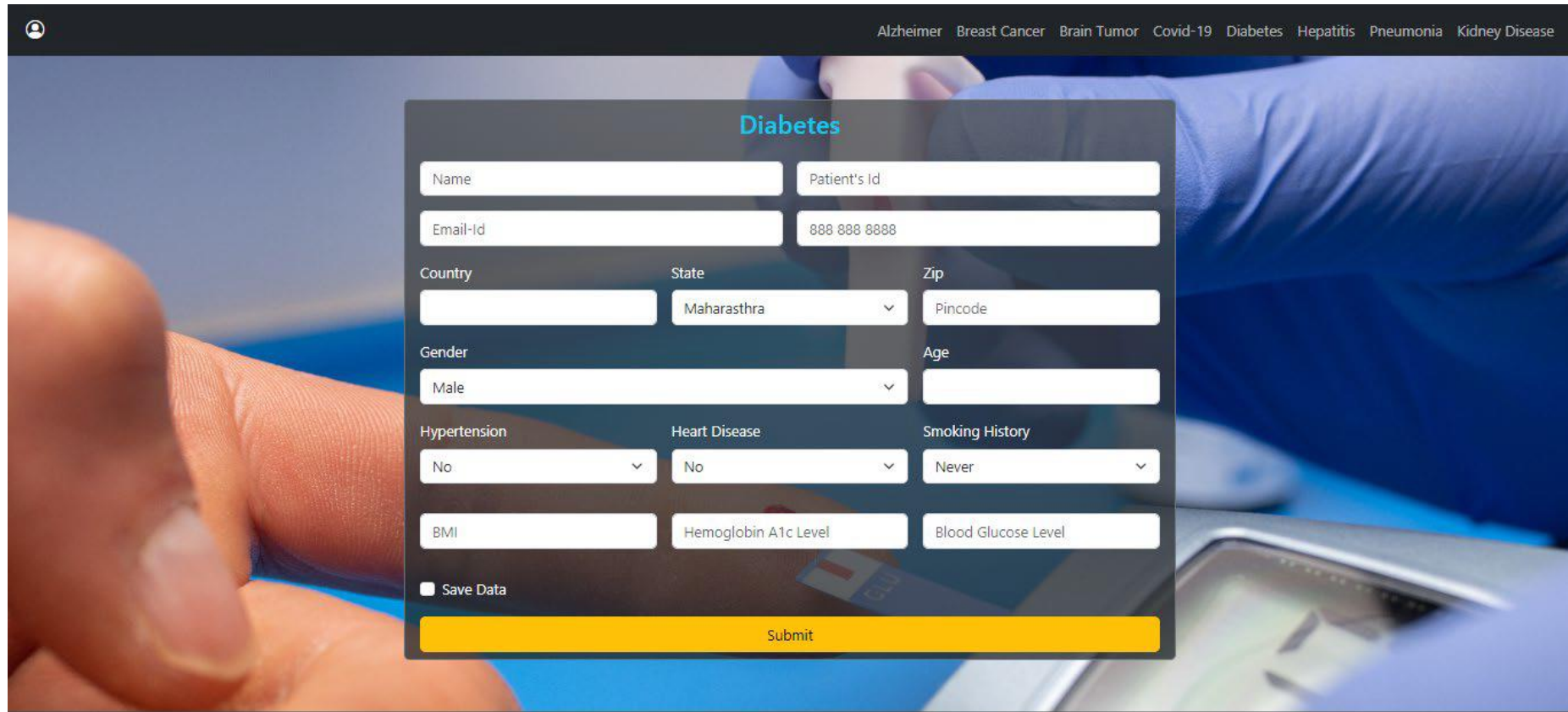
# COVID-19




The screenshot shows a web application interface for COVID-19 registration. The background features a blue and red virus particle illustration. A dark navigation bar at the top contains a profile icon and links to various medical conditions: Alzheimer, Breast Cancer, Brain Tumor, Covid-19, Diabetes, Hepatitis, Pneumonia, and Kidney Disease. The main form, titled 'Covid-19', includes the following fields:

- Name** and **Patient's Id** (text input)
- Email-Id** and a pre-filled value **888 888 8888** (text input)
- Country** (text input)
- State** (dropdown menu with 'Maharashtra' selected)
- Zip** and **Pincode** (text input)
- Gender** (dropdown menu with 'Male' selected)
- Age** (text input)
- Upload Image** section with a 'Choose File' button and a 'No file chosen' status.
- A checkbox labeled **Save Data**.
- A large yellow **Submit** button at the bottom.

# 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	Zip
	Maharashtra	Pincode
Gender	Age	
Male		
Hypertension	Heart Disease	Smoking History
No	No	Never
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:  Zip:

Gender:  Age:  ALB:

Alkaline phosphatase:  Alanine Transaminase:  Aspartate Transaminase:

Bilirubin:  Acetylcholinesterase:  Cholesterol:

Creatinine:  Gamma-Glutamyl Transferase:  Proteins:

☐ Save Data

Submit



# PNEUMONIA

Alzheimer Breast Cancer Brain Tumor Covid-19 Diabetes Hepatitis Pneumonia Kidney Disease

### Pneumonia

Name  Patient's Id

Email-Id  888 888 8888

Country  State  Zip

Gender  Age

Upload Image

Choose File No file chosen

☐ Save Data

Submit



# KIDNEY DISEASE

Alzheimer Breast Cancer Brain Tumor Covid-19 Diabetes Hepatitis Pneumonia Kidney Disease

### Kidney Disease

Name  Patient's Id

Email-Id  888 888 8888

Country  State  Zip

Gender  Age

Upload Image

No file chosen

☐ Save Data

# RESULT FOR ALZHEIMER'S

× logged in successfully

### Alzheimer

Country

State

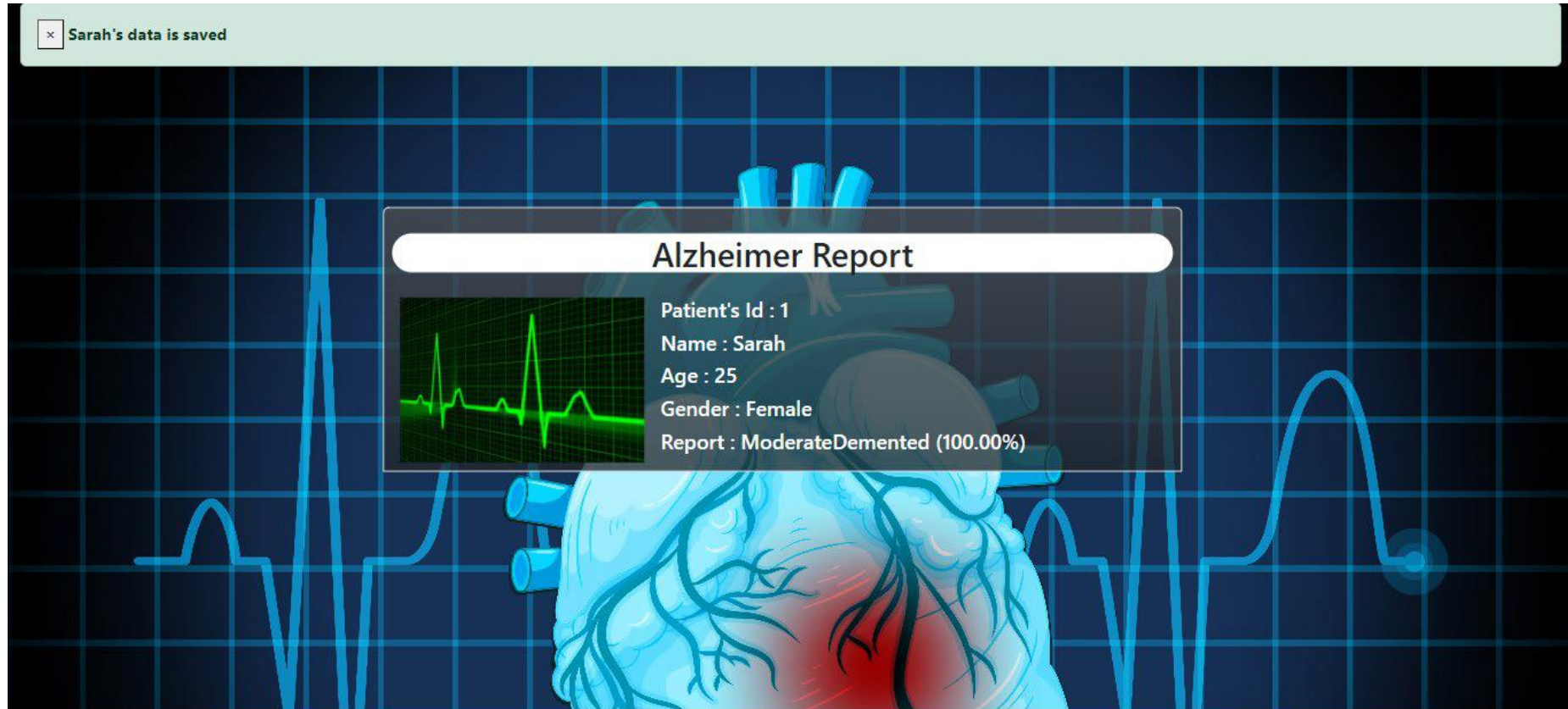
Zip

Gender

Age

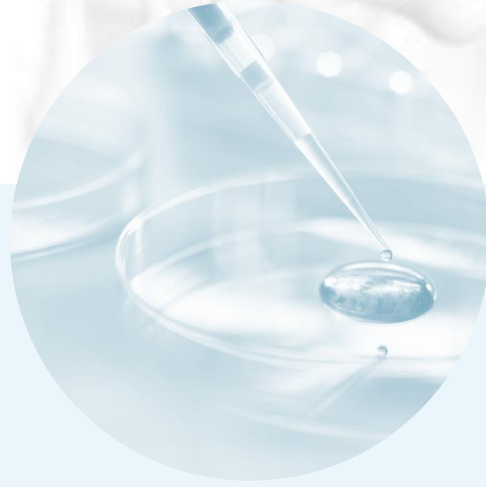
Upload Image

☒ Save Data



# 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**

