K. J. Somaiya College of Engineering, Mumbai-77

(Autonomous College Affiliated to University of Mumbai)

Covid Website with Chatbot

Submitted in partial fulfillment of requirements for completion of

Mini-Project

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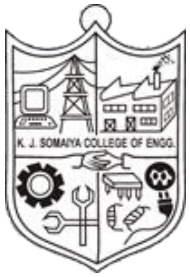
Under the guidance of

Guide – Dr. Sonali Patil



Department of Information Technology

K. J. Somaiya College of Engineering, Mumbai-77

(Autonomous College Affiliated to University of Mumbai)

Batch 2021

K. J. Somaiya College of Engineering, Mumbai-77

(Autonomous College Affiliated to University of Mumbai)

Certificate

This is to certify that the report entitled **Covid Website with Chatbot** is bona fide record of Mini-Project work done by **Ansh Dugar, Shruti Gosain and Heet Vora** in the Sem VI, year 2021 under the guidance of **Dr.Sonali Patil** of Department of Information Technology in partial fulfillment of requirement for the completion of Mini-Project

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Guide – **Dr. Sonali Patil** Head of the Department

Date:

Place: Mumbai-77

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Certificate of Approval of Examiners

We certify that this report entitled **Covid Website with Chatbot** is bona fide record of Mini-Project work done by Ansh Dugar, Shruti Gosain and Heet Vora.

This project is approved for the award of credits for completing Mini-Project course.

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Internal Examiner

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DECLARATION

We declare that this written report submission represents the work done based on our and / or others' ideas with adequately cited and referenced the original source. We also declare that we have adhered to all principles of intellectual property, academic honesty and integrity as we have not misinterpreted or fabricated or falsified any idea/data/fact/source/original work/ matter in our submission.

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Dedicated to

Our families and their wellbeing.

Abstract

Since the discovery of the Coronavirus (nCOV-19), it has become a global pandemic. At the same time, it has been a great challenge to hospitals or healthcare staff to manage the flow of the high number of cases. Especially in remote areas, it is becoming more difficult to consult a medical specialist when the immediate hit of the epidemic has occurred. Thus, it becomes obvious that if effectively designed and deployed chatbot can help people by promoting preventive measures, virus updates, and reducing psychological damage caused by isolation and fear. This study presents the design of a sophisticated chatbot for the purpose of answering most frequently asked questions such as recommending immediate measures when patients are exposed to COV-19. In addition, presenting a virtual assistant can also make it user convenient to know about Covid-19.

***Key words*:** Chatbot, Covid Website, Covid-19, Flask, Python, functionalities.

Contents

List of Figures

Nomenclature:

GUI - Graphical user interface

API - Application Programming Interface

UI- User Interface

JS- JavaScript

CSS- Cascading Style Sheet

COVID- Coronavirus

Chapter 1

Introduction

1.1 Problem Definition

With the spread of COVID-19 across the world, there is a sense of panic and uncertainty amongst the public. People are not sure what measures to take to safeguard themselves and their family and have many questions. Moreover, rumors, myths and misinformation about COVID-19 have spread as quickly as the virus itself. Public health hotlines and patient communication systems are now dealing with many more inquiries than normal, putting a strain on existing resources. There is a need for health organizations to automate as many responses to these inquiries as possible to free up human resources to deal with more complex problems in the fight against this pandemic. Hence, we have created a COVID-19 Chatbot with website to help the general public learn more about COVID-19. The topics covered include basic information about COVID-19, transmission, testing, risk reduction and safety measures. Information has been collected using reliable sources like Centers for Disease Control, World Health Organization, etc. A list of 50+ questions along with their answers has been collated to cover a broad spectrum of COVID-19 related information.

How is our website different?

There are various websites that contain the same information that our website does, like:

- www.cdc.gov
- mohfw.gov.in
- mygov.in
- www.who.int

These websites are information specific. However, our website has everything under one roof. We have the daily updates, Advice, News and Information on covid regarding different aspects on our website. Our website has the static as well as the real time information (using APIs) on Covid.Other websites have not integrated the feature of chatbot. Our website has the feature of chatbot which provides personal assistance to the visitor. The chatbot answers to the user's queries regarding the questions on Covid as well as fetches the answers from the website itself. The makes it easy for the people to get their answers instead of growing through the complicated structure of the website.

1.2 Motivation

The coronavirus outbreak has major consequences for society worldwide. People are rightly concerned and have many urgent questions. The World Health Organization provides answers to frequently asked questions regarding the coronavirus on their website. However, you may have to search for a while before you have found the right answer to your question. It is vital that people are well informed about current measures. This way we can efficiently limit mass spread. We strive to innovate and come up with better solutions to the current problem of pandemic and hence we thought a chatbot would be perfect with this. Whether via text, phone, websites, or communication apps, conversing with chatbots can play a critical role in helping communities quickly understand crucial information and free up customer service resources to focus on higher-level issues.

1.3 Scope of Project

As society is confronted with one of the biggest challenges of our lifetimes, stopping the spread of COVID-19 presents a global problem that demands a global response.The scope of this project is to create website containing information about COVID-19. The website will have authentic, real – time information about COVID such as the number of cases in India, updates about the vaccine, latest researches related to covid, travel precautions and updates, etc from the most trusted sources such as WHO.

Apart from this, this website will also have a chatbot for direct interaction with the user. Chatbots, if effectively designed could help us by sharing up-to-date information quickly, encouraging desired health impacting behaviours, and lessening the psychological damage caused by fear and isolation. The chatbot will be trained to search for answers asked by the users from the website.In times of crisis, communications systems are often overwhelmed with people trying to find basic information about testing, symptoms, community response, and other resources. When communication lines get clogged, people who need real help can't get through. Chatbots help respond to tens, even hundreds of thousands of messages a day.

Domains included in the project:

- Chatbot
- Covid Advice
- Travel Advice
- Health workers and administrators
- Global research on covid
- World map showing total and recovered number of cases around the world using API.
- Graph using API depicting the total cases, recovered cases and deaths in a country.

1.4 Functional Requirements and Non Functional Requirements

Function Requirements :

For Chatbot functions provided are:

- The chatbot is a pre-trained bot which will give an automated response.
- The chatbot will have a human-like approach.
- The chatbot is capable of having short and simple interactions.
- The chatbot will make it convenient for users to know about covid-19.
- The chatbot will have a pre-defined dataset as well as a dataset from the developer which will help the chatbot to give appropriate logical answers.

For Website functions provided are:

- The website consists of a dynamic world-map which will tell the users about the global situation (Current cases and deaths).
- The website consists of a dynamic graph which will give the users information about the total cases, recovered cases and deaths in the searched country.
- The website will provide valuable insights and advice for the general public.
- The website will provide the latest COVID 19 vaccine-related news.
- The website will provide the general covid-19 related news.
- The website will give the latest travel guidelines for the people.
- The chatbot will be integrated to the website.

Non-functional Requirements

- The user must have active internet connection throughout the time of using this application.
- Workload: The application can handle multiple users at a time.
- The bot should reply under 30 seconds to users queries.

Chapter 2

Background Work

COVID-19 hits humanity and everyone was startled. Pandemic proved to be deadly, and an immediate lockdown was necessary. With the spread of COVID-19 across the world, there is a sense of panic and uncertainty amongst the public. People are not sure what measures to take to safeguard themselves and their family and have many questions. Moreover, rumours, myths and misinformation about COVID-19 have spread as quickly as the virus itself. Public health hotlines and patient communication systems are now dealing with many more inquiries than normal, putting a strain on existing resources. COVID-19 has citizens looking for answers about symptoms and testing sites as well as the current status of schools, transportation, and other public services. Thus, it becomes obvious that effectively designed and deployed chatbot can help patients by promoting preventive measures, virus updates, and reducing psychological damage caused by isolation and fear.

There is a need for reliable websites for Covid-19 with chatbot to automate as many responses to these inquiries as possible to free up human resources to deal with more complex problems in the fight against this pandemic. We have designed a Covid website with chatbot to understand and respond to common questions about COVID-19 and display COVID-19 statistics inquiries with data from trusted sources on the website.

The chatbot will be able to respond by sharing consistent covid-19 information from the dataset we have made, help citizens quickly and easily access the latest information through text, free valuable resources by automating answers to common covid-19 questions and dynamically update information on the website.

Chapter 3

Implementation

3.1 Technologies Used.

Front end:

- Html
- Css
- Javascript
- BootStrap

Backend :

- Python
- Flask
- Important Libraries – Graph_files, Chatterbot, Chatbot_corpus, numpy, request
- Json

3.2 Methodology

- We referred to the World Health Organization (WHO) website to get basic information about Covid-19.
- We trained our covid-19 chatbot by taking Google FAQs and build our dataset.
- We realized that adding a virtual assistant on a dynamic website can make it user convenient to know about Covid-19. The design of a sophisticated covid chatbot for the purpose of answering most frequently asked questions such as recommending immediate measures when patients are exposed to Covid-19.
- We also felt the need of adding dynamic graphs and world map on our website which provides statistics about the pandemic.
- We discussed the solution with our faculty in-charge, it was further improved in the conversation and looking at the current situation all over the world.

3.3 Implementation and Algorithm

Chatbot:

Step 1: We have used python and flask for creating the chatbot along with a .yml dataset to train the chatbot.

Step 2: The user will search for his query on the chatbot GUI.

Step 3: The chatbot will first check if the query has been asked before in the SQLite database.

Step 4: If yes, the chatbot will automate a response from the SQLite database itself.

Step 5: If no, the chatbot will search for the user entered query in the .yml created dataset as well as the predefined dataset.

Step 6: The chatbot will display the response to the query on the GUI.

Website:

Step 1: From the home page, you can visit the world-map API page which shows the global situation.

Step 2: The global situation consists of the current cases and recovered cases which is fetched from the python library graph_file.

Step 3: The data fetched is displayed in the form of the world-map using the map API key we have created and upon hovering over the graph, you get the covid related statistics for the particular country.

Step 4: You can get the latest news and history about the cases and deaths of a state/province you want to know about by searching for it on the search bar on the home page.

Step 5: All the information related to the country will be collected from the graph_file library of python.

Step 6: The data fetched is displayed in the form of graph and upon hovering over the graph; you get the covid related statistics for the particular country.

Step 7: In the navbar, you can explore multiple pages like covid advice, research, vaccination and also access the chatbot.

Step 8: Covid advice provides advice for the people, the travel guidelines and also the work of heath administrators.

Step 9: Research provides the global research on the covid-19 pandemic and the latest news on the new vaccination available for covid-19.

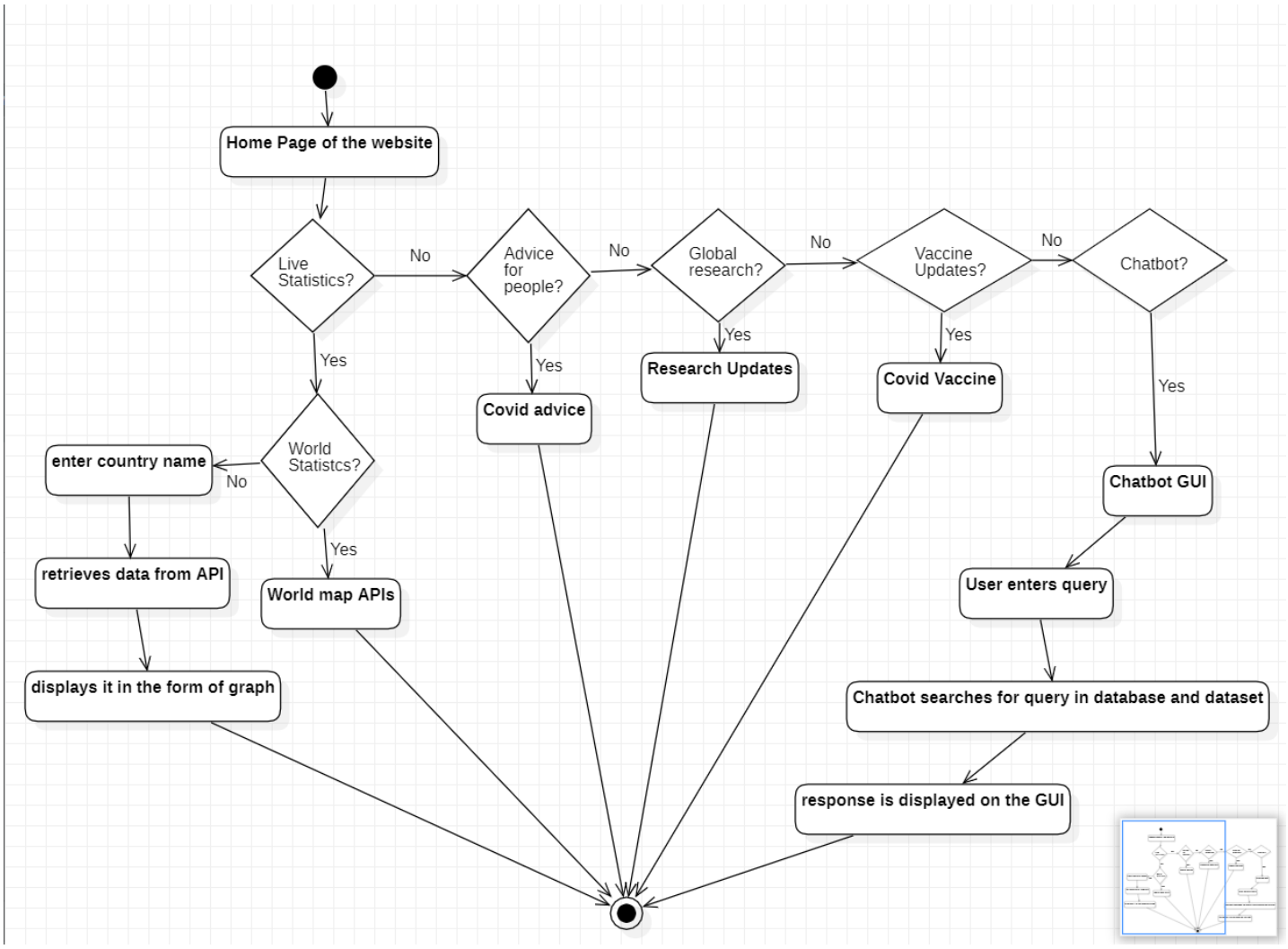

Fig 3.1 Flow of the Web Application

Chapter 4

Results and Discussion

Home Page:

This is the Covid website home page which consists of many tabs and features like the covid chatbot, real time data using API which has the world-map and country wise covid data, covid advice (for health workers and administrators, for local people and travel advice) , vaccine (covaxin and its side effects), recent updates on covid-19 and an about us page. It also provides a timeline of covid-19 right from when it was declared as a pandemic.

Fig 4.1 Home Page-1

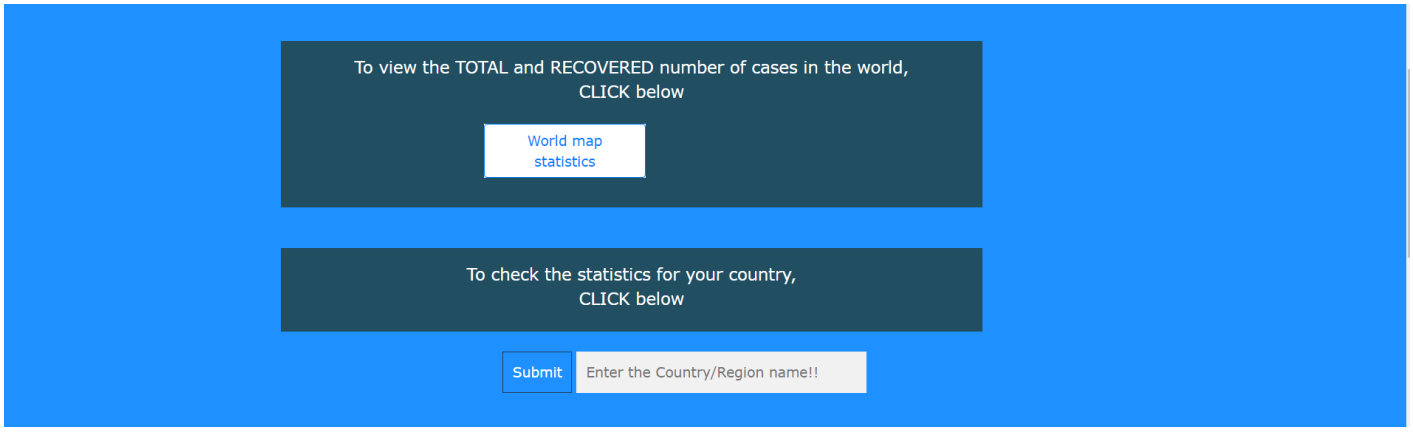

Fig 4.2 Home Page-2

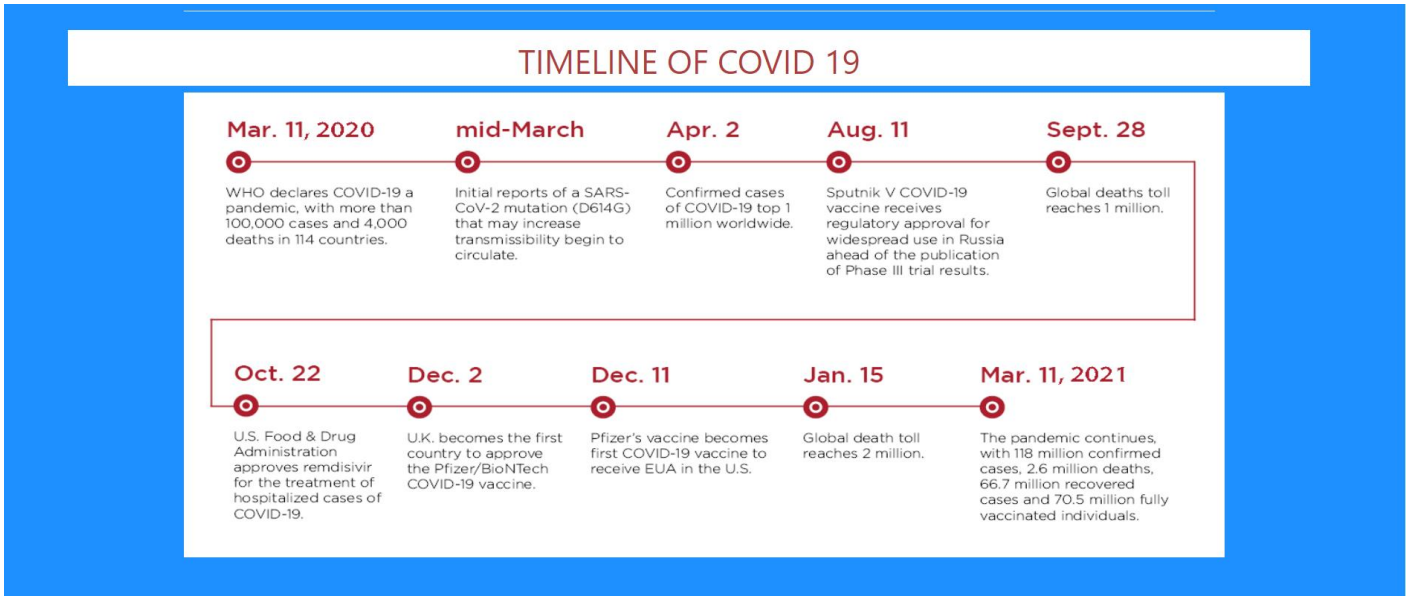

Fig 4.3 Home Page-3

World map:

This is the world map API page which shows the global situation consisting of the confirmed cases and recovered cases. It gives us real time data. The data is fetched from the python library graph_file and is displayed in the form of the world-map using the map API key we have created and upon hovering over the map, you get the covid related statistics for the particular country.

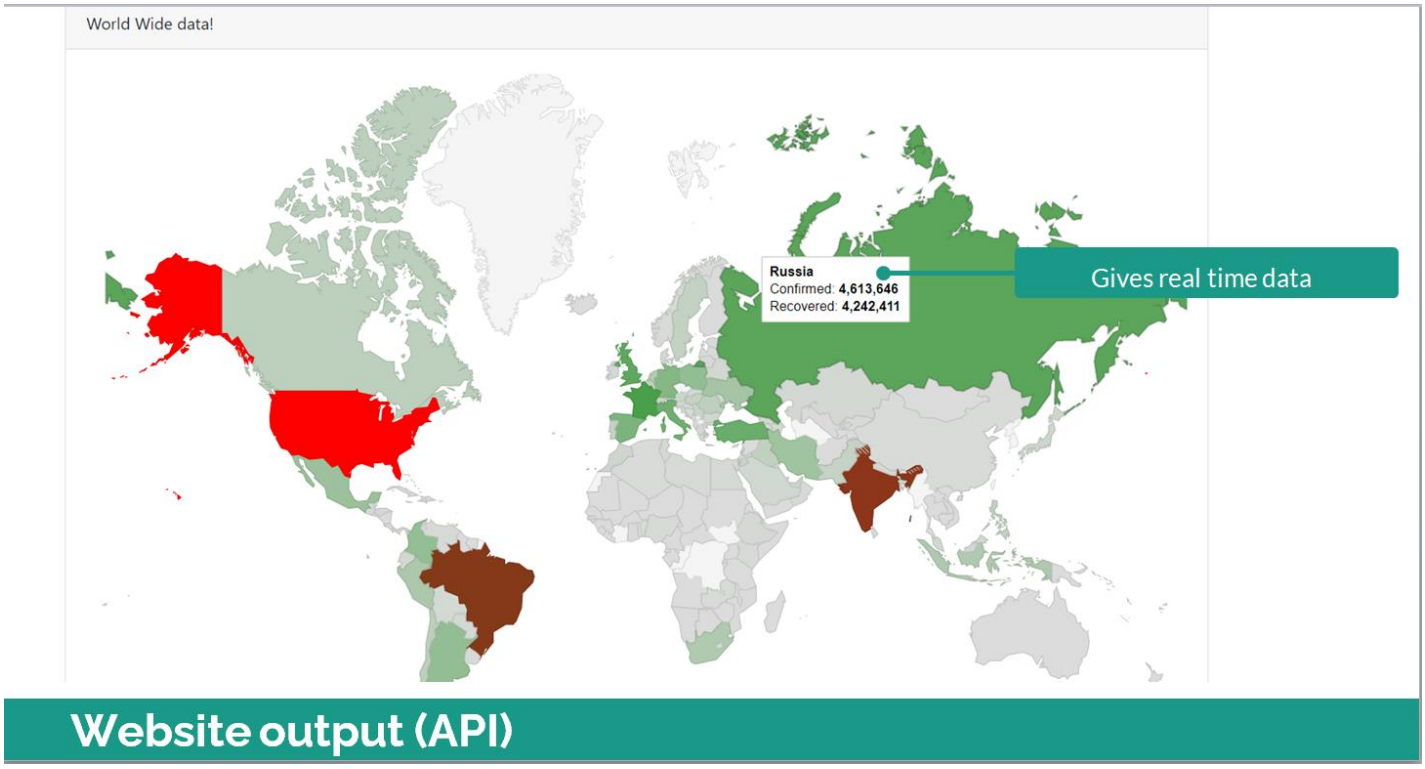

Fig 4.4 Worl Map API

Graph:

This page consists of two graphs, the first one being timeline vs number of cases and the second one being timeline vs number of new cases. It gives us the latest news and history of the confirmed cases, recovered cases and deaths of a particular country/province you search for on the search bar on the home page. All the information and data related to the country will be collected from the graph_file library of python and is displayed in the form of the a graph and upon hovering over the graph, you get the covid related statistics for the particular country.

Fig 4.5 Country Wise Graph API

Chatbot GUI:

This is the covid chatbot GUI where the user will enter his/her query and seek solutions for the same. We have used python and flask for creating the chatbot along with an .yml dataset to train the chatbot. The chatbot will first check if the query has been asked before in the SQLite database and if yes then it will fetch answers from the database itself otherwise it will search for answers in the .yml dataset created as well as the predefined datasets in python. It will display the answers to the asked questions on the GUI.

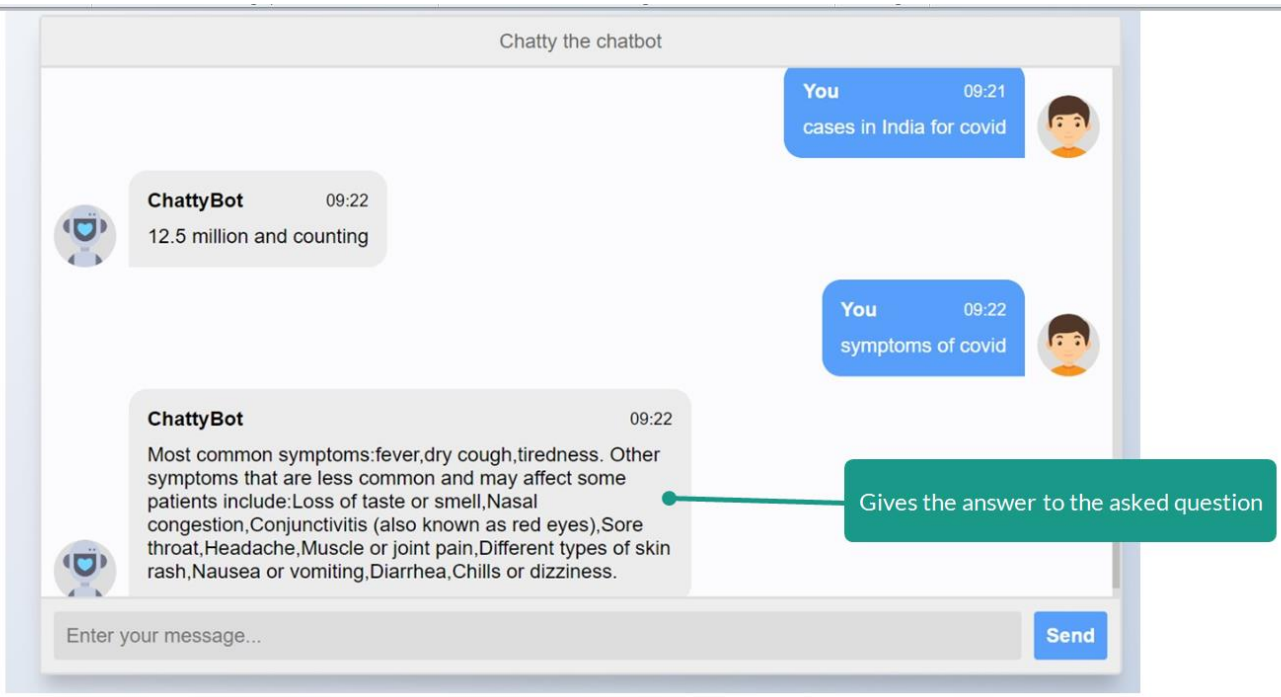

Fig 4.6 Chatbot

Covid Advice:

This is the covid advice page which basically makes it more clear and gives clear instructions on how to avoid covid, the precautions you can take, the hygiene to follow etc. It is divided into three main sections: Advice for people, Travel advice and advice for health workers and administrators.

Fig 4.7 Advice Page

Advice for the people:

This page tells us about the necessary steps to avoid covid and the precautions, hygiene to follow, distance to keep, cleanliness and the importance of masks. It has the data and information on what to do to keep ourselves and others safe from covid-19, how to make the environment safer, importance of good hygiene and steps to follow if you feel unwell. It also consists of pdfs on advice for ill people, for care givers, etc and how to cope with stress pdfs.

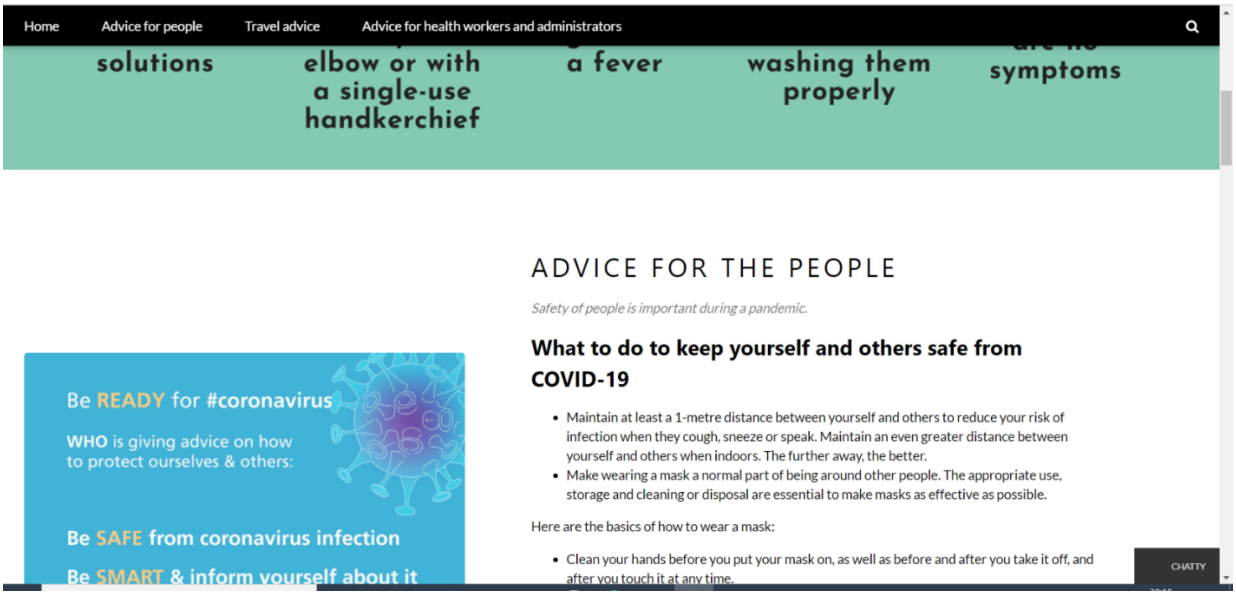

Fig 4.8 Advice for people-1

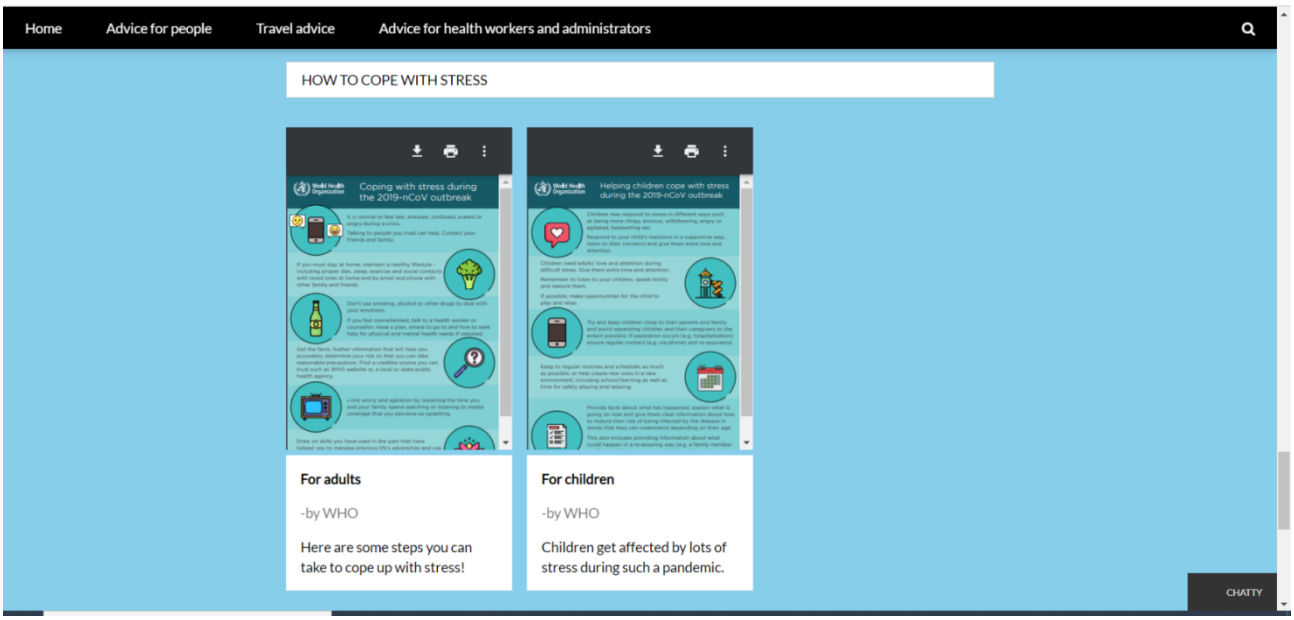

Fig 4.9 Advice for people-2

Travel Advice:

This section gives advice on things you can do to travel safely, the rules and regulations of travelling during the pandemic, recommendations and requirements for domestic travel and getting tested after travel. It enlightens you on how to prepare for a flight during covid and the things to do before, during and after your trip.

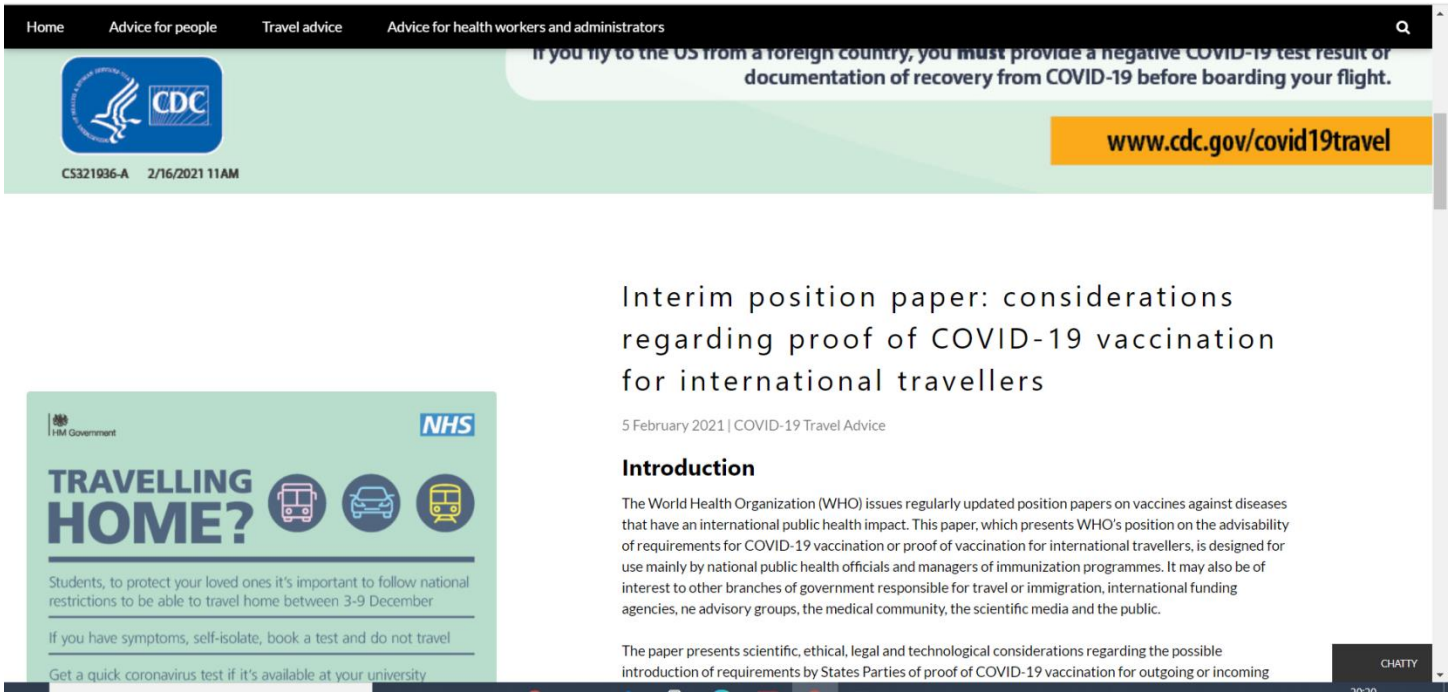

Fig 4.10 Travel Advice Page

Advice for health workers and administrators:

Health workers are central to the COVID-19 pandemic response, balancing additional service delivery needs while preserving access to essential health services and deploying COVID-19 vaccines. They also face higher risks of infection in their efforts to protect the greater community and are exposed to hazards such as psychological distress, fatigue and stigma.

To address these challenges, WHO provides the latest advice, guidance and training for both health workers and administrators.

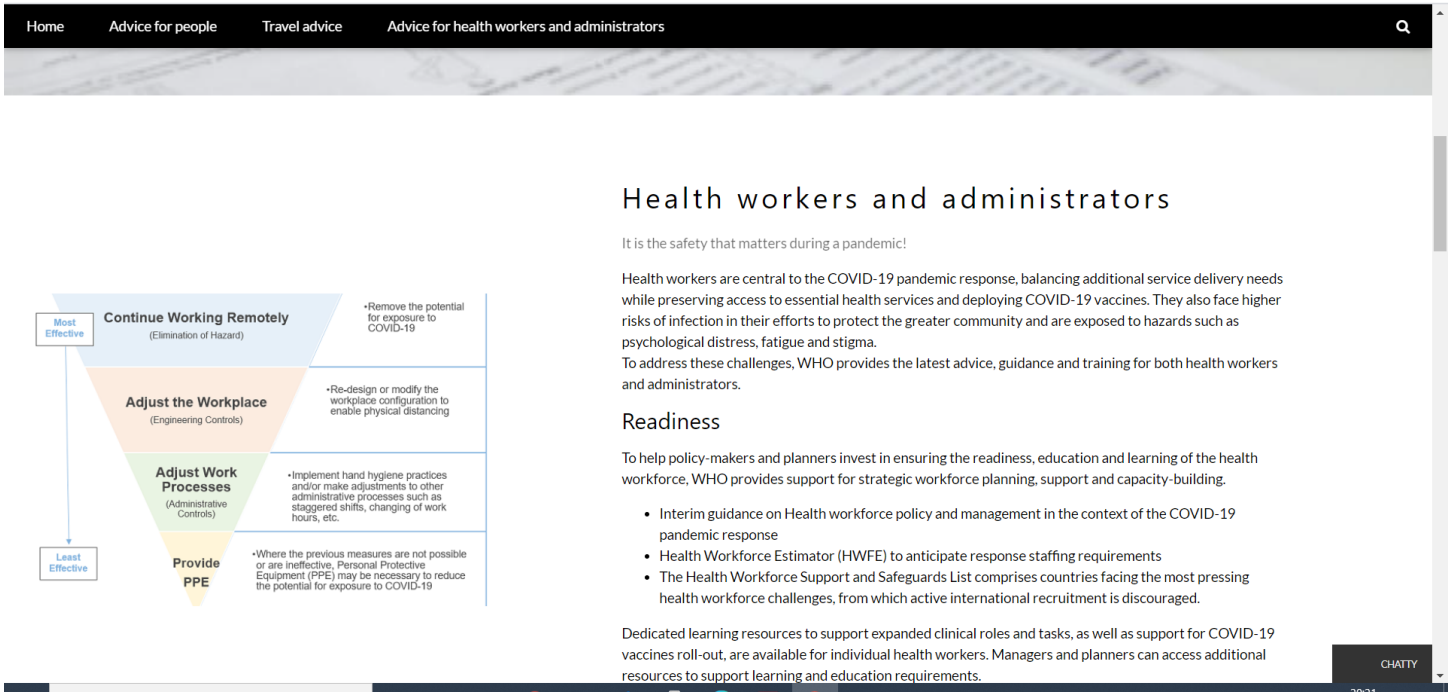

Fig 4.11 Advice for health workers

Covid Vaccines:

This page consists of three sections: Vaccine, New variant and the effects of new variant. It briefs the people about the covid-19 vaccine, the benefits of the vaccine and why is it important that everyone gets vaccinated and continue to take precautions even after getting vaccinated and not forget our responsibility.

Vaccine:

This page covers all the covid-19 vaccine related questions like if there even is a vaccine for covid, is it ready for distribution, what type of vaccines have been developed and how they work, will they provide long term protection and if they are safe for children.

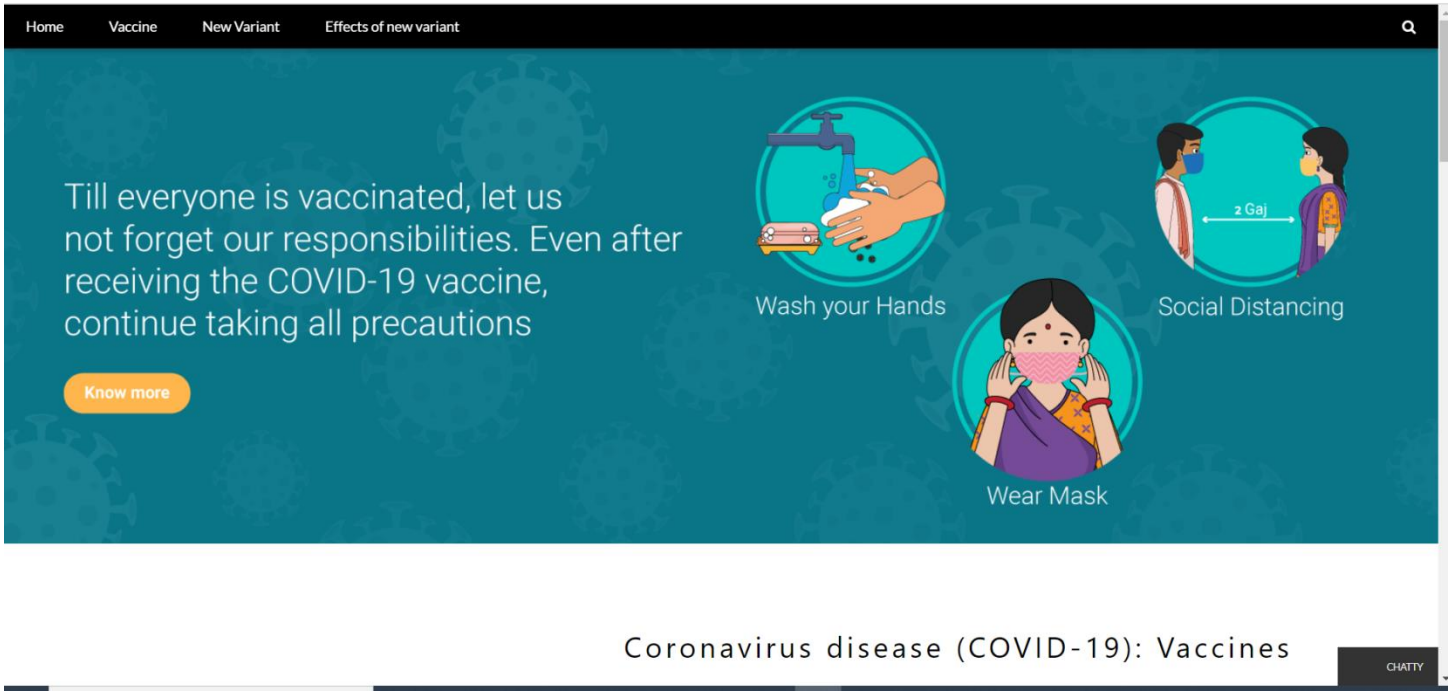

Fig 4.12 Covid Vaccine

New variant:

This section has information about virus variants and their effects on covid-19 vaccines. It briefs about the new variant of the virus that causes covid-19 and what we know and not know and how the virus works.

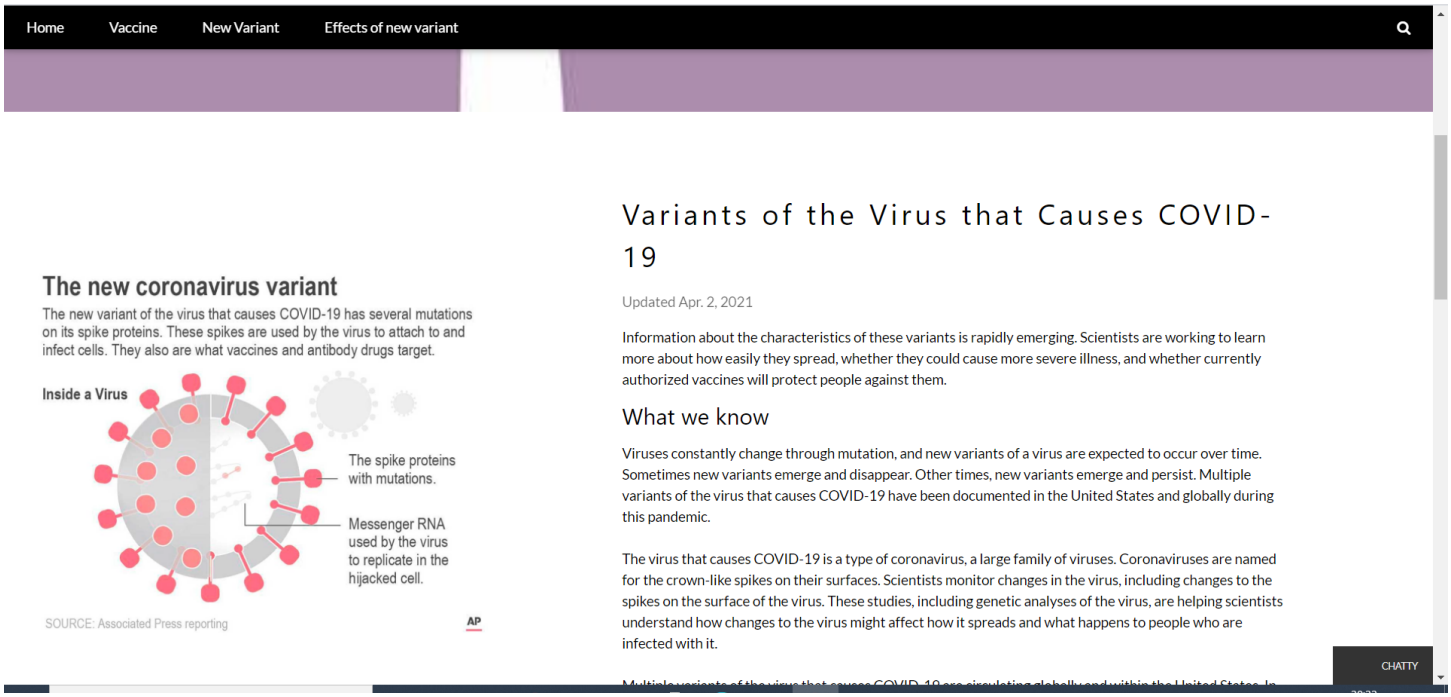

Fig 4.13 New Variant Page

Effects of new variant:

This page provides answers to questions like what causes a virus to change to a new variant, what impact the new variant has on covid-19 vaccines and what is WHO doing to monitor and understand the impact of the virus on the efficacy of covid vaccines. It also tells the importance of getting vaccinated in spite of the new variants and how we can prevent future new variants of the covid virus.

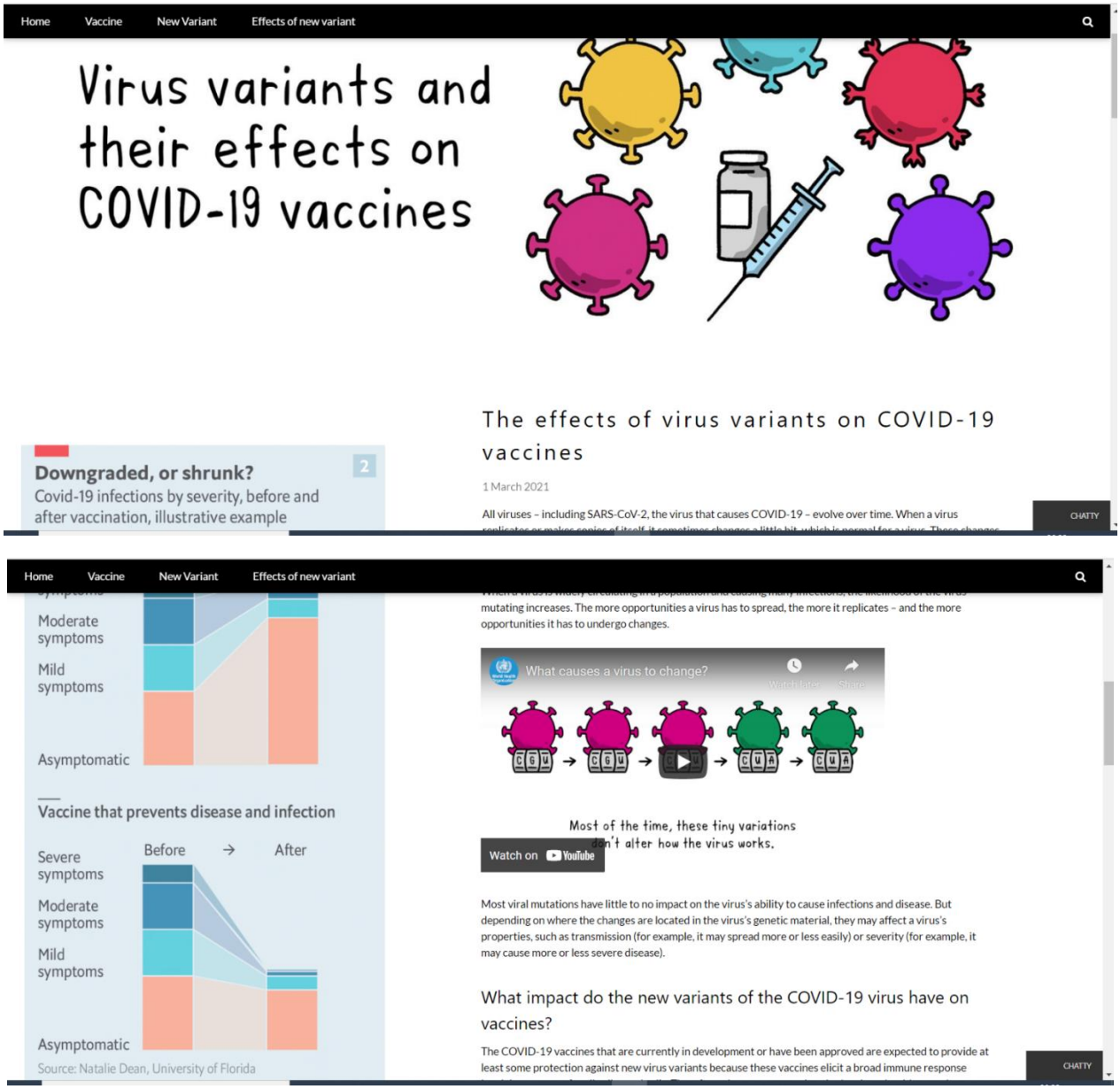

Fig 4.14 Effects of new variant

Research updates:

This page consists of three sections: Global research, India's work on the vaccine (covaxin) and its side effects and provides with the latest research on covid-19 from trusted sources.

Global research:

This page provides information on how WHO is bringing the world's scientists and global health professionals together to accelerate the research and development process, and develop new norms and standards to contain the spread of the coronavirus pandemic and help care for those affected. It also shares all the hardcore covid-19 facts like the symptoms, treatment, prevention and most at risk details.

Fig 4.15 Global Research Page

India’s work on the vaccine:

This page talks about India’s first indigenous covid-19 vaccine which is covaxin and its key attributes. Covaxin, India's indigenous COVID-19 vaccine by Bharat Biotech is developed in collaboration with the Indian Council of Medical Research (ICMR) - National Institute of Virology (NIV).

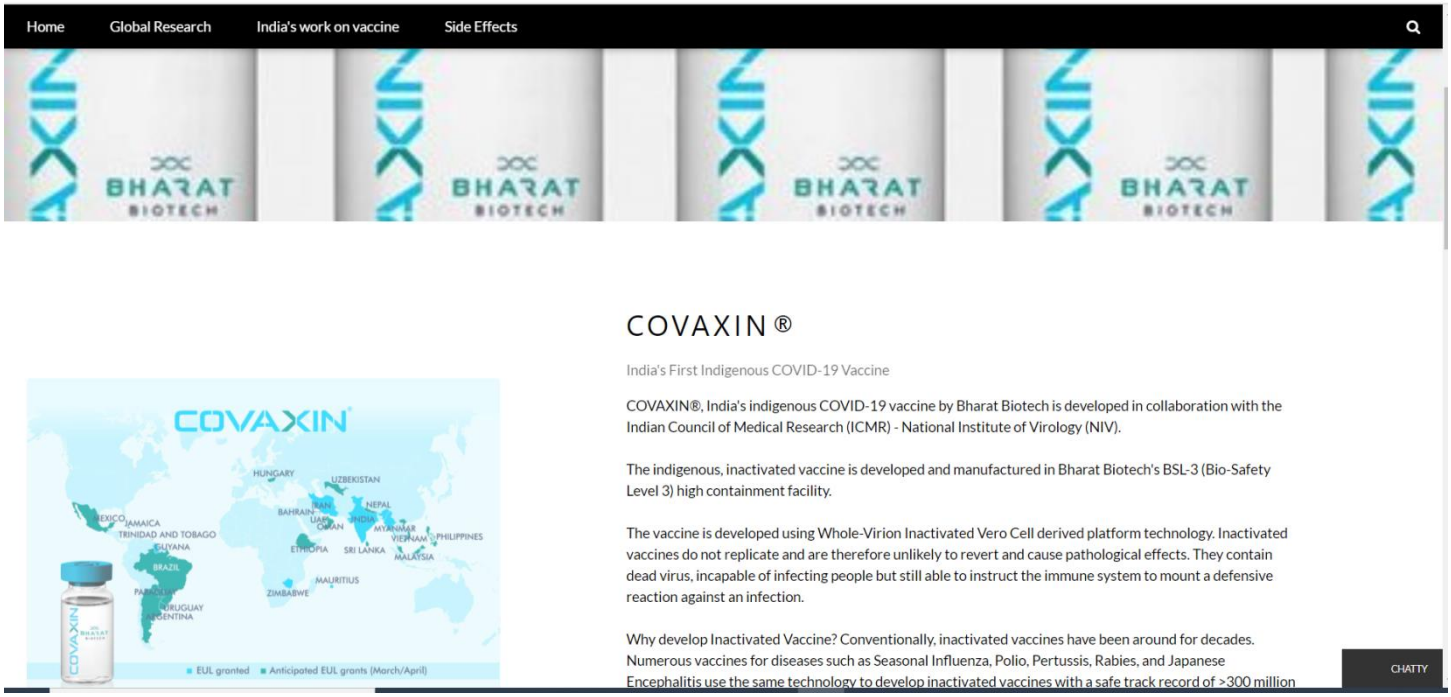

Fig 4.16 India’s work on vaccine

Side effects:

This page gives data about the possible side effects after getting the covid-19 vaccine. These side effects may affect your ability to do daily activities, but they should go away in a few days. Some people have no side effects. It also gives helpful tips to overcome these side effects and cases when to consult the doctor in case something serious happens.

Fig 4.17 Side Effects-1

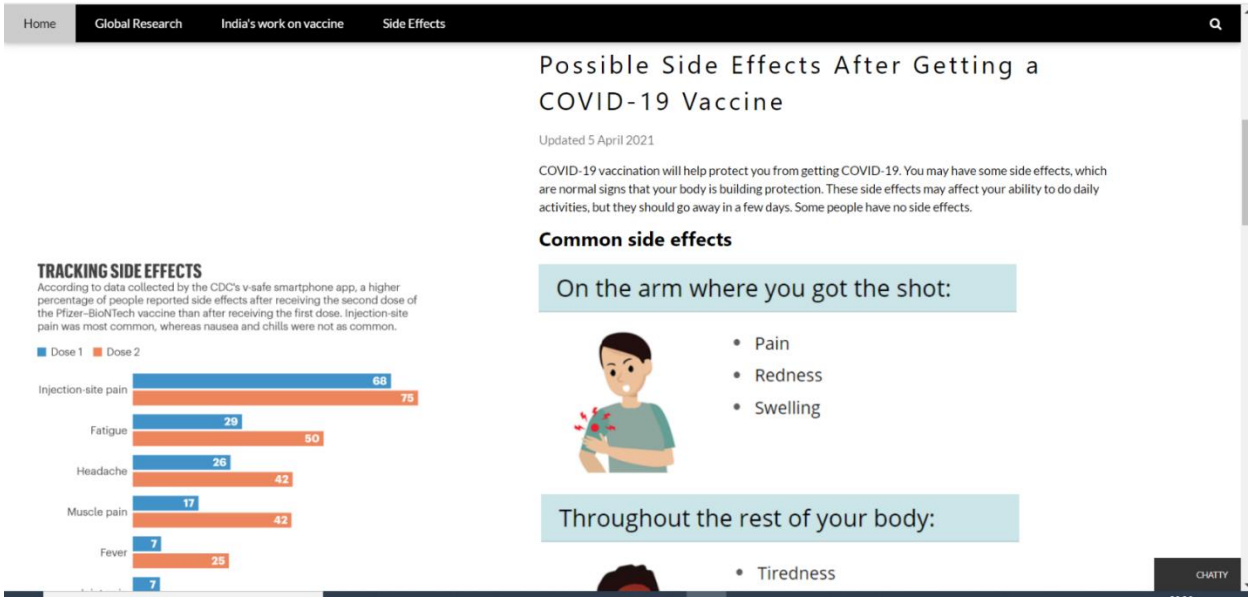

Fig 4.18 Side Effects-2

About us and webpage:

This is the about us and webpage section where we have written about us briefly and given an overview of the contents of our website.

Fig 4.19 About Us

Footer:

This is the footer of the Covid website consisting of the emergency contact number and mail details and giving credentials to the World Health Organization.

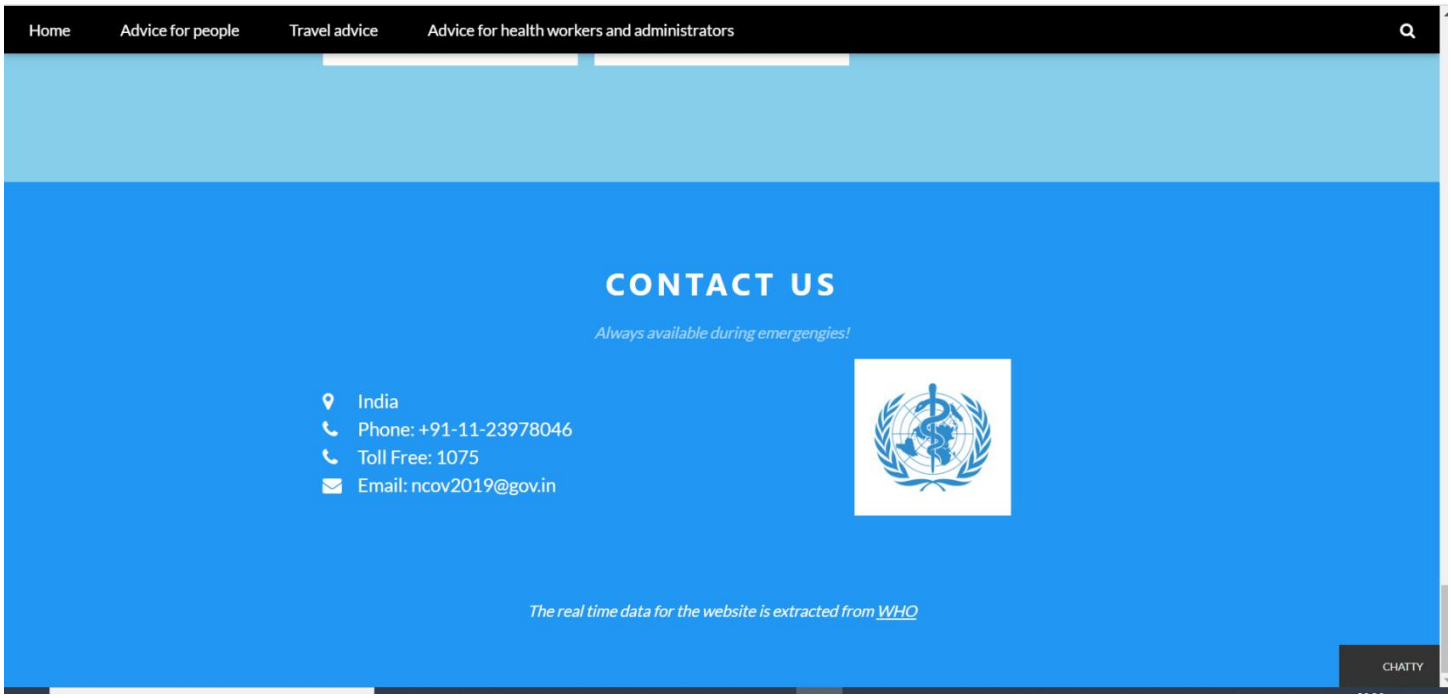

Fig 4.21 About Us

Chapter 5

Conclusions and learning

5.1 Conclusion

In our current emergency, providing information, updates, and support to the public are the key objectives. COVID-19 has accelerated the digitization process. It pushed the urgency of support and interaction methods that are timely and capable of coping with physical distance.

It's here where the use of chatbots has seen a significant uptick, revealing this new technology's full potential—especially in healthcare.

Chatbots can never replace empathy and the qualitative value of human support. They can, however, represent a valid way to manage requests and lighten the workload during emergencies.

5.2 Future Scope

The COVID-19 pandemic is an accelerator for chatbot technology, helping people around the world get more and more comfortable with leveraging this tool for healthcare. As we move beyond the pandemic, the adoption of chatbots in broader healthcare applications will continue to grow. As they do, public and private stakeholders must come together to create governance frameworks that maximize these benefits while minimizing risks. Assuming that Covid-19 is not the only disease we are facing, we plan to reuse the chatbot and make it compatible with other epidemics, diseases or other services with individual APIs or relevant datasets.

5.3 Learning

We learned Flask and using various plugins required in our project. We believe in coordinating and teamwork, thus we ensured everyone was on the same page when making this project. We believe that systems cannot be completed in one go, we accept the fact that the system can be improved, and we will strive to make incremental changes every now and then. It is essential to keep the project alive and let it grow.

We learned to understand the requirements of the world and further improve upon the current system that are in place. We hope this system helps everyone out there. Pandemics doesn't distinguish between any humans, disease brings destruction to human society, we want to decrease the impact of pandemics. We learned that this is not a simple problem. To further improve upon the system would require us to consult experts in the industry, doctors, etc.

No project could have a completed stamp on it, we believe this is a lively project and there is always room for improvement or some new functionality.

References:

- **https://www.who.int/**
- **https://www.bloomberg.com/coronavirus**
- **https://flask.palletsprojects.com/en/1.1.x/**
- **https://docs.python.org/3.8/**
- **https://chatterbot.readthedocs.io/en/stable/**
- **https://www.aarogyasetu.gov.in/**
- **https://developers.google.com/chart/interactive/docs/basic_load_libs#load-settings**

Acknowledgement

Success of a project like this involving high technical expertise, patience, and massive support of guides, is possible when team members work together. We take this opportunity to express our gratitude to those who have been instrumental in the successful completion of this project. We would like to thank our project guide Dr. Sonali Patil who guided and advised us throughout the project. Thank you to everyone who suggested us improvements and changes during our presentations which helped us build a better project.