DIGITAL NATURALIST - AI ENABLED TOOL FOR BIODIVERSITY RESEARCHERS

A PROJECT REPORT

Submitted by

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In partial fulfillment for the award of the degree

Of

BACHELOR OF COMPUTER SCIENCE AND ENGINEERING

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TRICHY-621 006

ANNA UNIVERSITY::CHENNAI-600 025

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1.INTRODUCTION

1.1 OVERVIEW OF THE PROJECT:

The overview of the project is to provide the information of the plants, animals and flowers. A naturalist is someone who studies the patterns of nature, identifies a different kind of flora and fauna in nature. Being able to identify the TOPIC DIGITAL NATURALIST - AI ENABLED TOOL FOR BIODIVERSITY RESEARCHERS TEAM MEMBERS MATHIYAZHAGAN.M ,AADHIKESAVAN.P,TAMILSELVAN.M, VIJAY.J FACULTY MENTOR DHAMODHARAN.V flora and fauna around us often leads to an interest in protecting wild spaces, and collecting and sharing information about the species that see on our travels is very useful for conservation groups like NCC. When venturing into the woods, field naturalists usually rely on common approaches like always carrying a guidebook around everywhere or seeking help from experienced ornithologists. There should be a handy tool for them to capture, identify and share the beauty to the outside world.

1.2 PROJECT PURPOSE:

The main purpose of the project is to guide the person who want to know the complete information about the plants, animals, flowers and birds. Digital natural system is an AI enabled tool which is help to the person who don't know about the flora and fauna.

2.LITERATURE SURVEY

2.1 EXISTING PROBLEM:

In the previous model the accuracy of the images are confused and it may show the wrong output and it provide the incorrect information to the client or person and it has an limited amount of the data. The increasing availability of digital images, coupled with sophisticated artificial intelligence (AI) techniques for image classification, presents an exciting opportunity for biodiversity researchers to create new datasets of species observations. To investigated whether an AI plant species classifier could extract previously unexploited biodiversity data from social media photos (Flickr). To found over 60,000 geolocated images tagged with the keyword "flower" across an urban and rural location in the UK and classified these using AI, reviewing these identifications and assessing the representativeness of images. Images were predominantly biodiversity focused, showing single species. Non-native garden plants dominated, particularly in the urban settings. The AI classifier performed best when photos was focused on single native species in wild situations but also performed well at higher taxonomic levels (genus and family), even when images substantially deviated from this Present checklist of questions that should be considered as a similar analysis.

2.2 REFERENCE:

1. AI Naturalists Might Hold the Key to Unlocking Biodiversity Data in Social Media Imagery.

2. Enabling Biodiversity Research with Automated Species Identification.

3. Plant Identification Using Artificial Intelligence Innovative Strategies for Teaching Food Biodiversity.

4. Naturalist opens up a wealth of nature data and computer vision challenges.

5. Researchers get AI help to map ecosystem, wildlife conservation.

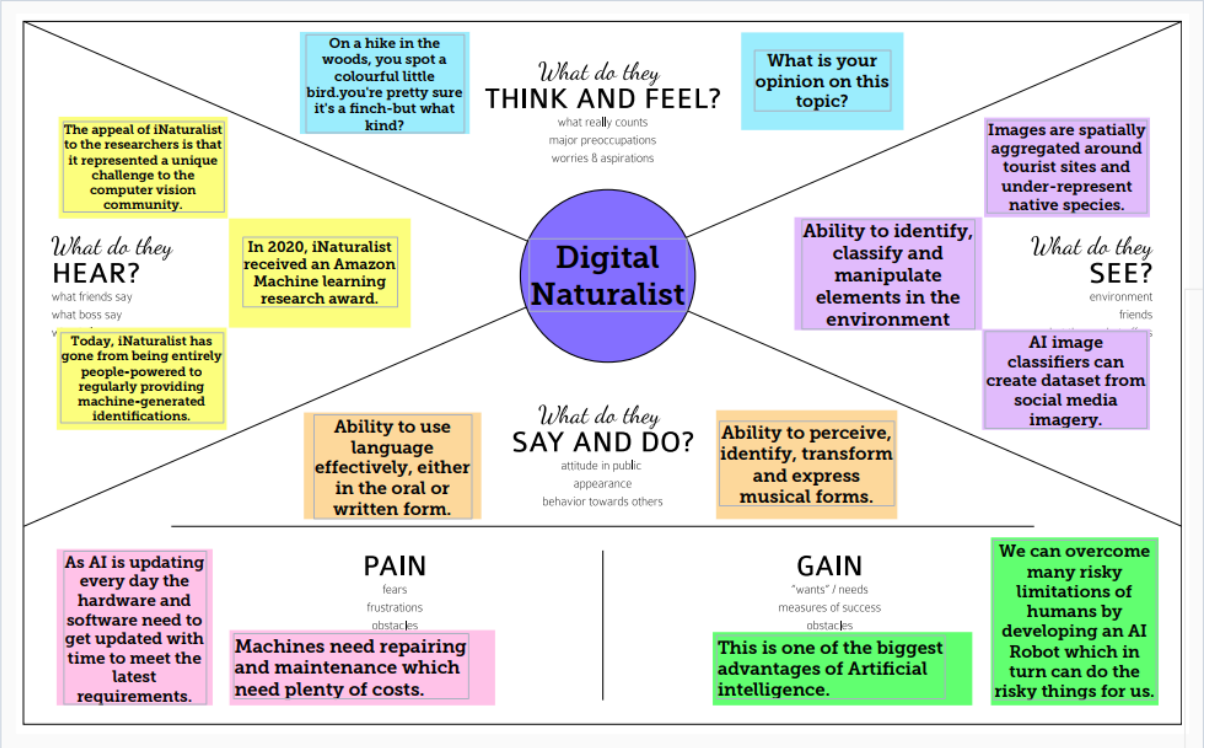
2.3 PROBLEM STATEMENT DEFINITION:

To provide the information about of plants, animals, flowers and birds the previous system provides the limited amount of the data in current project we are going to rectify it.

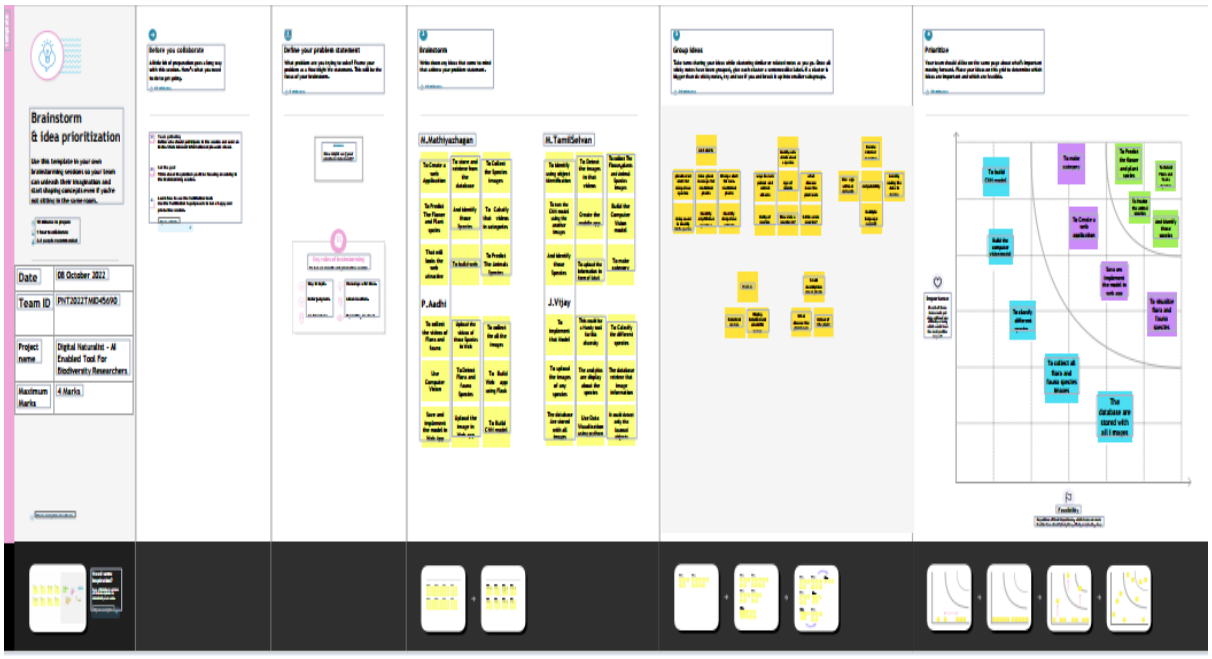
To provide the complete information about animals ,flowers and birds because the previous system provide very limited information.

3.IDEATION AND PROPOSED SOLUTION

3.1 Empathy Map Canvas:



3.2 Ideation & Brainstorming:



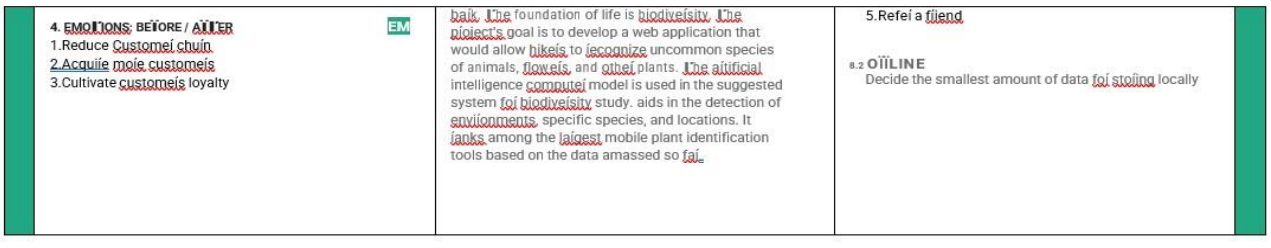
3.3 Proposed Solution:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	To build an efficient AI based image Recognition tool which effectively to curb out the following constraints: • Helps Naturalists and NonNaturalists users or the common people who go for hikes , canoe trips , excursions to explore the different species of flora and fauna found in that terrain • To capture the flora and fauna using the AI tool • • To provide the information about the flora and fauna species

2.	Idea / Solution description	This system is built by using the Image/object recognition and classification using (CNN) convolutional neural network. By using this system, we can capture the image of any animals and plants and can obtain the information about the flora and fauna at any time • Show alert messages for plants/ animals using different colours and in which way they are highlighted • Display rarities of the species • Description about the species
3.	Novelty / Uniqueness	This AI powered chatbot gives a 24*7 efficient automated so that the service can be used anywhere and anytime . This system carries out the visualisation of the interpreted results. It also provides various information regarding the respective flora and fauna. • Complete description about the characteristics of the species and Alert the users if the species is dangerous or not • Giving the medicinal values of plants and its description • Displaying the names in 7 taxonomical levels of each flora and fauna • Alerting the user based on rarity of the species found
4.	Social Impact / Customer Satisfaction	The feasibility of implementing this idea is moderate neither easy nor tough because the system needs to satisfy the basic requirements of the customer as well as it should act as a bridge towards achieving high accuracy on predicting and analysing the image taken as input and to deliver the output with respective to the input image. • Identifying the flora and fauna in our locality / environment helps in improving and understanding biodiversity and the importance of conserving and preserving them for our future generations • Establishment of more national parks and wildlife sanctuaries.

5.	Business Model (Revenue Model)	By using this system, the users can predict and analyse the picture of the animals or plants. In which it results to the visualizing the description of the flora or fauna which taken as input. • Partnership with many naturalists, universities and scientists around the world
6.	Scalability of the Solution	By implementing this system, the people can efficiently and effectively to gain knowledge about the nature they want and they wish to use at anytime. This system can also be integrated with the future • Technologies As the application grows more popular, new and innovative features can be added now and then • Subscriptions can be classified according to the type of users including the Normal plan,Educational plan, and Business plan

3.4 Problem Solution Fit:



4.REQUIREMENT ANALYSIS

4.1 Functional Requirements:

Anaconda Navigator

Keras

Tensorflow

Sklearn

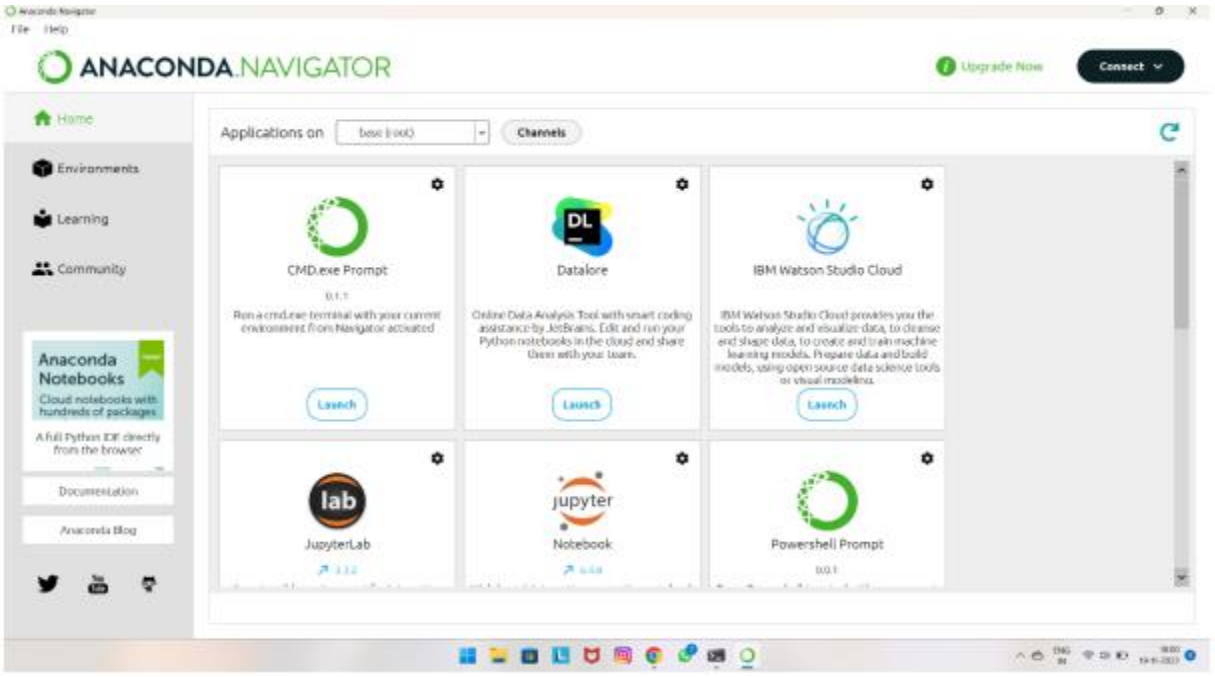
Pandas

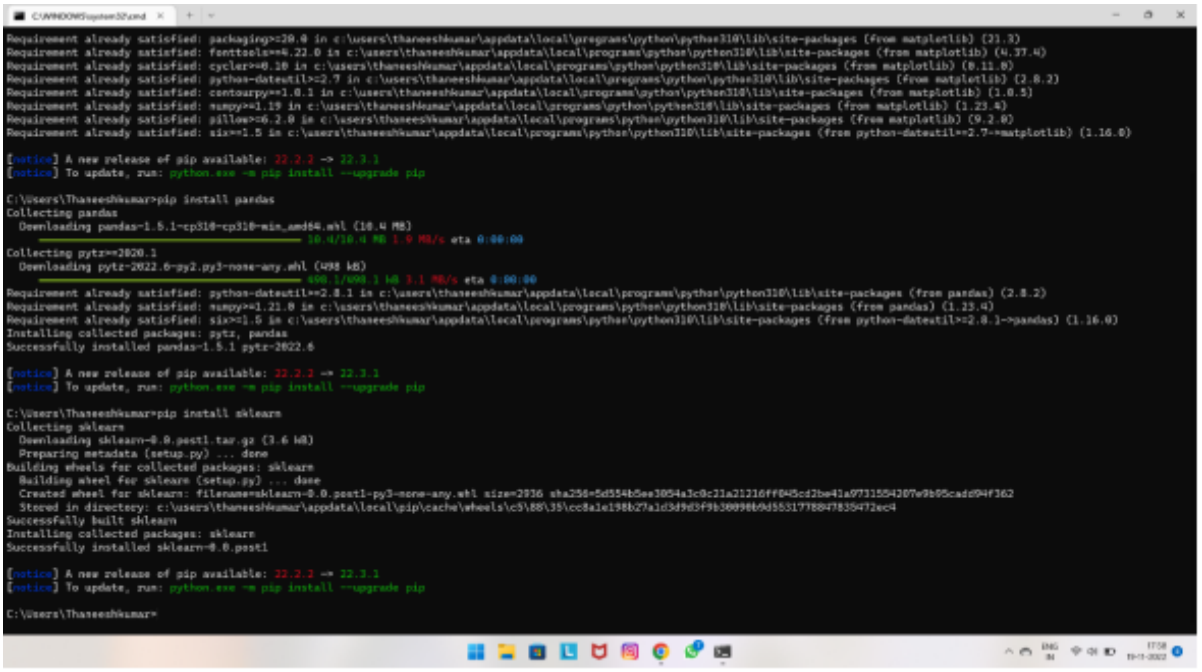
Numpy

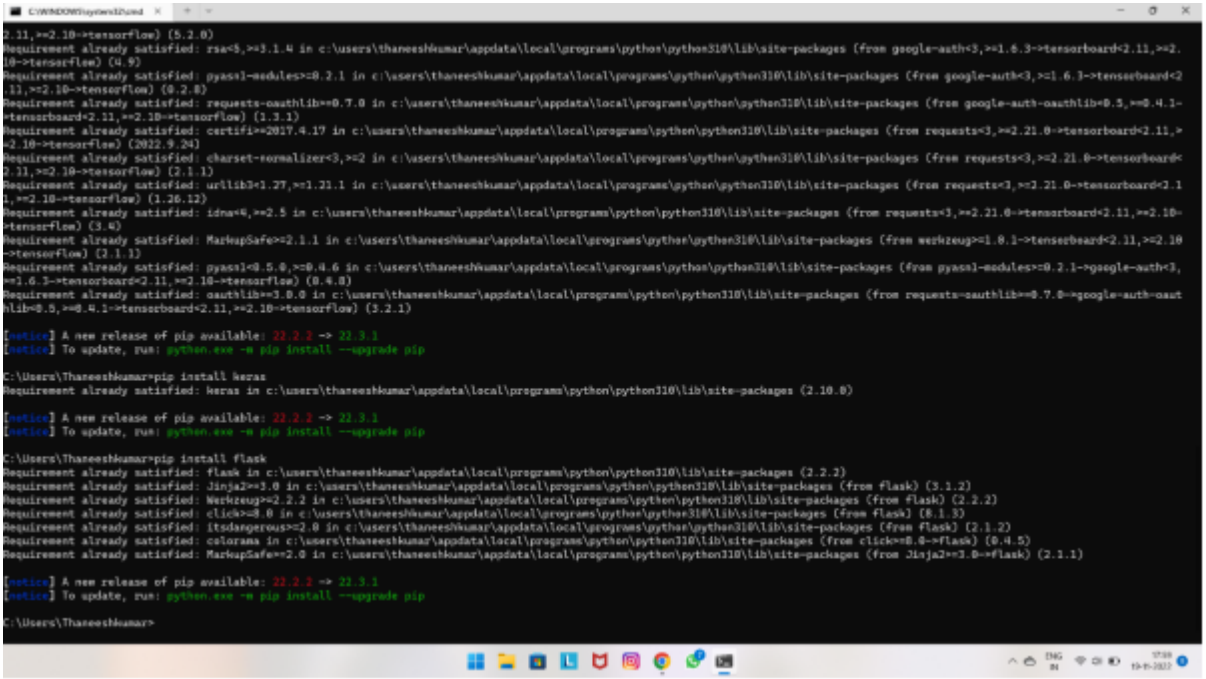
Flask

Matplotlib

Opencv-python.

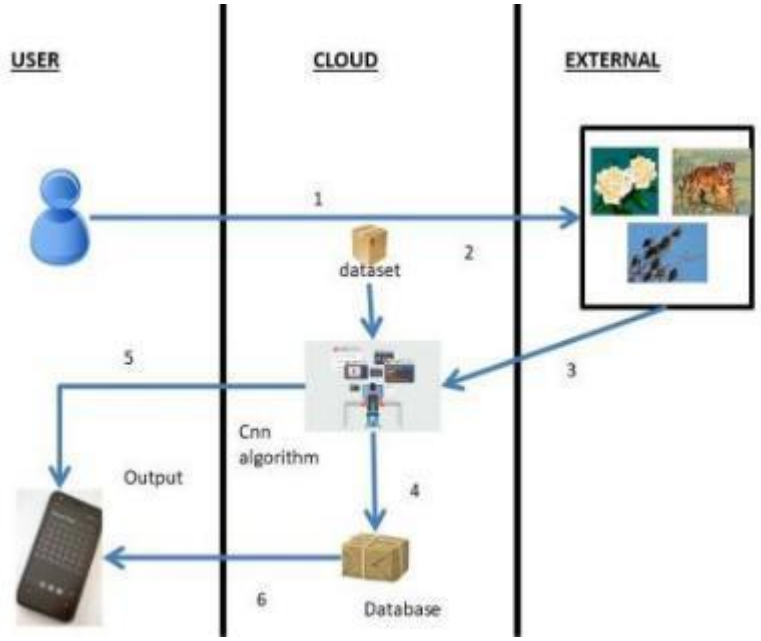



Requirement already satisfied: packaging>=20.0 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from matplotlib) (21.3)
Requirement already satisfied: fonttools>=4.22.0 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from matplotlib) (4.37.4)
Requirement already satisfied: cycler>=0.10 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from matplotlib) (0.11.0)
Requirement already satisfied: python-dateutil>=2.7 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from matplotlib) (2.8.2)
Requirement already satisfied: contourpy>=1.0.1 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from matplotlib) (1.0.5)
Requirement already satisfied: numpy>=1.19 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from matplotlib) (1.23.4)
Requirement already satisfied: pillow>=6.2.0 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from matplotlib) (9.2.0)
Requirement already satisfied: six>=1.5 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from python-dateutil>=2.7->matplotlib) (1.16.0)
[notice] A new release of pip available: 22.2.2 -> 22.3.1
[notice] To update, run: python.exe -m pip install --upgrade pip
C:\Users\Thaneeshkumar>pip install pandas
Collecting pandas
Downloading pandas-1.5.1-cp310-cp310-win_amd64.whl (10.4 MB)
10.4/10.4 MB 1.9 MB/s eta 0:00:00
Collecting pytz>=2020.1
Downloading pytz-2022.6-py2.py3-none-any.whl (498 kB)
498.1/498.1 kB 3.1 MB/s eta 0:00:00
Requirement already satisfied: python-dateutil>=2.8.1 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from pandas) (2.8.2)
Requirement already satisfied: numpy>=1.21.0 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from pandas) (1.23.4)
Requirement already satisfied: six>=1.5 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from python-dateutil>=2.8.1->pandas) (1.16.0)
Installing collected packages: pytz, pandas
Successfully installed pandas-1.5.1 pytz-2022.6
[notice] A new release of pip available: 22.2.2 -> 22.3.1
[notice] To update, run: python.exe -m pip install --upgrade pip
C:\Users\Thaneeshkumar>pip install sklearn
Collecting sklearn
Downloading sklearn-0.0.post1.tar.gz (3.6 kB)
Preparing metadata (setup.py) ... done
Building wheels for collected packages: sklearn
Building wheel for sklearn (setup.py) ... done
Created wheel for sklearn: filename=sklearn-0.0.post1-py3-none-any.whl size=2936 sha256=5d554b5ee3054a3c0c21a21216ff045cd2be41a97311554207e9b95cadd94f362
Stored in directory: c:\users\thaneeshkumar\appdata\local\pip\cache\wheels\c5\8b\35\cc8a1e198b27a1d3d9d3f9b30098b9d5531778847835472ec4
Successfully built sklearn
Installing collected packages: sklearn
Successfully installed sklearn-0.0.post1
[notice] A new release of pip available: 22.2.2 -> 22.3.1
[notice] To update, run: python.exe -m pip install --upgrade pip
C:\Users\Thaneeshkumar>


2.11,>=2.10->tensorflow) (5.2.0)
Requirement already satisfied: rsa<5,>=3.1.4 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from google-auth<3,>=1.6.3->tensorboard<2.11,>=2.10->tensorflow) (4.9)
Requirement already satisfied: pyasn1-modules>=0.2.1 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from google-auth<3,>=1.6.3->tensorboard<2.11,>=2.10->tensorflow) (0.2.8)
Requirement already satisfied: requests-oauthlib>=0.7.0 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from google-auth-oauthlib<0.5,>=0.4.1->tensorboard<2.11,>=2.10->tensorflow) (1.3.1)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from requests<3,>=2.21.0->tensorboard<2.11,>=2.10->tensorflow) (2022.9.24)
Requirement already satisfied: charset-normalizer<3,>=2 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from requests<3,>=2.21.0->tensorboard<2.11,>=2.10->tensorflow) (2.1.1)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from requests<3,>=2.21.0->tensorboard<2.11,>=2.10->tensorflow) (1.26.12)
Requirement already satisfied: idna<4,>=2.5 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from requests<3,>=2.21.0->tensorboard<2.11,>=2.10->tensorflow) (3.4)
Requirement already satisfied: MarkupSafe>=2.1.1 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from werkzeug>=1.0.1->tensorboard<2.11,>=2.10->tensorflow) (2.1.1)
Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from pyasn1-modules>=0.2.1->google-auth<3,>=1.6.3->tensorboard<2.11,>=2.10->tensorflow) (0.4.8)
Requirement already satisfied: oauthlib>=3.0.0 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from requests-oauthlib>=0.7.0->google-auth-oauthlib<0.5,>=0.4.1->tensorboard<2.11,>=2.10->tensorflow) (3.2.1)
[notice] A new release of pip available: 22.2.2 -> 22.3.1
[notice] To update, run: python.exe -m pip install --upgrade pip
C:\Users\Thaneeshkumar>pip install keras
Requirement already satisfied: keras in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (2.10.0)
[notice] A new release of pip available: 22.2.2 -> 22.3.1
[notice] To update, run: python.exe -m pip install --upgrade pip
C:\Users\Thaneeshkumar>pip install flask
Requirement already satisfied: flask in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (2.2.2)
Requirement already satisfied: Jinja2>=3.0 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from flask) (3.1.2)
Requirement already satisfied: Werkzeug>=2.2.2 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from flask) (2.2.2)
Requirement already satisfied: click>=8.0 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from flask) (8.1.3)
Requirement already satisfied: itsdangerous>=2.0 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from flask) (2.1.2)
Requirement already satisfied: colorama in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from click>=8.0->flask) (0.4.5)
Requirement already satisfied: MarkupSafe>=2.0 in c:\users\thaneeshkumar\appdata\local\programs\python\python310\lib\site-packages (from Jinja2>=3.0->flask) (2.1.1)
[notice] A new release of pip available: 22.2.2 -> 22.3.1
[notice] To update, run: python.exe -m pip install --upgrade pip
C:\Users\Thaneeshkumar>

5.PROJECT DESIGN

5.1 DATAFLOW DIAGRAM:



5.2 Solution & Technical Architecture:

5.3 User Stories:

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority
Customer (Mobile user)	Image capture	USN-1	As a user, I can take photos of the plant life, animals and birds	I can take photos when required	High
		USN-2	As a user, I will receive processed information about the type of species	I can see the type of plant or animal or plant	High
		USN-3	As a user, I can share it with others	I can share using share option	Low
	Data process	USN-4	Data must be trained and tested and CNN algorithm must work properly.	I must see the correct processed information	High
	Output	USN-5	As a user, I can see the scientific name of the species	I must see the correct data	High
		USN-6	As a user, I can see the characteristics and alert messages	I must see the correct data	High
Administrator	Manage	USN-1	As a admin I must add various data and edit information	I must edit the data present	High

6. PROJECT PLANNING AND SCHEDULING

6.1 Sprint Planning Estimation & Schedule:

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Modelling Phase	USN-1	Data Collecting and digitalizing for analysing	3	Medium	M.MATHIYAZHAGAN
Sprint-1		USN-2	Adding more data to avoid overfitting	2	Medium	M.TAMILSELVAN
Sprint-1		USN-3	Building a CNN model using the collected data	5	High	P.AADHIKESAVAN
Sprint-1		USN-4	Evaluating the model to check the accuracy and precision	3	High	J.VIJAY
Sprint-2	Development Phase	USN-5	Home page Creation – Shows the features of our application	1	Low	P.AADHIKESAVAN
Sprint-2		USN-6	Setting up facilities for user to feed the image	2	Medium	M.MATHIYAZHAGAN
Sprint-2		USN-7	Prediction page creation – shows prediction for the user given image	4	Medium	J.VIJAY
Sprint-2		USN-8	Model loading – API creation using flask	5	High	M.TAMILSELVAN
Sprint-3	Deployment Phase	USN-9	Integrating UI & backend – Connecting the front end and backend using API calls	3	Medium	P.AADHIKESAVAN
Sprint-3		USN-10	Cloud deployment – Deployment of application using IBM Cloud	5	High	J.VIJAY
Sprint-4	Testing Phase	USN-11	Functional testing – Checking the scalability and robustness of the application	5	High	M.MATHIYAZHAGAN J.VIJAY
Sprint-4		USN-12	Non-Functional testing – Checking for user acceptance and integration	5	High	M.TAMILSELVAN P.AADHIKESAVAN

7.CODING & SOLUTIONING

Index.html:

```
<!DOCTYPE html>
<html lang="en">

<head>
                    <meta charset="UTF-8">
                    <meta name="viewport" content="width=device-width, initial-scale=1.0">
                    <meta http-equiv="X-UA-Compatible" content="ie=edge">
                    <title>DIGITAL NATURALIST</title>
                    <meta name="description" content="">
                    <meta name="keywords" content="">
                    <link rel="icon" type="image/x-icon"
href="https://img.icons8.com/fluency/48/000000/natural-food.png">
                    <link href="https://fonts.googleapis.com/css?family=Source+Sans+Pro:400,700"
rel="stylesheet">
                    <link rel="stylesheet" href="/static/style.css">

</head>

<body class="leading-normal tracking-normal text-gray-900" style="font-family: 'Source Sans Pro',
sans-serif;">

                    <div class="h-screen pb-14 bg-right bg-cover">
                      <!--Nav-->
                      <div class="w-full container mx-auto p-6">

                      </div>

                      <!--Main-->
                      <div class="container pt-24 md:pt-48 px-6 mx-auto flex flex-wrap flex-col
md:flex-row items-center">
```

```
                    <!--Left Col-->
                    <div class="flex flex-col w-full xl:w-2/5 justify-center lg:items-start
overflow-y-hidden">
                        <h1
                            class="my-4 text-3xl md:text-5xl text-green-800 font-bold
leading-tight text-center md:text-left slide-in-bottom-h1">
                            Digital Naturalist</h1>
                        <p class="leading-normal text-base md:text-2xl mb-8 text-center
md:text-left slide-in-bottom-subtitle">
                            An Artificial Intelligence powered tool for Bio-Diversity
Researchers</p>

                        <p class="text-blue-400 font-bold pb-8 lg:pb-6 text-center
md:text-left fade-in">Trouble identifing a
                            animal,plant or bird,<br>Upload the picture<br>Sit
back<br>Relax<br>We will find it
                            <!DOCTYPE html>
                        </p>
                        <div class="flex w-full justify-center md:justify-start pb-24 lg:pb-
0 fade-in">
                            <form action="/predict" id="upload-file" method="post"
enctype="multipart/form-data">
                                <input type="file" name="uploadedimg"
id="uploadedimg" required accept=".jpg, .png, .jpeg, .gif, .bmp, .tif, .tiff|image/*" >
                                <input type="reset" value="Reset"
class="upload">
                                <input type="submit" value="Upload"
class="upload" onsubmit="check_file">
                            </form>
                        </div>

                    </div>

                    <!--Right Col-->
                    <div class="w-full xl:w-3/5 py-6 overflow-y-hidden">
```

```
                                    <img class="w-5/6 mx-auto lg:mr-0 slide-in-bottom"
src="https://i.ibb.co/vwhxYCg/animals.png">
                                </div>



                                <!--Footer-->
                                <div class="w-full pt-16 pb-6 text-sm text-center md:text-left fade-in">
                                    <a class="text-gray-500 no-underline hover:no-underline"
                                        href="https://github.com/IBM-EPBL/IBM-Project-46326-
1660745221">&copy; Digital Naturalist</a>
                                </div>

                            </div>



                        </div>

<script>
document.getElementById("uploadedimg").addEventListener("change", validateFile)

function validateFile(){
  const allowedExtensions =  ['jpg','png'],
        sizeLimit = 1_000_000;
  const { name:fileName, size:fileSize } = this.files[0];
  const fileExtension = fileName.split(".").pop();
  if(!allowedExtensions.includes(fileExtension)){
    alert("Only image files - .jpg, .jpeg, .png, .tiff ");
    this.value = null;
  }else if(fileSize > sizeLimit){
    alert("file size too large")
    this.value = null;
  }}</script>
</body>
</html>
```

Login.html:

```
<!DOCTYPE html>
<html lang="zxx">
<head>
<title>Water Quality Prediction</title>
<!-- Meta tag Keywords -->
<meta name="viewport" content="width=device-width, initial-
scale=1">
<meta charset="UTF-8" />     <meta name="keywords"
content="Login Form" />
<link
href="//fonts.googleapis.com/css2?family=Poppins:wght@300;400;500;6
00&display=swap" rel="stylesheet">
<script src="https://kit.fontawesome.com/af562a2a63.js"
crossorigin="anonymous"></script>
<link type="text/css" rel="stylesheet" href="{{ url_for('static',
filename='css/style1.css') }}" />
</head>
<body>
<!-- form section start -->
<section class="w3l-mockup-form">
<div class="container">
<!-- /form -->
<div class="workinghny-form-grid">
<div class="main-mockup">
<div class="alert-close">
<span class="fa fa-close"></span>
</div>
<div class="w3l_form align-self">
<div class="left_grid_info">
<img src="{{ url_for('static', filename='images/bg.png')
}}" alt="">                    </div>
</div>
```

```
<div class="content-wthree">
<h2>Login Now</h2>
<p></p>
<form action="/login_validation" method="post">
<input type="email" class="email" name="email"
placeholder="Email" required>
<input type="password" class="password"
name="password"  style="margin-bottom: 2px;" placeholder="Password"
required>
<button name="submit" name="submit" class="btn"
type="submit">Login</button>
</form>
<div class="social-icons">
<p>Create Account! <a
href="/register">Register</a>.</p>
</div>
</div>
</div>
</div>
<!-- //form -->
</div>
</section>
<!-- //form section start -->
<script></script>
<script>
$(document).ready(function (c) {
$('.alert-close').on('click', function (c) {
$('.main-mockup').fadeOut('slow', function (c) {
$('.main-mockup').remove();
});
});
});
</script>
```

```
</body>
</html>
```

Register.html:

```
<!DOCTYPE html>
<html lang="zxx">
<head>
<title>D-Naturalist</title>
<!-- Meta tag Keywords -->
<meta name="viewport" content="width=device-width, initial-
scale=1">
<meta charset="UTF-8" />     <meta name="keywords"
content="Login Form" />
<link
href="//fonts.googleapis.com/css2?family=Poppins:wght@300;400;500;6
00&display=swap" rel="stylesheet">
<script src="https://kit.fontawesome.com/af562a2a63.js"
crossorigin="anonymous"></script>
<link type="text/css" rel="stylesheet" href="{{ url_for('static',
filename='css/style1.css') }}" />
</head>
<body>
<!-- form section start -->
<section class="w3l-mockup-form">
<div class="container">
<!-- /form -->
<div class="workinghny-form-grid">
<div class="main-mockup">
<div class="alert-close">
<span class="fa fa-close"></span>
</div>
<div class="w3l_form align-self">
<div class="left_grid_info">
<img src="{{ url_for('static', filename='images/bg.png')
```

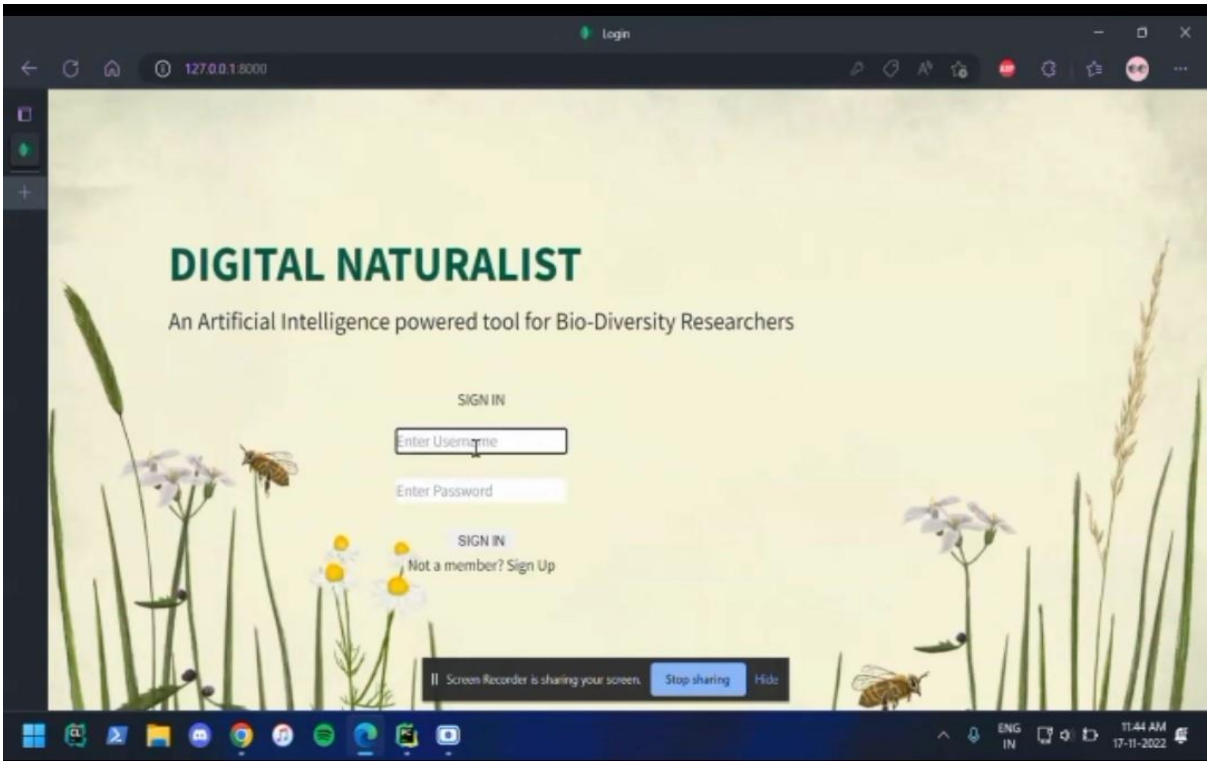
```
}}" alt="">                    </div>
</div>
<div class="content-wthree">
<h2>Register Now</h2>
<p></p>
<form action="/add_user" method="post">
<input type="text" class="name" name="name"
required placeholder="Name">
<input type="email" class="email" name="email"
required placeholder="Email">
<input type="password" class="password"
name="password" required placeholder="Password">
<button name="submit" class="btn"
type="submit">Register</button>
</form>
<div class="social-icons">
<p>Have an account! <a href="/login">Login</a>.</p>
<!-- //form -->
</div>
</section>
<!-- //form section start -->
<script>
$(document).ready(function (c) {
$('.alert-close').on('click', function (c) {
$('.main-mockup').fadeOut('slow', function (c) {
$('.main-mockup').remove();
});
});
});
</script>
</body>
</html>
```

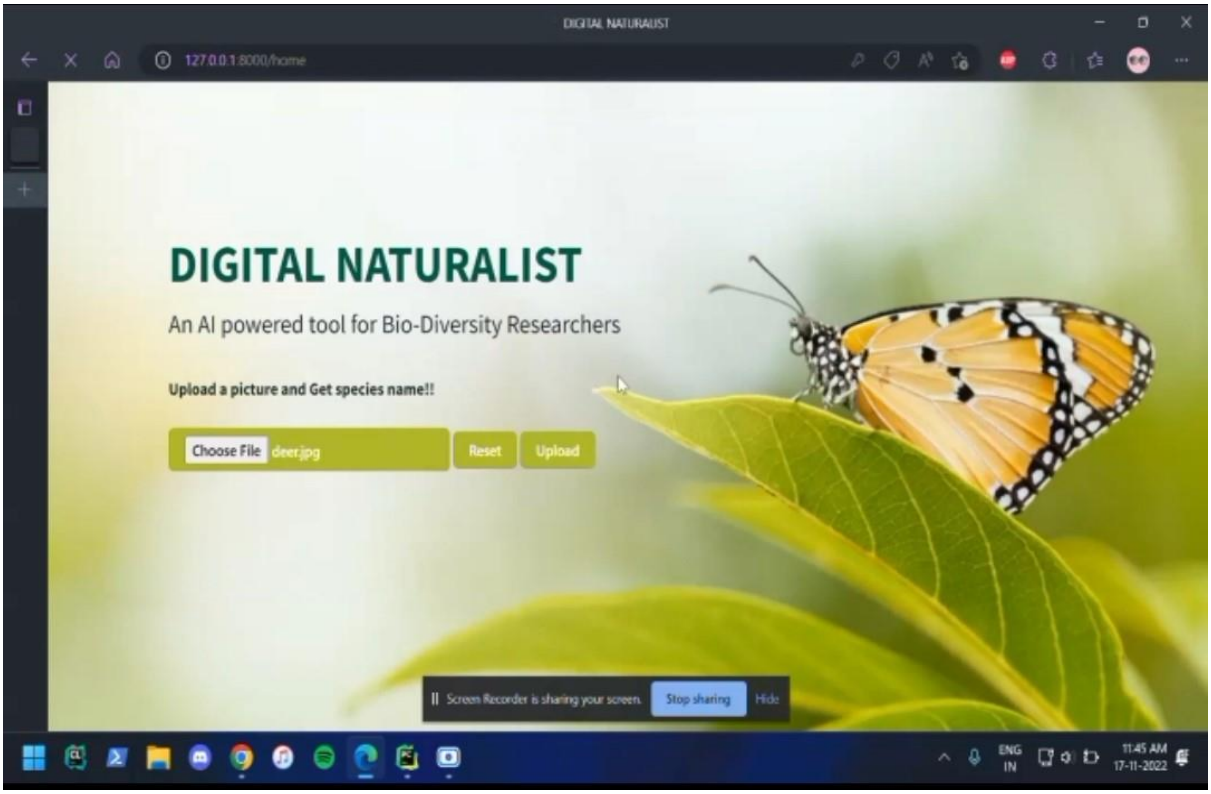
8.TESTING

8.1 Test Cases

				Date:									
				User ID:									
				Project Name:	Project - Digital Naturalist – AI Enabled tool for Biodiversity Researchers								
				Maximum Marks:									
				Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	Write Automation(Y/N)	Bug ID	Executed By

9.RESULTS





10.ADVANTAGES & DISADVANTAGES

Advantages:

It is useful to find the new variety of plants, animals and flowers and etc.

It is very useful for client.

Easy to build.

Easy to use.

Disadvantages:

It is little hard to use at the first stage.

It cost is high.

It need more amount of space of memory.

11. CONCLUSION

By combining social media APIs with AI classifiers, Can able to build an AI naturalist capable of creating biodiversity datasets from previously unexploited data sources. However, demonstrate that there are a number of biases in the data produced, some of which may be able to be mitigated against, that must be carefully considered before the data could be used in certain types of analyses.

12. FUTURESCOPE

The future scope of the project is to develop the AI tool into an Most used application for the client and to add the more number of varieties of the plant, animals, plants and sea animals and etc.

13. APPENDIX:

SOURCE CODE:

Index.html :

```
<html>
 <head>
 <title>D-Naturalist</title>

  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial- scale=1">
  <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min
.css">
<link href='https://fonts.googleapis.com/css?family=Josefin Sans'
rel='stylesheet'>
<link href='https://fonts.googleapis.com/css?family=Merriweather' rel='stylesheet'>
 <script src="https://cdn.bootcss.com/popper.js/1.12.9/umd/popper.min.js"></scri pt>
    <script src="https://cdn.bootcss.com/jquery/3.3.1/jquery.min.js"></script>
    <script src="https://cdn.bootcss.com/bootstrap/4.0.0/js/bootstrap.min.js"></script
>  <style>
                .header {
                top:0px;                    margin:0px;                 left: 0px;
                right: 0px;             position: fixed;            background:
 #22a8ee;               text-transform:uppercase;               letter-
 spacing:3px;                color: white;                overflow: hidden;
          padding-bottom: 10px;              font-size: 2.25vw;
          width: 100%;                padding-left:0px;           text-align:
 center;
                        padding-top:5px;
                        font-family: 'Merriweather';
                }

          .second{              top:60px;             bottom:0px;
```

```
        margin:0px;                 left: 0px;              right: 0%;
                position: absolute;                 padding: 0px;
        width: 100%;
                        background-
image:url({{url_for('static',filename="images/6.jfif")}});
        background-repeat:no-repeat;                background-size: cover;
                background-position:center;                 background-
attachment:absolute;

                }

                .inside{
                top:7%;             bottom:0px;                 margin:0px;
                left: 5%;           right: 55%;
                position: absolute;                 padding-left: 40px;
        padding-top:8%;             padding-right:5%;
        background-color:transparent;               font-family:Merriweather;
                color:#563F31;              font-size:18px;             text-
align:justify;                  line-height:32px;
margin:auto; overflow:hidden;   }
        .myButton{                      border: none;   text-align: center;    cursor:
pointer;                text-transform: uppercase;
                  outline: none;                overflow: hidden;
color: #fff;                font-weight: 700;                       font-size: 12px;
           background-color: #22a8ee;                   padding: 10px 15px;
           margin: 0 auto;
                        box-shadow: 0 5px 15px rgb(34, 168, 238);
                }

 .predictimg{           background-
image:url({{url_for('static',filename="images/7.jfif")}});

        background-repeat:no-repeat;
        background-size: cover;
         background-position:center;
        background-attachment:absolute;
 height:100%;
  margin-top:49.6%;  text-align:center;
 }
 #showcase{ height:300px;  margin-bottom:20px;
}
 html
 {
  scroll-behavior: smooth;
}

#main{
 float:center; color: #22a8ee;
 width:100%;
 padding:0 30px;
  padding- top:7%;
```

```
box-sizing: border-box;
font-family:Georgia, serif;
text- align:center;

#sidebar{ float:right; width:50%;
background-color: transparent;
color: #22a8ee; font-family:Georgia, serif; padding-left:0px; padding- right:0px;padding-top:1px; box-sizing: border-box;
}

.img-preview
{ width: 300px; height: 300px; position: relative;
border: 5px solid #F8F8F8; box-shadow: 0px 2px 4px 0px rgba(0, 0, 0, 0.1);
margin-top: 1em; margin-bottom: 1em;
}

.img-preview>div { width: 100%; height: 100%; background-size: 300px 300px; background-repeat: no-repeat; background-position: center;
}

input[type="file"] { display: none;
}

.upload-label{ display: inline-block; padding: 12px 30px;
background: #22a8ee; color: #fff; font-size: 1em; transition: all .4s; cursor: pointer; font-weight:bold;
}

.upload-label:hover{ background: #3A3A3A; color: white; font-weight:bold;
}

.loader { border: 8px solid #f3f3f3; /* Light grey */ border-top: 8px solid #22a8ee; border-radius: 50%; width: 50px; height: 50px; animation: spin 1s linear infinite;
}

</style>
```

```
<div class="header">D-Naturalist</div>
                        <div class="second">
    <div class="inside">D-Naturalist creating a web application which uses a deep
learning model, trained on different species of birds, flowers , animals , marine
animal , plants and get the prediction of the user image is been given.

<br><br>

                        <section id="showcase">
                        <br>
                        <div style="margin-left:32.5%">
                        <a href="{{ url_for('register')}}"><button type="button"
class="myButton"
>REGISTRATION</button></a>
                        <br><br>
        <a href="{{ url_for('login')}}"><button type="button"
class="myButton" >BIODIVERSITY SCRUTINIZE</button></a>

                        </div>
                        </div>
                        </section>

                        </div>

 <script> window.onscroll = function() {myFunction()};

$(document).ready(function () {
    // Init
    $('.image-section').hide();
    $('.loader').hide();
    $('#result').hide();

    // Upload Preview          function readURL(input)
    {
                                if (input.files && input.files[0])

    {                           var reader = new FileReader();

reader.onload = function (e)
{
$('#imagePreview').css('background-image', 'url(' + e.target.result +')');
                $('#imagePreview').hide();

                $('#imagePreview').fadeIn(650);
```

```
            }

            reader.readAsDataURL(input.files[0]);
        }

    }

    $("#imageUpload").change(function () {
        $('.image-section').show();
        $('#btn-predict').show();
        $('#result').text('');              $('#result').hide();              readURL(this);
    });


    // Predict
    $('#btn-predict').click(function () {
        var form_data = new FormData($('#upload-file')[0]);

        // Show loading animation
        $(this).hide();
        $('.loader').show();

        // Make prediction by calling api /predict
        $.ajax({                type: 'POST',                url: '/predict',                data:
form_data,                contentType: false,                cache: false,
processData: false,                async: true,                success: function
(data) {
                // Get and display the result
                $('.loader').hide();
                $('#result').fadeIn(600);
                        $('#result').text('Prediction: '+data);
                        console.log('Success!');
            },

        });

    });


});

</script>



 </body>
</html>
```

GITHUUB LINK:

https://github.com/IBM-EPBL/IBM-Project-12390-1659449878

DEMO VIDEO LINK:

https://drive.google.com/file/d/1M2b8G-awNh0LiBkP9bwiTRIvk4gu5-o8/view?usp=drivesdk