NATURAL DISASTER INTENSITY ANALYSIS AND CLASSIFICATION USING ARTIFICIAL INTELLIGENCE.

DONE BY

TEAM ID: **PNT2022TMID06270**

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TABLE OF CONTENT

1.INTRODUCTION:

Natural disasters are inevitable, and the occurrence of disasters drastically affects the economy, ecosystem and human life. Buildings collapse, ailments spread and sometimes natural disasters such as tsunamis, earthquakes, and forest fires can devastate nations. When earthquakes occur, millions of buildings collapse due to seismological effects. As the population is growing rapidly, people need to acquire land to live on, and as a result the ecosystem is disturbed horrifically, which causes global warming and increases the number of natural disasters. Populations in underdeveloped countries cannot afford damages disasters cause to infrastructures. The aftermath of disasters leaves the humans in miserable situations, and sometimes the devastating effects cannot be detected; additionally, rescue operations cannot take place in most of the places and victims are unable to be identified due to geographical factors of the different areas.Disasters such as forest fires spread rapidly in dense areas, so firefighting is difficult to carry out; in this case, development of the strategy to predict such circumstances is crucial so that such disasters can be prevented beforehand.As the technologies are continuously improving, aviation systems have begun adopting smart technologies to develop unmanned aerial vehicles (UAVs) equipped with cameras, which can reach distant areas to identify aftereffects of natural disasters on human life, infrastructure, and transmission lines by capturing images and videos. Data acquired from these UAVs helps to identify the facial expressions of victims, the intensity of their situation and their needs in a post disaster scenario. It helps to take actions and carry out necessary operations to tackle devastating scenarios. Raw images obtained from camera-equipped UAVs are processed and neural network-based feature extraction techniques are applied to analyze the intensity.

1.1 OVERVIEW:

Natural disasters not only disturb the human ecological system but also destroy the properties and critical infrastructures of human societies and even lead to permanent change in the ecosystem. Disaster can be caused by naturally occurring

events such as earthquakes, cyclones, floods, and wildfires. Many deep learning techniques have been applied by various researchers to detect and classify natural disasters to overcome losses in ecosystems, but detection of natural disasters still faces issues due to the complex and imbalanced structures of images. To tackle this problem, we developed a multilayered deep convolutional neural network model that classifies the natural disaster and tells the intensity of disaster of natural.The model uses an integrated webcam to capture the video frame and the video frame is compared with the Pre-trained model and the type of disaster is identified and showcased on the OpenCV window. A deep learning method for the construction of two-dimensional cardiac magnetic resonance images was proposed to enhance the image data acquisition process.

1.2 PURPOSE:

The main purpose of this model is to detect and classify the type of disaster with a high accuracy rate and to prevent the natural disaster in real time.This method include the use of artificial intelligence which, given its ability to anticipate future events, could make a huge difference and help limit the human and material costs of such disasters.Artificial intelligence is proving to be a valuable tool for detecting and analysing the first signs of these types of events.This model is capable of providing a level of accuracy close to that of human analyses and of detecting a larger number of Disaster, particularly those of low intensity, which are usually not identified by traditional detection methods. This increased detection power has been achieved by adapting the best medical image processing and voice capture algorithms to detect even the weakest of signals. Being able to identify and then study the smallest disasters is of considerable interest; this provides a better overall understanding of how these events are distributed along a fault line, and also helps learn more about how they are triggered and how they stop.

2. LITERATURE SURVEY:

2.1 EXISTING PROBLEM:

Over the past century, techniques for monitoring, forecasting and managing natural disasters have developed considerably as a result of technological progress.major obstacle: high-magnitude earthquakes – the ones that seismologists would most like to be able to predict – are also the rarest, due to the exceptional nature of the conditions required for them to occur. This raises the problem of the lack of data needed to train the algorithm properly.Conversely, small, imperceptible Disaster occur daily, along the same fault lines from which high-intensity events originate and, moreover, they involve identical physics and mechanisms. These “micro-earthquakes” therefore represent a useful source of untapped information in the quest to understand and predict Disaster.

2.2 REFERENCES:

[1]Ashiquzzaman A., Oh S.M., Lee D., Lee J., Kim J. *Smart Trends in Computing and Communications, Proceedings of the SmartCom 2020, Paris, France, 29–31 December 2020*. Springer; Berlin/Heidelberg, Germany: 2021. Context-aware deep convolutional neural network application for fire and smoke detection in virtual environment for surveillance video analysis; pp. 459–467.

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[5] Li T., Zhao E., Zhang J., Hu C. Detection of Wildfire Smoke Images Based on a Densely Dilated Convolutional Network. *Electronics.* 2019;**8**:1131. doi: 10.3390/electronics8101131.

[6] Mangalathu S., Burton H.V. Deep learning-based classification of earthquake-impacted buildings using textual damage descriptions. *Int. J. Disaster Risk Reduct.* 2019;**36**:101111. doi: 10.1016/j.ijdrr.2019.101111.

[7] Tonini M., D'Andrea M., Biondi G., Degli Esposti S., Trucchia A., Fiorucci P. A Machine Learning-Based Approach for Wildfire Susceptibility Mapping. The Case Study of the Liguria Region in Italy.*Geosciences.* 2020;**10**:105. doi: 10.3390/geosciences10030105.

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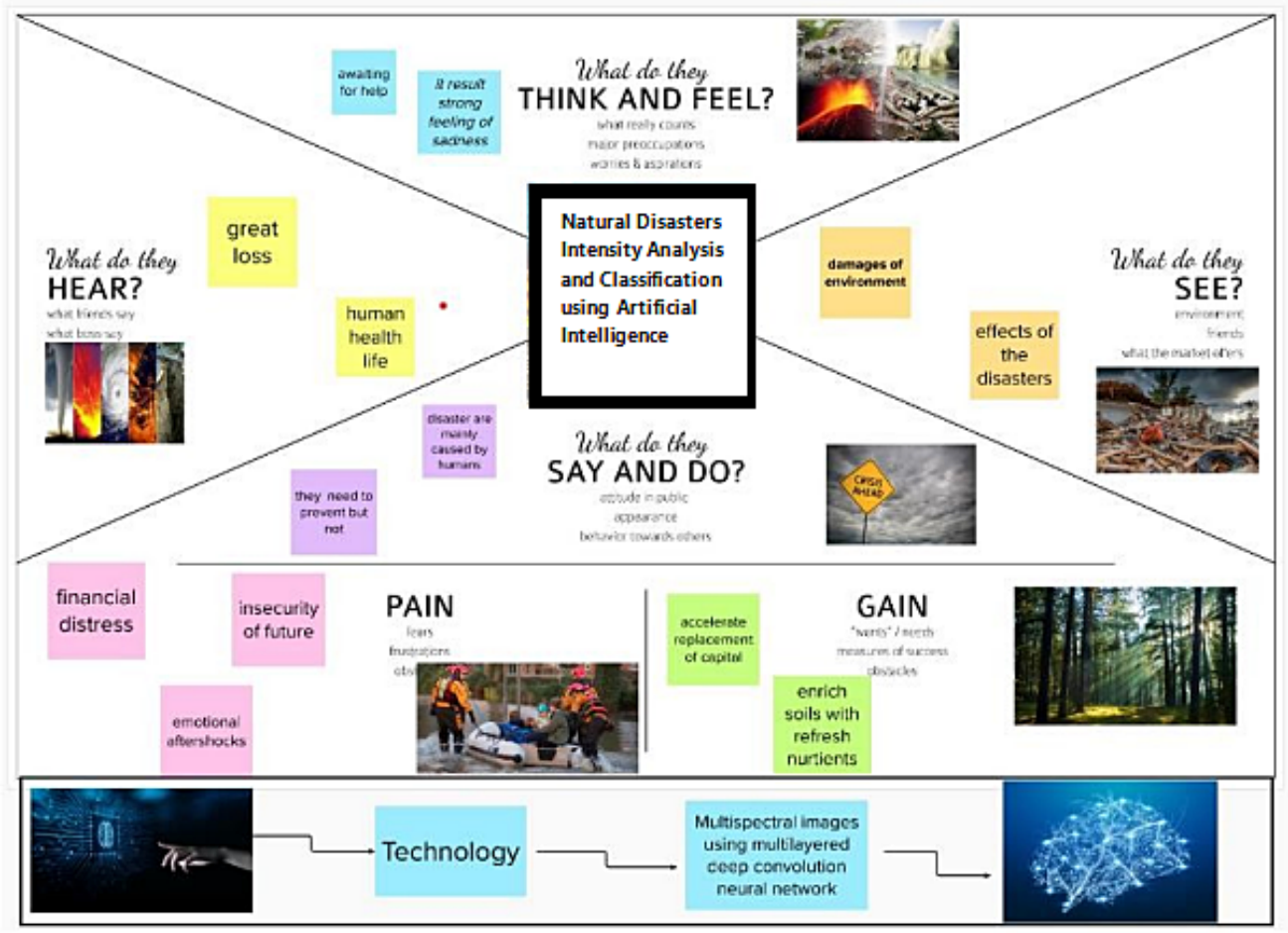
2.3 PROBLEM STATEMENT DEFINITION:

The problem affects in the case that Natural disasters not only disturb the human ecological system but also destroy the properties and critical infrastructures of human societies and even lead to permanent change in the ecosystem.The main cause for disaster is it can be caused by naturally occurring events such as earthquakes, cyclones, floods, and wildfires.Critical impact is,Since most of the disaster are naturally occurring, if cannot be avoided. The caution of the natural disaster will be more which can be reduced by some precautionary measures.To avoid this the role of artificial intelligence in such disasters is required and important for analysing the situations and to come out with solutions for being prepared to face disasters.And Thus, the challenges for artificial intelligence are cost, saving life, environment protection and false data.Therefore, the main issue is that Many deep

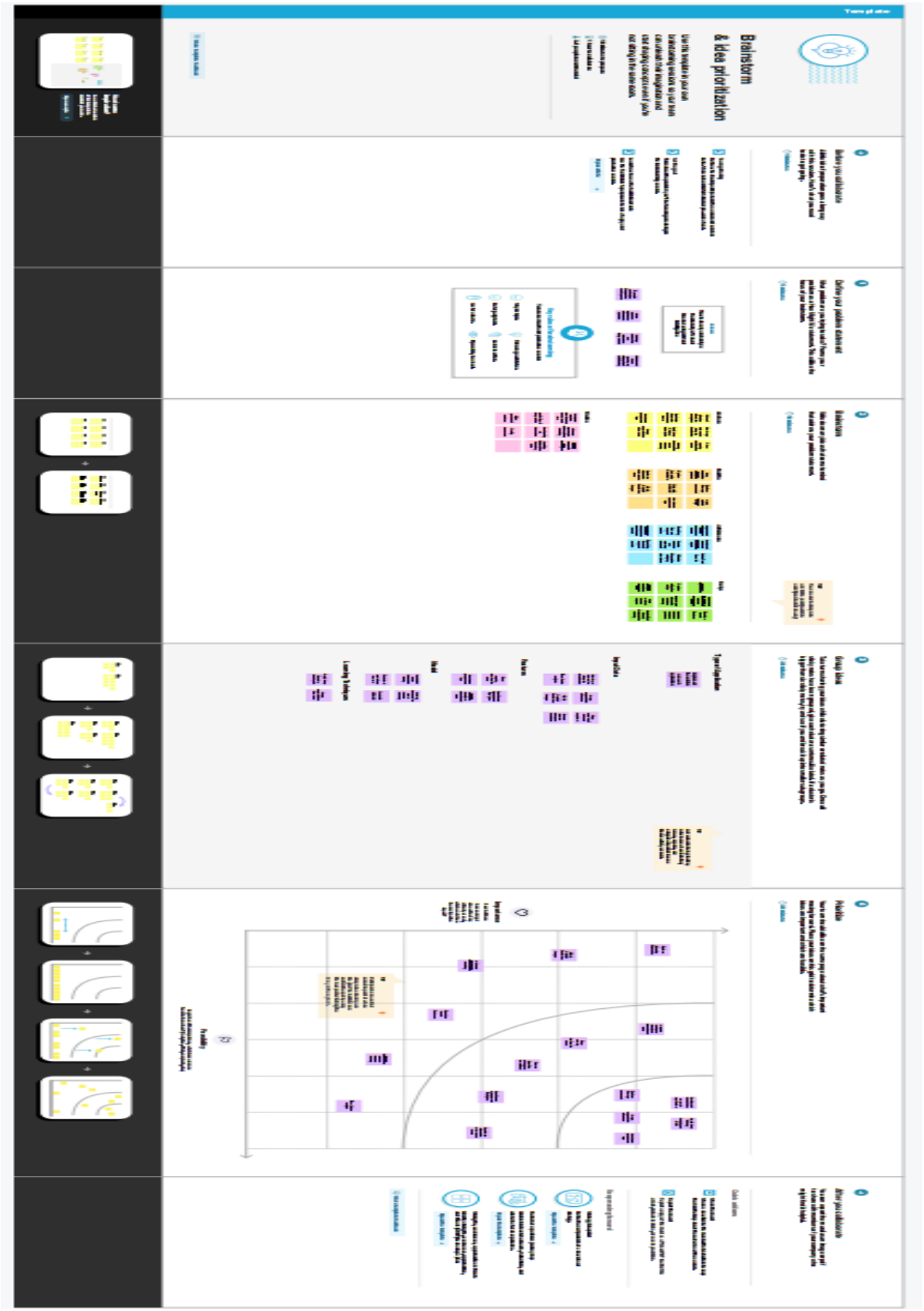
learning techniques have been applied by various researchers to detect and classify natural disasters to overcome losses in ecosystems, but detection of natural disasters still faces issues due to the complex and imbalanced structures of images.Neural networks provide multilevel network architectures, where Convolutional Neural Networks are the most frequently implemented architecture as the direct input of multidimensional vector images, can be carried out with low complexity. CNNs efficiently perform feature extraction by denoising the images and removing interference and achieve highly accurate results.

3. IDEATION AND PROPOSED SOLUTION:

3.1 EMPATHY MAP CANVAS:



3.2 IDEATION AND BRAINSTORMING:

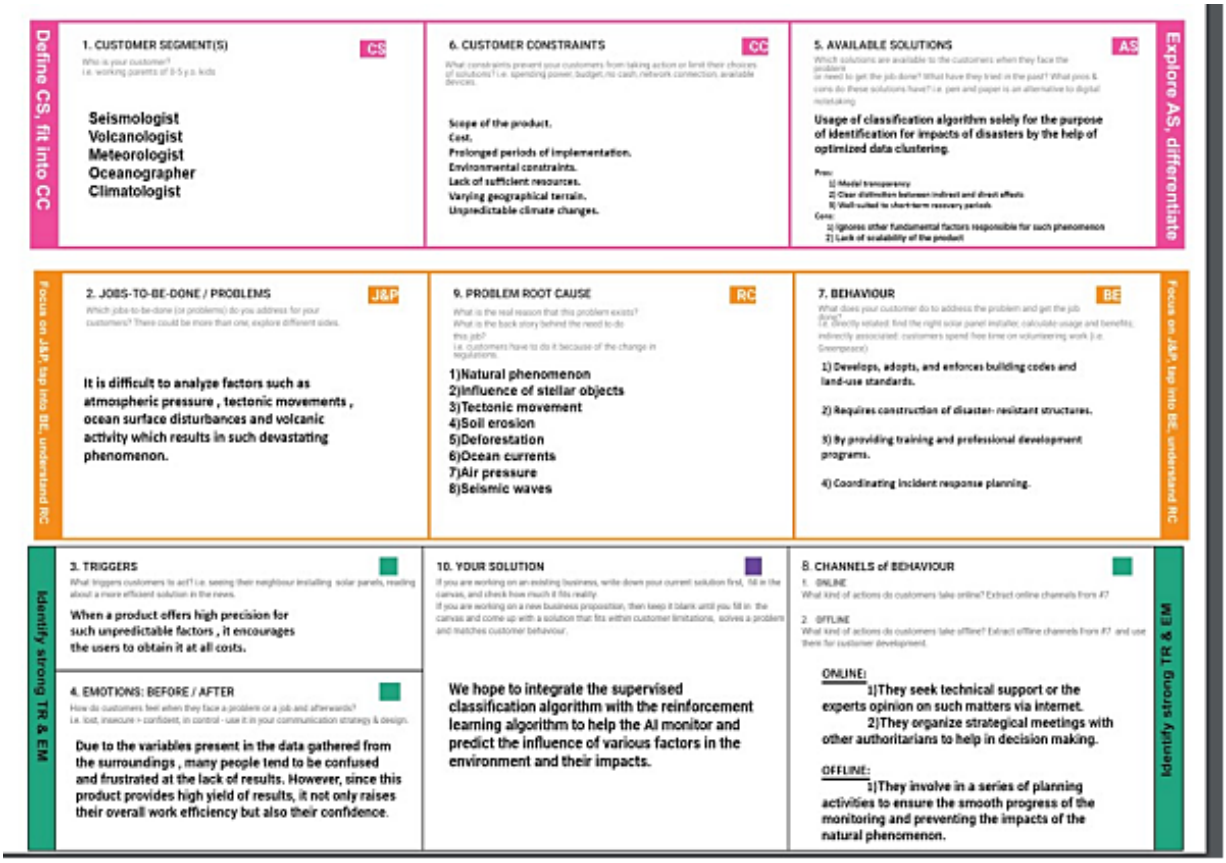


3.3 PROPOSED SOLUTION:

S.No.	Parameter	Description
1.	**Problem Statement (Problem to be solved)**	To Classify and analyze the intensity of natural disasters before and after hand to alert and protect livelihood and its associated factors.
2.	**Idea / Solution description**	To develop a multi-layered deep convolutional neural network model that classifies the natural disaster and tells the intensity of disaster. An integrated webcam is used to capture the video frame and the video frame is compared with the pre-trained model. The type of disaster is identified and showcased on the OpenCV window.
3.	**Novelty / Uniqueness**	A web app interface to feed live video stream or recorded content to identify the intensity level of the disaster at a particular location and an alerting system.
4.	**Social Impact / Customer Satisfaction**	Continuous monitoring service and accurate detection of the natural disaster with an alerting system based on the level of intensity reduces damage done to livelihood andeconomy.

5.	**Business Model (Revenue Model)**	A lightweight , robust and portable prototype with accurate, reliable and advanced analysis of a natural disaster with Multi-Layer CNN at its heart. Includes a Web-cam that detects complex and imbalanced structures of images which is then compared with the pre-trained model and the type of disaster is identified.
6.	**Scalability of the Solution**	The model prototype can be extended to private and government forecast organisations which can help in global recognition, due to its robustness and portability.

3.4 PROBLEM SOLUTION FIT:



4.REQUIREMENT ANALYSIS:

4.1 FUNCTIONAL REQUIREMENTS:

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Request Permission	Access permission from web camera.
FR-2	Disaster Prediction	Based on the webcam image, natural disaster isclassified.
FR-3	Accuracy	Since the training and testing images are

		huge, theaccuracy is higher.
FR-4	Speed	The generation of results from the input images arefaster.
FR-5	Resolution	The resolution of the integrated web camera should be high enough tocapturethe video frames.
FR-6	User Interface	Maximizing the interaction in Web Designing Service.

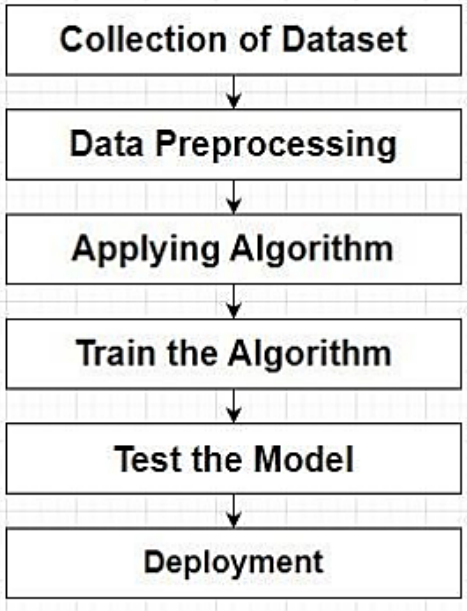
4.2 NON-FUNCTIONAL REQUIREMENTS:

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	User friendly and classify the disaster easily.
NFR-2	**Security**	The model is secure due to the cloud deployment models and also there is no login issue.
NFR-3	**Reliability**	Accurate prediction of the natural disaster andthe website can also be fault tolerant.
NFR-4	**Performance**	It is shown that the model gives almost 90 percentaccuracy after continuous training.
NFR-5	**Availability**	The website will be made available for 24 hours.
NFR-6	**Scalability**	The website can run on web browsers like Google chrome, Microsoft edge and also it can be extended to the NDRF and customers.

5. PROJECT DESIGN:

5.1 DATAFLOW DIAGRAM:

A data flow diagram (DFD) is a visual representation of the information flow through a process or system. DFDs help Us better understand process or system operation to discover potential problems, improve efficiency, and develop better processes.



5.2 SOLUTION AND TECHNICAL ARCHITECTURE:

SOLUTION ARCHITECTURE:

Solution architecture is a complex process – with many sub-processes - that bridges the gap between business problems and technology solutions. Its goals are to:

1. Find the best tech solution to solve existing business problems.
2. Describe the structure, characteristics, behavior, and other aspects of the software toproject stakeholders.
3. Define features, development phases, and solution requirements.
4. Provide specifications according to which the solution is defined, managed, and

delivered.

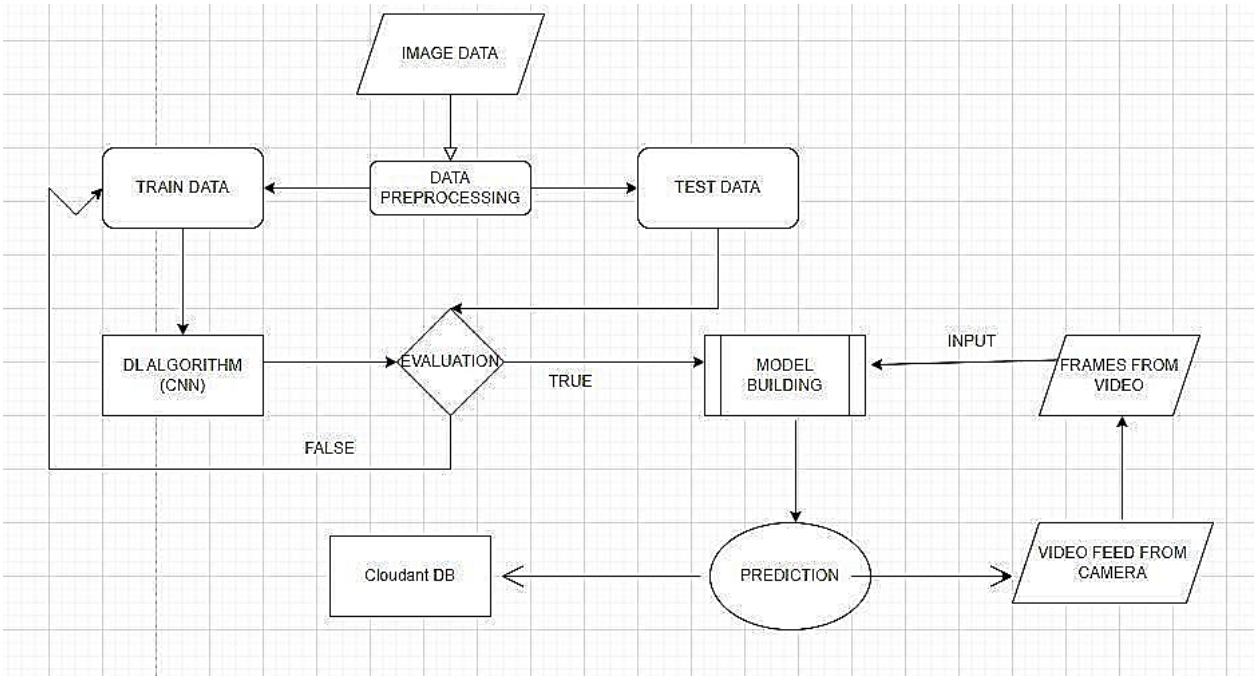
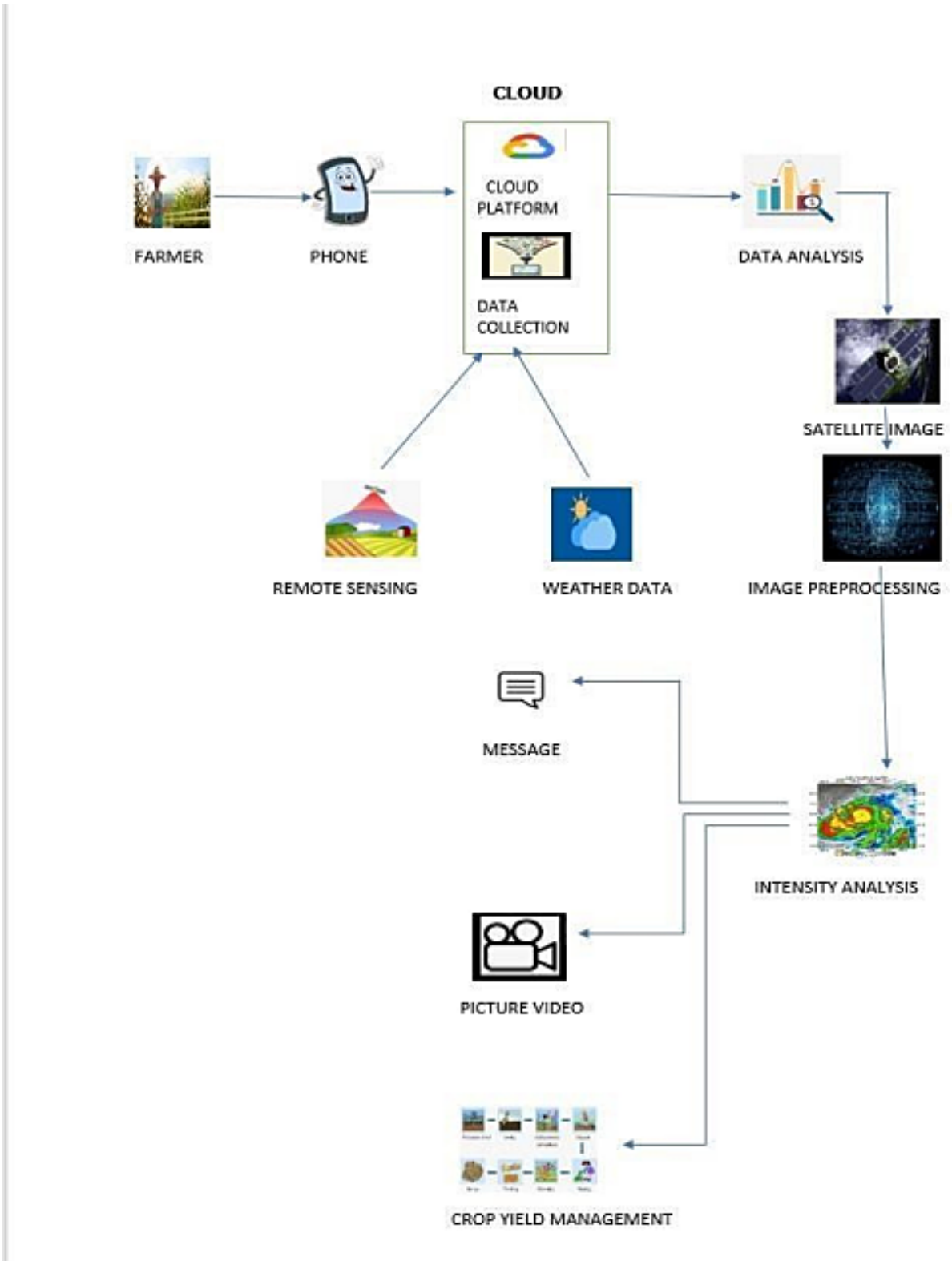


IMAGE DATA
TRAIN DATA
DATA PREPROCESSING
TEST DATA
DL ALGORITHM (CNN)
EVALUATION
TRUE
FALSE
MODEL BUILDING
INPUT
FRAMES FROM VIDEO
Cloudant DB
PREDICTION
VIDEO FEED FROM CAMERA

TECHNICAL ARCHITECTURE:



S. No	Component	Description	Technology
1	Website	Customer can proceed the website and interact with the chatbot to get the desire product	HTML, CSS, JavaScript,chatbot
2	Docker	Service for storing the private container images	Container
3	IBM Object Storage	Bucket are used to upload the images and files	Bucket
4	Kubernetes	Manage the complete process in the stablestate If any software crash it automatically restart the work	Kubernetes
5	DB2	Data types are String, Numeric, Date, time, and timestamp distinct types.Act_ sortmem_ limit, auto_ del_ rec _ obj, auto_ maint Configuration .	MySQL
6	Cloud DB2	A fully managed cloud database with AI capabilities that keep our website running 24*7.	IBM DB2
7	Watson chatbot	Customers can search the product easily by human-like interaction with bot.	IBM Watson Assistant

8	Infrastructure (Server /Cloud)	Application Deployment on Local System /Cloud Local Server Configuration: Anaconda Cloud Sever Configuration: IBM cloud	Local,CloudFoundry, Kubernetes, etc.

5.3 USER STORIES:

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account /dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2

		USN-4	As a user, I can register for the application through Gmail	I can register & access the dashboard with Gmail Login	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password	I can login & access my account with my registered credentials	High	Sprint-1
	Dashboard	USN-6	As a user, I can access the services and information provided in the dashboard	I can upload the images, I can viewthe result, I can edit my profile and I can view my history	High	Sprint-1
Customer (Webuser)	Login	USN-7	As a user, I can log into the web application and access the dashboard	I can login with the same registered credentials andaccess my account through web Application	High	Sprint-1

User Type	**Functional Requirement (Epic)**	**User Story Number**	**User Story / Task**	**Acceptace criteria**	**Priorty**	**Release**
Customer Care Executive	Help Desk	USN-8	As a user, I can get the guidance from thecustomer care	I can get help from the customer care for carryingout	High	Sprint-2

				my tasks		
Administrator	Management	USN-9	As an administrator, I can collect new datasets and keep the model trained	I can collect and train the model with new dataset frequently	High	Sprint-2
		USN-10	As an administrator, I can update otherfeatures of the application	I can update and tune the features of application ifneeded	Medium	Sprint-1
		USN-11	As an administrator, I can maintain the information about the user	I can maintain information like user type and other such information	Medium	Sprint-1
		USN-12	As an administrator, I can maintain third-party services	I can support and maintain any third-party services	Low	Sprint-2

6. PROJECT PLANNING & SCHEDULING:

6.1 SPRINT PLANNING AND ESTIMATION:

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I Collecting data from trusted sources, in addition to collecting analysis.	2	High	1.Akshara.M 2.Haritha.L 3.Jothimeena.V 4.Kaviya.C 5.Monika.S
Sprint-1		USN-2	As a user, I Filtering of demographic information, as well as filtering of countries ,region, state ,or province with cases of disaster	1	High	1.Akshara.M 2.Haritha.L 3.Jothimeena.V 4.Kaviya.C 5.Monika.S
Sprint-2		USN-3	As a user, I Counting, globally or from a specificlocation ,of confirmed cases, Recovered and deaths	2	Low	1.Akshara.M 2.Haritha.L 3.Jothimeena.V 4.Kaviya.C 5.Monika.S

			by Disaster			
Sprint-1		USN-4	As a user, I can register for the application through maps	2	Medium	1.Akshara.M 2.Haritha.L 3.Jothimeena.V 4.Kaviya.C 5.Monika.S
Sprint-1	Login	USN-5	As a user, I can log into the application by entering geographic panel	1	High	1.Akshara.M 2.Haritha.L 3.Jothimeena.V 4.Kaviya.C 5.Monika.S
Sprint-2	Dashboard	USN-6	As a user, I Display of maps, histograms, or an interactive geographic panel	1	High	1.Akshara.M 2.Haritha.L
Sprint-3	Prediction and analysis of data	USN – 7	Predicting and visualizing the data effectively	6	High	1.Haritha L 2.Monika s
Sprint-3	Report generation	USN – 8	Generating a clear and detailed report on product data analysis	3	High	1.Haritha L 2.Akshara M
Sprint-4	Cloud	USN – 9	The application is deployed through cloud	10	High	1.Kaviya C 2.Jothimeena V

Sprint-4	Testing	USN – 10	The system is thoroughly tested and unit testing, integration testing andsystem testing is performed	10	High	1.Haritha L 2.Kaviya C 3.Monika S 4.Akshara M 5.Jothimeena V
Sprint-4	Visualizazon	USN – 11	The output is shown through simple visualization	5	Medium	1.Kaviya C

6.2 SPRINT DELIVERY SCHEDULE:

Sprint	**Total Story Points**	**Duration**	**Sprint Start Date**	**Sprint EndDate (Planned)**	**Sprint Release Date (Actual)**
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	30 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	06 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	19 Nov 2022	19 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	19 Nov 2022

6.3 REPORTS FROM JIRA:

7.CODING AND SOLUTIONING:

7.1 Feature 1:

A convolutional neural network is a class of Artificial neural network.It is a Deep Learning algorithm that can take in an input image, assign importance to various objects in the image and be able to differentiate one from the other. The pre-processing required in a ConvNet is much lower as compared to other classification algorithms.The advantage of CNNs is to provide an efficient dense network which performs the prediction or identification efficiently.

7.2 Feature 2 :

We developed a multilayered deep convolutional neural network model that classifies the natural disaster and tells the intensity of disaster of natural The model uses an integrated webcam to capture the video frame and the video frame is compared with the Pre-trained model and the type of disaster is identified and showcased on the OpenCV window. A multilayer neural network with appropriate weights has been shown **to be able to approximate any input-output function making it an attractive tool for modeling and forecasting**.

8. TESTING

8.1 Test Cases

				Team ID	PNT2022TMID06270	
				Project Name	Project - Natural Disaster Intensity Analysis and Classification using Artificial Intelligence	
				Maximum Marks	4 marks	
Test case ID	**Feature Type**	**Component**	**Test Scenario**	**Pre-Requisite**	**Steps To Execute**	**T**
HomePage_TC_OO1	UI	Home Page	Verify user is able to see the home page and other tabs , when user entered into the website	internet and device	1.Enter URL and click go 2.click the tabs in the Navigation Bar	URI W
HomePage_TC_OO2	UI	Home Page	verify user is able to see the results tab		1.Enter URL and click go 2.Click on results tab and check whether the user is able to see the flag card with open button	URI W

HomePage_TC_OO3	Functional	Home page	Verify user is able to click the button on the results tab		1.Enter URL and click go 2.Click on results tab and check whether the user is able to click the button named open	URI W
HomePage_TC_OO4	Functional	access came ra	Verify user is able to see that the camera is accessible and open when the button is clicked		1.Enter URL and click go 2.click on results tab 3.click open button	URI W
Camera_TC_OO4	Functional	came ra	Verify user is able to capture the image from live stream		1.Enter URL and click go 2.click on results tab 3.click open button 4.camera is opened 5.click q button to capture image	URI W
Prediction_TC_OO5	Functional	output wind ow	Verify user is able to see the predicted results in the window		when the image is captured again click q button to see the results	URI W

8.2 User Acceptance Testing:

1.Purpose of Document

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	1	0	0	0	1
Duplicate	1	3	3	1	8

External	2	3	0	0	5
Fixed	2	4	4	2	12
Not Reproduced	0	0	0	1	1
Skipped	0	0	0	0	0
Won't Fix	0	0	0	0	0
Totals	6	10	7	4	27

The purpose of this document is to briefly explain the test coverage and open issues of the Natural Disaster Intensity Analysis and Classification using Artificial Intelligence project at the time of the release to User Acceptance Testing (UAT).

2.Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they were resolved

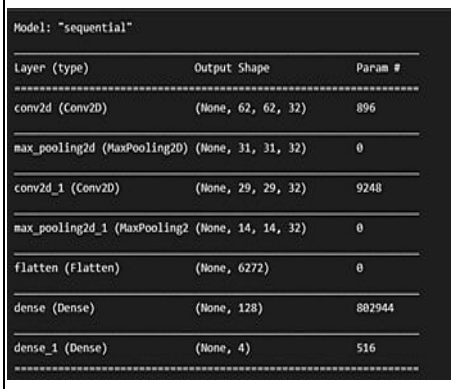
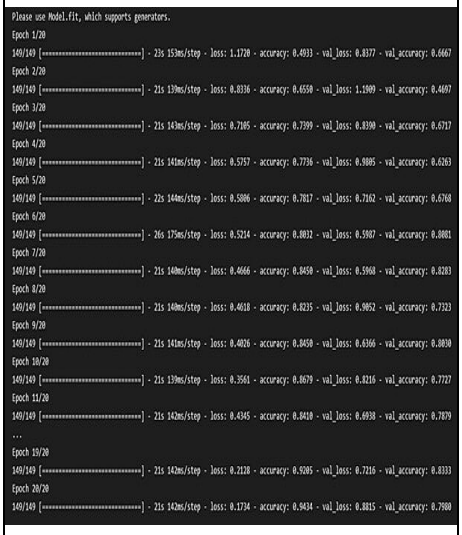
3.Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

Section	**Total Cases**	**Not Tested**	**Fai l**	**Pass**
Print Engine	2	0	0	2
Client Application	3	0	0	3
Security	2	0	0	2
Outsource Shipping	3	0	0	3
Exception Reporting	1	0	0	1
Final Report Output	4	0	0	4
Version Control	2	0	0	2

Model Performance Testing:

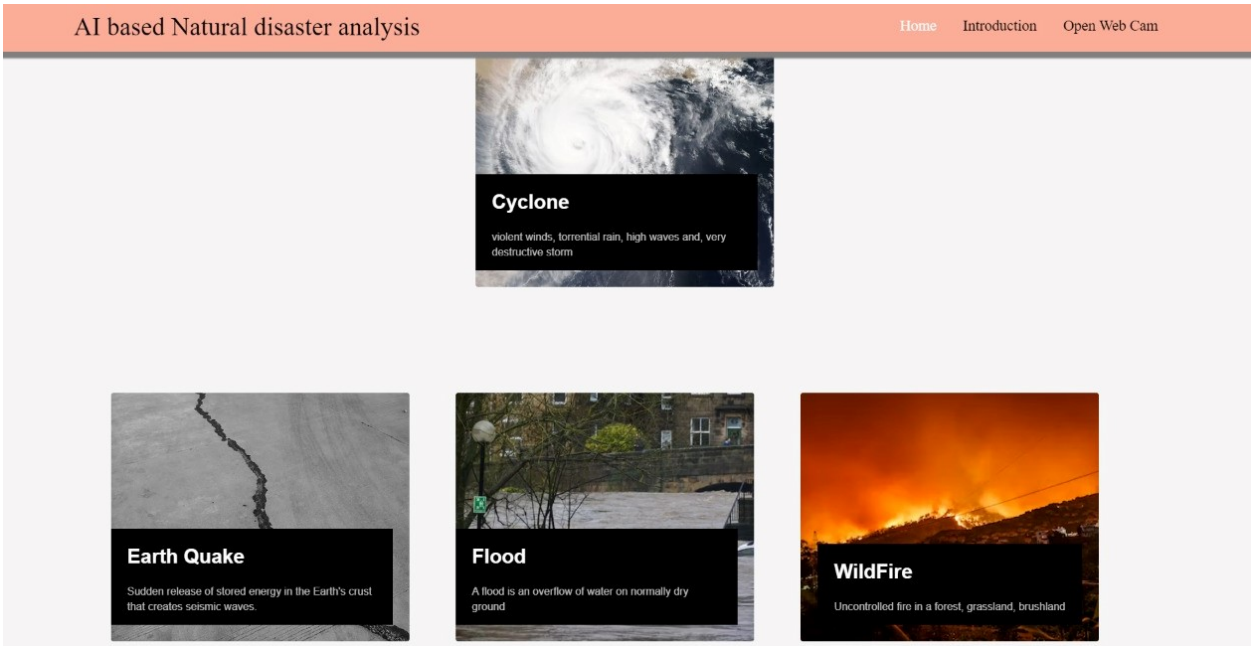
Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Values	Screenshot
1.	Model Summary	Total params: 813,604 Trainable params: 813,604 Non-trainable params: 0	
2.	Accuracy	Training Accuracy – 94.3% Validation Accuracy -83.33%	

9. RESULTS :

9.1 Performance Metrics:

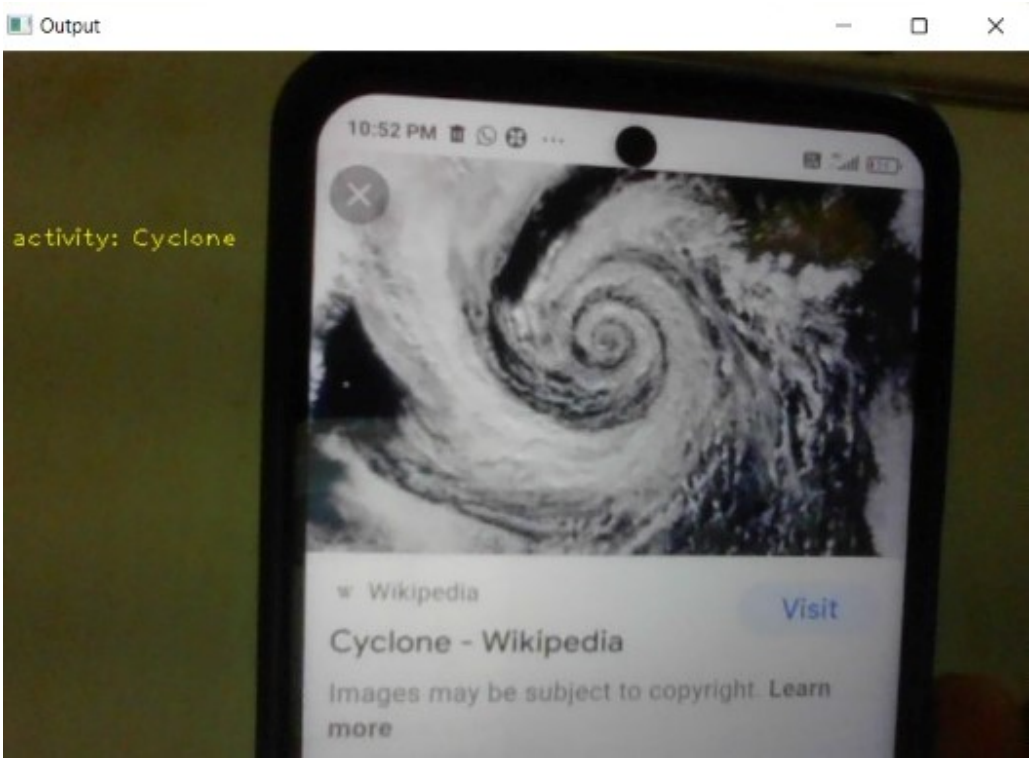
HOME PAGE:

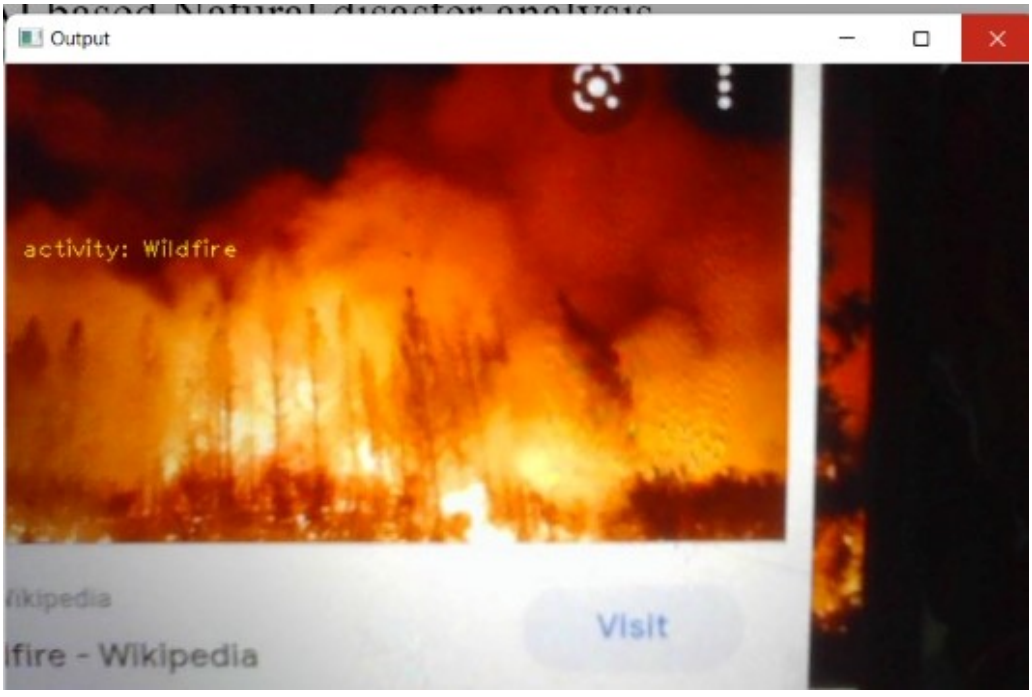


INTRO PAGE:

China, India and the United States are among the countries of the world most affected by natural disasters.
Natural disasters have the potential to wreck and even end the lives of those people, who stand in their way. However, whether or not you are likely to be affected by a natural disaster greatly depends on where in the world you live, The objective of the project is to human build a web application to detect the type of disaster . The input is taken from the in built web cam, which in turn is given to the pre trained model . The model predicts the type of disaster and displayed on UI.

OUTPUT:





10. ADVANTAGES & DISADVANTAGES:

ADVANTAGES:

i. The use of AI to forecast natural disasters would save millions of lives. Furthermore, the information evaluated by AI-powered systems can aid in understanding the scale and patterns of natural catastrophes such as floods, earthquakes, and tsunamis, which would aid in improved infrastructure development in disaster-prone areas.

ii. Disaster management plays an integral role in keeping communities safe. It involves coordinating the resources, such as pollution control systems, and responsibilities, such as following best practice policies, needed to prevent, prepare for, respond to, and recover from emergencies

DISADVANTAGES:

i. A forest fire is a natural disaster that cannot be forecasted.

ii. Sometimes the prediction may fail and result in huge loss.

11. CONCLUSION:

Natural disasters inflict severe damage on almost the entire spectrum of social and natural habitats, ranging from housing and shelter, water, food, health, sanitation, and waste management to information and communication networks, supply of power and energy, and transportationinfrastructure.So far, different approaches to landslide susceptibility zonation have been proposed, but what is certain is that all these methods can provide accurate results with minimal data and costs and at very low levels. Combining thesemodels with GIS and RS systems not only increases the accuracy of dealing with complex issues and uncertainties, but also leads to the emergence and development of new theories and methods in a variety of issues.

12. FUTURE SCOPE:

The term “Natural Disaster” encompasses the complete realm of disaster-related activities. Traditionally people tend to think of disaster management only in terms of the post-disaster actions taken by relief and reconstruction officials; yet disaster management covers a much broader scope, and many modern disaster managers may find themselves far more involved in pre-disaster activities than in post-disaster response. Those are:

1. The refugee field of disaster management is highly specialized and requires not only many development skills but also a broader awareness of political, legal, and humanitarian issues.
2. DM aims and objectives, elements, Natural/man-made Disasters, Victims, Relief Systems.
3. Phases of Disaster Response/Relief Operations, Government’s Role.

To Safeguard and make available vital materials, supplies and equipment to ensure the safety and recovery of records from predictable disasters.To reduce the risk of disasters caused by human error, deliberate destruction, and building or equipment failures. Be better prepared to recover from a major natural catastrophe.Our model help to build preparedness for threats and hazards by providing a low-risk, cost- effective environment to: **Test and validate plans, policies, procedures and capabilities**. Identify resource requirements, capability gaps, strengths, areas for improvement, and potential best practices. Disaster management aims to reduce, or avoid, the potential losses from hazards, assure prompt and appropriate assistance to victims of disaster, and achieve rapid and effective recovery. Disaster Risk Management includes the sum total of all activities, programs and measures which can be taken up before, during and after a disaster with the purpose to avoid a disaster, reduce its impact or recover fromits losses.

13. APPENDIX:

HTML CODE :

Home html;

```
<html>
<script>
</script>
<style>
.header {       position: relative;
                        top:0;
                        margin:0px;
                        z-index: 1;
                        left: 0px;
                        right: 0px;
                        position: fixed;
                        background-color: #FCAD98 ;
                        color: white;
                        box-shadow: 0px 8px 2px grey;
                        overflow: hidden;
                        padding-left:20px;
                        font-family: 'Josefin Sans';
                        font-size: 2vw;
                        width: 100%;
                        height:8%;
                        text-align: center;
                }
                .topnav {
  overflow: hidden;
  background-color: #FCAD98;
}
```

```
.topnav-right a {
  float: left;
  color: black;
  text-align: center;
  padding: 14px 16px;
  text-decoration: none;
  font-size: 18px;
}

.topnav-right a:hover {
  background-color: #FCAD98;
  color: black;
}

.topnav-right a.active {
  background-color: #FCAD98;
  color: white;
}

.topnav-right {
  float: right;
  padding-right:100px;
}
body {
background-image:  -webkit-linear-gradient(90deg, skyblue 0%, steelblue 100%);
  background-image: url("");
    background-size: cover;
```

```
  background-attachment: fixed;
  background-size: 100% 100%;
  background-color: ;
  background-repeat: no-repeat;
  background-size:cover;
  background-position: 0px 0px;
  }
  .button {
  background-color: #091425;
  border: none;
  color: white;
  padding: 15px 32px;
  text-align: center;
  text-decoration: none;
  display: inline-block;
  font-size: 12px;
  border-radius: 16px;
}
.button:hover {
      box-shadow: 0 12px 16px 0 rgba(0,0,0,0.24), 0 17px 50px 0
rgba(0,0,0,0.19);
}
form {border: 3px solid #f1f1f1; margin-left:400px;margin-right:400px;}
input[type=text], input[type=password] {
  width: 100%;
  padding: 12px 20px;
  display: inline-block;
  margin-bottom:18px;
  border: 1px solid #ccc;
```

```
  box-sizing: border-box;
}

button {
  background-color: #091425;
  color: white;
  padding: 14px 20px;
  margin-bottom:10px;
  border: none;
  cursor: pointer;
  width: 17%;
  border-radius:4px;
  font-family:Montserrat;
}
button:hover {
  opacity: 0.8;
}

.cancelbtn {
  width: auto;
  padding: 10px 18px;
  background-color: #f44336;
}

.imgcontainer {
  text-align: center;
  margin: 24px 0 12px 0;
}
```

```
img.avatar {
  width: 30%;
  border-radius: 50%;
}

.container {
  padding: 16px;
}

span.psw {
  float: right;
  padding-top: 16px;
}

/* Change styles for span and cancel button on extra small screens */
@media screen and (max-width: 300px) {
  span.psw {
     display: block;
     float: none;
  }
  .cancelbtn {
     width: 100%;
  }
}
.home{
          margin:80px;
  width: 84%;
  height: 500px;
  padding-top:10px;
```

```
  padding-left: 30px;
}
.login{
        margin:80px;
        box-sizing: content-box;
  width: 84%;
  height: 420px;
  padding: 30px;
  border: 10px solid blue;
}
.left,.right{
 box-sizing: content-box;
 height: 400px;
 margin:20px;
 border: 10px solid blue;
}

.mySlides {display: none;}
img {vertical-align: middle;}
/* Slideshow container */
.slideshow-container {
  max-width: 1000px;
  position: relative;
  margin: auto;
}
/* Caption text */
.text {
  color: #f2f2f2;
  font-size: 15px;
```

```
  padding: 8px 12px;
  position: absolute;
  bottom: 8px;
  width: 100%;
  text-align: center;
}
/* The dots/bullets/indicators */
.dot {
  height: 15px;
  width: 15px;
  margin: 0 2px;
  background-color: #bbb;
  border-radius: 50%;
  display: inline-block;
  transition: background-color 0.6s ease;
}
.active {
  background-color: #FCAD98;
}
/* Fading animation */
.fade {
  -webkit-animation-name: fade;
  -webkit-animation-duration: 1.5s;
  animation-name: fade;
  animation-duration: 1.5s;
}

@-webkit-keyframes fade {
  from {opacity: .4}
```

```
  to {opacity: 1}
}

@keyframes fade {
  from {opacity: .4}
  to {opacity: 1}
}
/* On smaller screens, decrease text size */
@media only screen and (max-width: 300px) {
  .text {font-size: 11px}
}
@import
url('https://fonts.googleapis.com/css2?family=Poppins&display=swap');
* {
  box-sizing: border-box;
}
body {
  min-height: 100vh;
  margin: 0;
  color: #fff;
  font-family: 'Poppins',sans-serif;
  display: flex;
  align-items: center;
  justify-content: center;
  background-color: #f5f5f5;
}
.container {
  max-width: 1376px;
  margin: auto;
```

```
  padding: 2rem 1.5rem;
}

.cards {
  display: flex;
  flex-wrap: wrap;
  align-items: center;
  justify-content: center;
}
.card {
  cursor: pointer;
  background-color: transparent;
  height: 300px;
  perspective: 1000px;
  margin: 1rem;
  align-items: center;
  justify-content: center;
}
.card h3 {
  border-bottom: 1px #fff solid;
  padding-bottom: 10px;
  margin-bottom: 10px;
  text-align: center;
  font-size: 1.6rem;
  word-spacing: 3px;
}
.card p{
  opacity: 0.75;
  font-size: 0.8rem;
```

```
  line-height: 1.4;
}
.card img {
  width: 360px;
  height: 300px;
  object-fit: cover;
  border-radius: 3px;
}
.card-inner {
  position: relative;
  width: 360px;
  height: 100%;
  transition: transform 0.9s;
  transform-style: preserve-3d;
}
.card:hover .card-inner {
  transform: rotateY(180deg);
}
.card-front,
.card-back {
  position: absolute;
  width: 360px;
  height: 100%;
  -webkit-backface-visibility: hidden;
  backface-visibility: hidden;
}
.card-back {
  background-color: #222;
  color: #fff;
```

```
  padding: 1.5rem;
  transform: rotateY(180deg);
}
.text-block {
  position: absolute;
  bottom: 20px;
  right: 20px;
  background-color: black;
  color: white;
  padding-left: 20px;
  padding-right: 20px;
}
</style>
<body>
<div class="header">
<div          style="width:50%;float:left;font-size:2vw;text-align:left;color:black;
padding-top:1%;padding-left:5%;">AI based Natural disaster analysis</div>
  <div class="topnav-right"style="padding-top:0.5%;">
    <a class="active" href="/home">Home</a>
    <a href="/intro">Introduction</a>
    <a href="/upload">Open Web Cam</a>
  </div>
</div>
<div class="container">
       <div class="cards">
          <div class="card">
             <div class="card-inner">
                <div class="card-front">
                                    <img  src="https://images.unsplash.com/photo-
```

```
1454789476662-
53eb23ba5907?ixid=MXwxMjA3fDB8MHxwaG90by1wYWdlfHx8fGVufDB8f
Hw%3D&ixlib=rb-1.2.1&auto=format&fit=crop&w=689&q=80"
                    alt="">
<div class="text-block">
  <h2>Cyclone</h2>
      <p>violent winds, torrential rain, high waves and, very destructive
storm</p>
 </div>
            </div>
            <div class="card-back">
              <h3>Cyclone</h3>
                <p>The effects of tropical cyclones include heavy rain, strong
wind, large storm surges near landfall, and tornadoes. The destruction from
a tropical cyclone, such as a hurricane or tropical storm, depends mainly on
its intensity, its size, and its location.</p>
            </div>
          </div>
        </div>
<div class="container">
      <div class="cards">
        <div class="card">
          <div class="card-inner">
            <div class="card-front">
                                <img  src="https://images.unsplash.com/photo-
1603869311144-
66b03d340b32?ixid=MXwxMjA3fDB8MHxzZWFyY2h8M3x8ZWFydGhxdWFr
ZXxlbnwwfHwwfA%3D%3D&ixlib=rb-
1.2.1&auto=format&fit=crop&w=500&q=60"
```

```
                    alt="">
<div class="text-block">
  <h2>Earth Quake</h2>
    <p>Sudden release of stored energy in the Earth's crust that creates seismic waves.</p>
 </div>
            </div>
            <div class="card-back">
              <h3>Earth Quake</h3>
                 <p>Earthquakes are usually caused when rock underground suddenly breaks along a fault. This sudden release of energy causes the seismic waves that make the ground shake. ... During the earthquake and afterward, the plates or blocks of rock start moving, and they continue to move until they get stuck again.</p>
            </div>
          </div>
        </div>


<div class="container">
    <div class="cards">
      <div class="card">
        <div class="card-inner">
          <div class="card-front">
              <img src="https://images.unsplash.com/photo-1547683905-f686c993aae5?ixid=MXwxMjA3fDB8MHxzZWFyY2h8MXx8Zmxvb2R8ZW58MHx8MHw%3D&ixlib=rb-1.2.1&auto=format&fit=crop&w=500&q=60"
                    alt="">
<div class="text-block">
```

```
  <h2>Flood</h2>
  <p>A flood is an overflow of water on normally dry ground</p>
 </div>

            </div>
            <div class="card-back">
              <h3>Flood</h3>
                        <p>During heavy rain, the storm drains can become overwhelmed or plugged by debris and flood the roads and buildings nearby. Low spots, such as underpasses, underground parking garages, basements, and low water crossings can become death traps. Areas near rivers are at risk from floods.</p>
            </div>
          </div>
        </div>
<div class="container">
      <div class="cards">

        <div class="card">
          <div class="card-inner">
            <div class="card-front">
                              <img  src="https://images.unsplash.com/photo-1473260079709-83c808703435?ixid=MXwxMjA3fDB8MHxzZWFyY2h8NHx8d2lsZGZpcmV8ZW58MHx8MHw%3D&ixlib=rb-1.2.1&auto=format&fit=crop&w=500&q=60"
                    alt="">
<div class="text-block">
  <h2>WildFire</h2>
  <p>Uncontrolled fire in a forest, grassland, brushland</p>
```

```
 </div>
            </div>
            <div class="card-back">
              <h3>Wildfire</h3>
                    <p>Wildfires can be caused by an accumulation of dead matter (leaves, twigs, and trees) that can create enough heat in some instances to spontaneously combust and ignite the surrounding area. Lightning strikes the earth over 100,000 times a day. 10 to 20% of these lightning strikes can cause fire.</p>
            </div>
          </div>
        </div>
</body>
<html>
```

INTRO HTML:

```
<html>
<script>
</script>
<style>
.header {       position: relative;
                        top:0;
                        margin:0px;
                        z-index: 1;
                        left: 0px;
                        right: 0px;
                        position: fixed;
                        background-color: rgba(100, 100, 100, 0.5) ;
                        color: white;
                        box-shadow: 0px 8px 4px grey;
```

```
                    overflow: hidden;
                    padding-left:20px;
                    font-family: 'Josefin Sans';
                    font-size: 2vw;
                    width: 100%;
                    height:8%;
                    text-align: center;
                }
                .topnav {
  overflow: hidden;
  background-color: #FCAD98;
}

.topnav-right a {
  float: left;
  color: black;
  text-align: center;
  padding: 14px 16px;
  text-decoration: none;
  font-size: 18px;
}

.topnav-right a:hover {
  background-color: #FCAD98;
  color: black;
}

.topnav-right a.active {
  background-color: #FCAD98;
```

```
  color: white;
}

.topnav-right {
  float: right;
  padding-right:100px;
}

body {

  background-color: ;
  background-repeat: no-repeat;
  background-size:cover;

    background-size: cover;
  background-position: 0px 0px;
  }
  .button {
  background-color: #091425;
  border: none;
  color: white;
  padding: 15px 32px;
  text-align: center;
  text-decoration: none;
  display: inline-block;
  font-size: 12px;
  border-radius: 16px;
}
.button:hover {
```

```
      box-shadow: 0 12px 16px 0 rgba(0,0,0,0.24), 0 17px 50px 0
rgba(0,0,0,0.19);
}
form {border: 3px solid #f1f1f1; margin-left:400px;margin-right:400px;}

input[type=text], input[type=password] {
  width: 100%;
  padding: 12px 20px;
  display: inline-block;
  margin-bottom:18px;
  border: 1px solid #ccc;
  box-sizing: border-box;
}

button {
  background-color: #091425;
  color: white;
  padding: 14px 20px;
  margin-bottom:10px;
  border: none;
  cursor: pointer;
  width: 17%;
  border-radius:4px;
  font-family:Montserrat;
}

button:hover {
  opacity: 0.8;
}
```

```
.cancelbtn {
  width: auto;
  padding: 10px 18px;
  background-color: #f44336;
}

.imgcontainer {
  text-align: center;
  margin: 24px 0 12px 0;
}

img.avatar {
  width: 30%;
  border-radius: 50%;
}
.container {
  padding: 16px;
}
span.psw {
  float: right;
  padding-top: 16px;
}

/* Change styles for span and cancel button on extra small screens */
@media screen and (max-width: 300px) {
  span.psw {
     display: block;
     float: none;
```

```
  }
  .cancelbtn {
     width: 100%;
  }
}
.home{
        margin:80px;

  width: 84%;
  height: 500px;
  padding-top:10px;
  padding-left: 30px;

}
.login{
        margin:80px;
        box-sizing: content-box;
  width: 84%;
  height: 420px;
  padding: 30px;
  border: 10px solid blue;
}
.left,.right{
 box-sizing: content-box;
 height: 400px;
 margin:20px;
 border: 10px solid blue;
}
.mySlides {display: none;}
```

```
img {vertical-align: middle;}
/* Slideshow container */
.slideshow-container {
  max-width: 1000px;
  position: relative;
  margin: auto;
}
/* Caption text */
.text {
  color: #f2f2f2;
  font-size: 15px;
  padding: 8px 12px;
  position: absolute;
  bottom: 8px;
  width: 100%;
  text-align: center;
}
/* The dots/bullets/indicators */
.dot {
  height: 15px;
  width: 15px;
  margin: 0 2px;
  background-color: #bbb;
  border-radius: 50%;
  display: inline-block;
  transition: background-color 0.6s ease;
}
.active {
  background-color: #FCAD98;
```

```
}
/* Fading animation */
.fade {
  -webkit-animation-name: fade;
  -webkit-animation-duration: 1.5s;
  animation-name: fade;
  animation-duration: 1.5s;
}
@-webkit-keyframes fade {
  from {opacity: .4}
  to {opacity: 1}
}
@keyframes fade {
  from {opacity: .4}
  to {opacity: 1}
}
/* On smaller screens, decrease text size */
@media only screen and (max-width: 300px) {
  .text {font-size: 11px}
}
@import
url("https://fonts.googleapis.com/css?family=Montserrat&display=swap");
* {
  padding: 0;
  margin: 0;
}
body {
  height: 100vh;
  display: flex;
```

```
  flex-direction: column;
  justify-content: center;
  align-items: center;
}
h1 {
  font-family: "Montserrat Medium";
  max-width: 90ch;
  text-align: center;
  transform: scale(0.94);
  animation: scale 3s forwards cubic-bezier(0.5, 1, 0.89, 1);
}
@keyframes scale {
  100% {
    transform: scale(1);
  }
}
span {
  display: inline-block;
  opacity: 0;
  filter: blur(4px);
}
span:nth-child(1) {
  animation: fade-in 1s 0.1s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(2) {
  animation: fade-in 0.8s 0.2s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(3) {
  animation: fade-in 0.8s 0.3s forwards cubic-bezier(0.11, 0, 0.5, 0);
```

```
}
span:nth-child(4) {
  animation: fade-in 0.8s 0.4s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(5) {
  animation: fade-in 0.8s 0.5s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(6) {
  animation: fade-in 0.8s 0.6s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(7) {
  animation: fade-in 0.8s 0.7s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(8) {
  animation: fade-in 0.8s 0.8s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(9) {
  animation: fade-in 0.8s 0.9s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(10) {
  animation: fade-in 0.8s 1s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(11) {
  animation: fade-in 0.8s 1.1s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(12) {
  animation: fade-in 0.8s 1.2s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(13) {
```

```
  animation: fade-in 0.8s 1.3s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(14) {
  animation: fade-in 0.8s 1.4s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(15) {
  animation: fade-in 0.8s 1.5s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(16) {
  animation: fade-in 0.8s 1.6s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(17) {
  animation: fade-in 0.8s 1.7s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(18) {
  animation: fade-in 0.8s 1.8s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(19) {
  animation: fade-in 0.8s 1.9s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(20) {
  animation: fade-in 0.8s 2.0s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(21) {
  animation: fade-in 0.8s 2.1s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
span:nth-child(22) {
  animation: fade-in 0.8s 2.2s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
```

```
span:nth-child(23) {
  animation: fade-in 0.8s 2.3s forwards cubic-bezier(0.11, 0, 0.5, 0);
}span:nth-child(24) {
  animation: fade-in 0.8s 2.4s forwards cubic-bezier(0.11, 0, 0.5, 0);
}span:nth-child(25) {
  animation: fade-in 0.8s 2.5s forwards cubic-bezier(0.11, 0, 0.5, 0);
}span:nth-child(26) {
  animation: fade-in 0.8s 2.6s forwards cubic-bezier(0.11, 0, 0.5, 0);
}span:nth-child(27) {
  animation: fade-in 0.8s 2.7s forwards cubic-bezier(0.11, 0, 0.5, 0);
}span:nth-child(28) {
  animation: fade-in 0.8s 2.8s forwards cubic-bezier(0.11, 0, 0.5, 0);
}
@keyframes fade-in {
  100% {
    opacity: 1;
    filter: blur(0);
  }
}
</style>
<body>
<h1>
  <span> China, India and the United States </span> <span> are among the countries of the world most </span> <span> affected by natural disasters. </span > <span> Natural disasters have the potential to wreck and even end the lives of those people,</span> <span>who stand in their way.</span> <span>  However, whether or not you are likely to be  </span> <span> affected by a natural disaster greatly depends</span > <span>  on where in the world you live, </span>
```

 The objective of   the project is to human build a   web application   to detect the   type of disaster . The input   is taken from the in built web cam,
 which in turn   is   given to the pre trained model . The model predicts the   type of disaster   and displayed on UI.
</h1>
<!--Brian Tracy-->

AI based Natural disaster analysis
<div class="topnav-right"style="padding-top:0.5%;">
Home
Introduction
Open Web Cam

</body>
</html>

UPLOAD HTML:

<html lang="en">
<head>
<title>Register</title>
<link href="https://cdn.bootcss.com/bootstrap/4.0.0/css/bootstrap.min.css" rel="stylesheet">

```
<style>
.header {       position: relative;
                        top:0;
                        margin:0px;
                        z-index: 1;
                        left: 0px;
                        right: 0px;
                        position: fixed;
                        background-color: #F36262 ;
                        color: white;
                        box-shadow: 0px 8px 4px grey;
                        overflow: hidden;
                        padding-left:20px;
                        font-family: 'Josefin Sans';
                        font-size: 2vw;
                        width: 100%;
                        height:8%;
                        text-align: center;
                }
                .topnav {
  overflow: hidden;
  background-color: #FCAD98;
}
.topnav-right a {
  float: left;
  color: black;
  text-align: center;
  padding: 14px 16px;
  text-decoration: none;
```

```
  font-size: 18px;
}
.topnav-right a:hover {
  background-color: #FCAD98;
  color: black;
}

.topnav-right a.active {
  background-color: #FCAD98;
  color: white;
}
.topnav-right {
  float: right;
  padding-right:100px;
}
body {
  background-color: ;
  background-repeat: no-repeat;
  background-size:cover;
                                                                  background-image:
url("https://i.pinimg.com/originals/b2/1d/c6/b21dc69346915015bc4e19bd
502f401b.gif");
    background-size: cover;
  background-position: 0px 0px;
  }
  .button {
  background-color: #091425;
  border: none;
  color: white;
```

```
  padding: 15px 32px;
  text-align: center;
  text-decoration: none;
  display: inline-block;
  font-size: 12px;
  border-radius: 16px;
}
.button:hover {
      box-shadow: 0 12px 16px 0 rgba(0,0,0,0.24), 0 17px 50px 0
rgba(0,0,0,0.19);
}
form {border: 3px solid #f1f1f1; margin-left:400px;margin-right:400px;}
input[type=text], input[type=password] {
  width: 100%;
  padding: 12px 20px;
  display: inline-block;
  margin-bottom:18px;
  border: 1px solid #ccc;
  box-sizing: border-box;
}
button {
  background-color: #091425;
  color: white;
  padding: 14px 20px;
  margin-bottom:10px;
  border: none;
  cursor: pointer;
  width: 17%;
  border-radius:4px;
```

```
  font-family:Montserrat;
}
button:hover {
  opacity: 0.8;
}
.cancelbtn {
  width: auto;
  padding: 10px 18px;
  background-color: #f44336;
}
.imgcontainer {
  text-align: center;
  margin: 24px 0 12px 0;
}
img.avatar {
  width: 30%;
  border-radius: 50%;
}

.container {
  padding: 16px;
}
span.psw {
  float: right;
  padding-top: 16px;
}
/* Change styles for span and cancel button on extra small screens */
@media screen and (max-width: 300px) {
  span.psw {
```

```
    display: block;
    float: none;
  }
  .cancelbtn {
    width: 100%;
  }
}
.home{
        margin:80px;
  width: 84%;
  height: 500px;
  padding-top:10px;
  padding-left: 30px;
}
.login{
        margin:80px;
        box-sizing: content-box;
  width: 84%;
  height: 420px;
  padding: 30px;
  border: 10px solid blue;
}
.left,.right{
 box-sizing: content-box;
 height: 400px;
 margin:20px;
 border: 10px solid blue;
}
.mySlides {display: none;}
```

```
img {vertical-align: middle;}
/* Slideshow container */
.slideshow-container {
  max-width: 1000px;
  position: relative;
  margin: auto;
}
/* Caption text */
.text {
  color: #f2f2f2;
  font-size: 15px;
  padding: 8px 12px;
  position: absolute;
  bottom: 8px;
  width: 100%;
  text-align: center;
}
/* The dots/bullets/indicators */
.dot {
  height: 15px;
  width: 15px;
  margin: 0 2px;
  background-color: #bbb;
  border-radius: 50%;
  display: inline-block;
  transition: background-color 0.6s ease;
}
.active {
  background-color: #FCAD98;
```

```
}
/* Fading animation */
.fade {
  -webkit-animation-name: fade;
  -webkit-animation-duration: 1.5s;
  animation-name: fade;
  animation-duration: 1.5s;
}
@-webkit-keyframes fade {
  from {opacity: .4}
  to {opacity: 1}
}
@keyframes fade {
  from {opacity: .4}
  to {opacity: 1}
}
/* On smaller screens, decrease text size */
@media only screen and (max-width: 300px) {
  .text {font-size: 11px}
}
.bar
{
margin: 0px;
padding:20px;
background-color:white;
opacity:0.6;
color:black;
font-family:'Roboto',sans-serif;
font-style: italic;
```

```
border-radius:20px;
font-size:25px;
}
a
{
color:grey;
float:right;
text-decoration:none;
font-style:normal;
padding-right:20px;
}
a:hover{
background-color:black;
color:white;
border-radius:15px;0
font-size:30px;
padding-left:10px;
}
body
{
                background-image:     url("https://images.unsplash.com/photo-
1532883130016-
f3d311140ba8?ixid=MXwxMjA3fDB8MHxwaG90by1wYWdlfHx8fGVufDB8f
Hw%3D&ixlib=rb-1.2.1&auto=format&fit=crop&w=1050&q=80");
   background-size: cover;
}
p
{
color:white;
```

```
font-style:italic;
font-size:30px;
}
</style>
</head>
<body>
<div class="header">
<div          style="width:50%;float:left;font-size:2vw;text-align:left;color:black;
padding-top:1%;padding-left:5%;">AI based Natural disaster analysis</div>
  <div class="topnav-right"style="padding-top:0.5%;">

    <a  href="/home">Home</a>
    <a href="/intro">Introduction</a>
    <a class="active" href="/upload">Open Web Cam</a>
  </div>
</div>
</body>
```

PYTHON CODE:

```
from flask import Flask, render_template, request, redirect, url_for
import cv2
from tensorflow.keras.models import load_model
import numpy as np
from werkzeug.utils import secure_filename
app = Flask(__name__, template_folder="templates")
model = load_model('disaster.h5')
print("Loaded model from disk")
@app.route('/', methods=['GET'])
def index():
    return render_template('home.html')
```

```
@app.route('/home', methods=['GET'])
def home():
    return render_template('home.html')
@app.route('/intro', methods=['GET'])
def about():
    return render_template('intro.html')
@app.route('/upload', methods=['GET', 'POST'])
def predict():
    print("[INFO] starting video stream...")
    vs = cv2.VideoCapture(0)
    (W, H) = (None, None)
    while True:
        (grabbed, frame) = vs.read()
        if not grabbed:
            break
        if W is None or H is None:
            (H, W) = frame.shape[:2]
        output = frame.copy()
        frame = cv2.cvtColor(frame, cv2.COLOR_BGR2RGB)
        frame = cv2.resize(frame, (64, 64))
        x = np.expand_dims(frame, axis=0)
        result = np.argmax(model.predict(x), axis=-1)
        index = ['Cyclone', 'Earthquake', 'Flood', 'Wildfire']
        result = str(index[result[0]])
                    cv2.putText(output,  "activity:  {}".format(result),  (10,  120),
cv2.FONT_HERSHEY_PLAIN,
                1, (0, 255, 255), 1)
        cv2.imshow("Output", output)
        key = cv2.waitKey(1) & 0xFF
```

```
        if key == ord("q"):
            break
    print("[INFO] cleaning up...")
    vs.release()
    cv2.destroyAllWindows()
    return render_template("upload.html")
@app.route('/file', methods=['POST', 'GET'])
def video():
    if request.method == 'POST':
        uploaded_file = request.files['file1']
        if uploaded_file.filename != '':
            vid_name = str(uploaded_file.filename)
            print(vid_name + "Uploaded_Succesfully")
            uploaded_file.save(uploaded_file.filename)
            vs = cv2.VideoCapture(vid_name)
            if (vs.isOpened() == False):
                print("Error opening video stream or file")
            (W, H) = (None, None)
            while True:
                (grabbed, frame) = vs.read()
                if not grabbed:
                    break
                if W is None or H is None:
                    (H, W) = frame.shape[:2]
                output = frame.copy()
                frame = cv2.cvtColor(frame, cv2.COLOR_BGR2RGB)
                frame = cv2.resize(frame, (64, 64))
                x = np.expand_dims(frame, axis=0)
                result = np.argmax(model.predict(x), axis=-1)
```

```
            index = ['Cyclone', 'Earthquake', 'Flood', 'Wildfire']
            result = str(index[result[0]])
            cv2.putText(output, "activity: {}".format(
               result), (10, 120), cv2.FONT_HERSHEY_PLAIN, 1, (0, 255, 255), 1)
            cv2.imshow("Output", output)
            key = cv2.waitKey(1) & 0xFF
            if key == ord("q"):
               break
         print("[INFO] cleaning up...")
         vs.release()
         cv2.destroyAllWindows()
   return render_template("file.html")
@app.route('/image', methods=['POST', 'GET'])
def image():
   resulttext = ''
   if request.method == 'POST':
      uploaded_file = request.files['imgfile']
      if uploaded_file.filename != '':
         img_name = str(uploaded_file.filename)
         print(img_name + "Uploaded Succesfully")
         uploaded_file.save(uploaded_file.filename)
         from tensorflow.keras.models import load_model
         from keras.preprocessing import image
         model = load_model("disaster.h5")
         img = image.load_img(img_name, grayscale=False,
                              target_size=(64, 64))
         x = image.img_to_array(img)
         x = np.expand_dims(x, axis=0)
         pred = model.predict_classes(x)
```

```
        index = ['Cyclone', 'Earthquake', 'Flood', 'Wildfire']
        result = index[pred[0]]
        resulttext = result
    return render_template('image.html', result_text=resulttext)
if __name__ == '__main__':
    app.run(host='127.0.0.1', port=8000, debug=True)
```

GitHub & Project Demo Link:

https://github.com/IBM-EPBL/IBM-Project-685-1658315166

https://drive.google.com/file/d/1hAcJq1y0fng2sHoflB5lx3WJljytT8Jz/view?usp=sharing