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CHAPTER 1
INTRODUCTION

1.1Project 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.

1.2 Purpose

The main purpose of this model is to detect and classify the type of disaster with a high accuracy rate. To prevent natural disasters in the future, said model can be used to predict future disasters and take some action against heavy loss of human ecological systems and property. The proposed model works in two blocks: Block-I convolutional neural network (B-I CNN), for detection and occurrence of disasters, and Block-II convolutional neural network (B-II CNN), for classification of natural disaster intensity types with different filters and parameters

The model is tested on 4428 natural images and performance is calculated and expressed as different statistical values: sensitivity (SE), 97.54%; specificity (SP), 98.22%; accuracy rate (AR), 99.92%; precision (PRE), 97.79%; and F1-score (F1), 97.97%. The overall accuracy for the whole model is 99.92%, which is competitive and comparable with state-of-the-art algorithms.

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 propose a multilayered deep convolutional neural network.

CHAPTER 2
LITERATURE SURVEY

2.1 Existing Problem

The detection of natural disasters by using deep learning techniques still faces various issues due to noise and serious class imbalance problems. But for a model to have sustained accuracy, the conditions above are necessary. ML techniques have the advantage of immediately filtering images, which would have required months to be sorted manually. Temporary settlements can also be detected, indicating areas of survivors in need. A number of researchers have worked on this type of disaster classification either on twitter datasets or on some particular website of news.

The input disaster information is converted into T-CAP so that it can be linked to the currently operating UHD broadcasting system. It also introduced the disaster information delivery process issued by the emulator and introduces the CAP element values specifically defined in the T-CAP. The risk of earthquake disaster in six western provinces of China is evaluated by analytic hierarchy process (AHP), and the evaluation results are compared. Due to climate changes, many natural disasters have become more serious, such as the intensity of typhoons that are getting higher every year. The characteristics of such a disaster is high-intensity but low-probability event (HILP).

We proposed multilayered deep convolutional neural network algorithm. We also need to develop better ways of communicating the results of models, including their limitations and uncertainties, so that decision makers better understand and appreciate both the predictions and the limitations of these prediction. Number of disasters and pandemics has caused a strain on the emergency services, and this is where ML algorithms are required to work efficiently and make the best use of existing resources.

2.2 References

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2.3Problem Statement Definition

- Natural Disaster one of most inevitable disasters, it can be caused by naturally occurring events such as earthquakes, cyclones, floods, and wildfires.

- A natural disaster can cause loss of life or damage property like buildings will collapse due to seismological effects, and typically leaves some economic damage in its wake. diseases/viruses spread and sometimes natural disasters can devastate nations.

- 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.

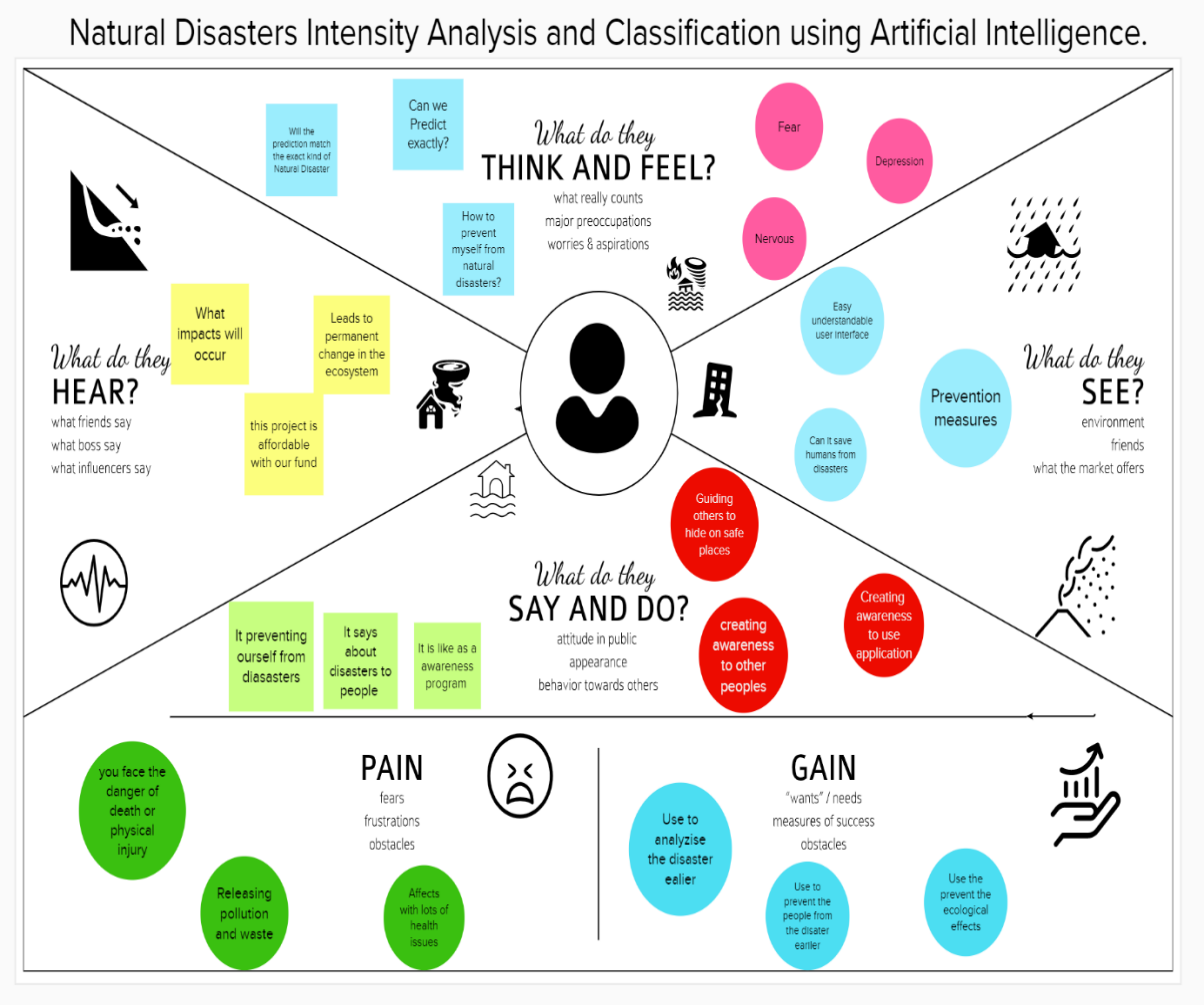
- The defined problem statements lead to focus on building a multilayered deep Convolutional Neural Network (CNN) model that classifies the natural disaster and monitors the intensity of its occurrence.

- For detection, an integrated webcam is used to capture the video frame and is compared with the pre-trained model and the type of disaster is identified and showcased on the user interface.

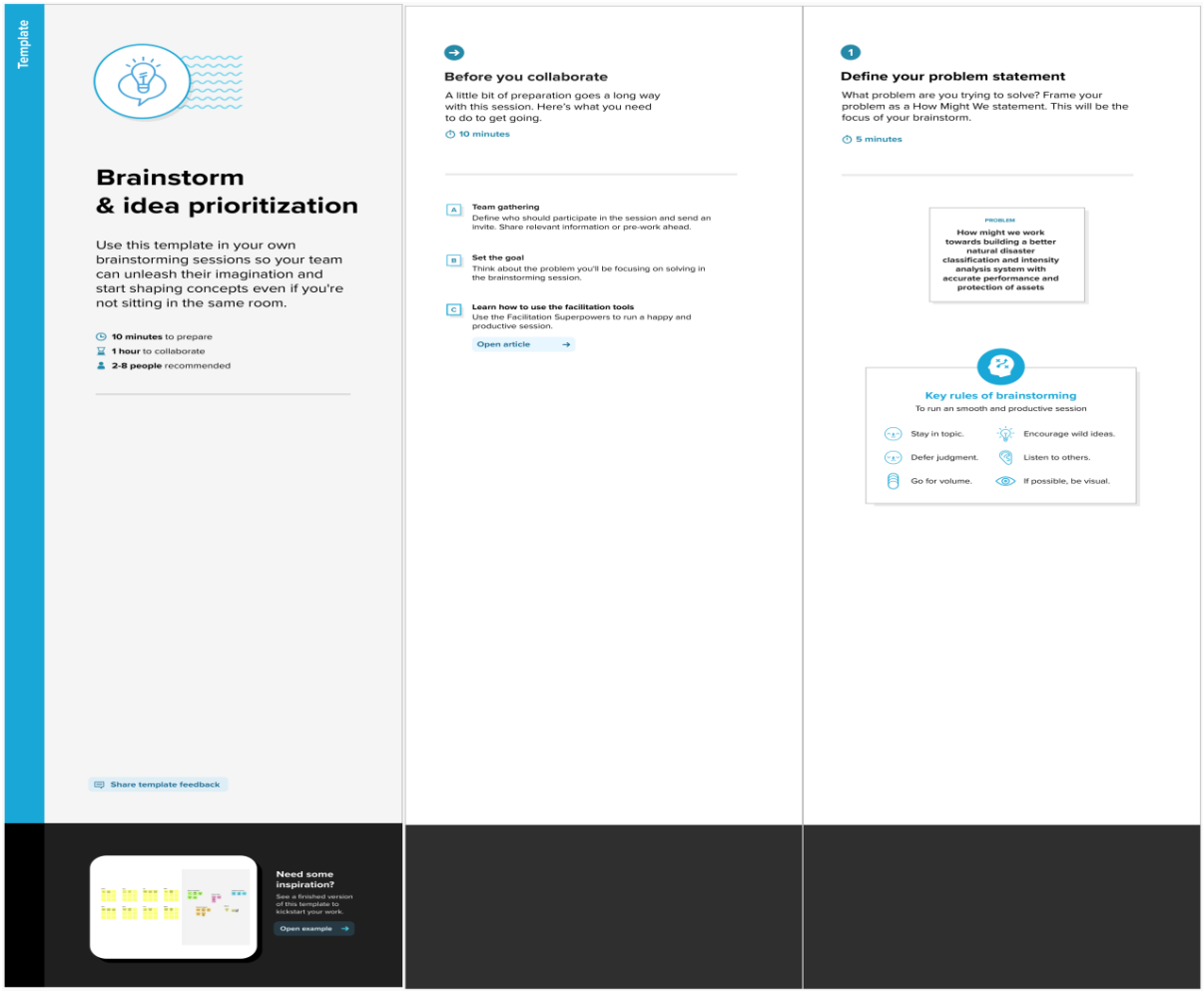
CHAPTER 3

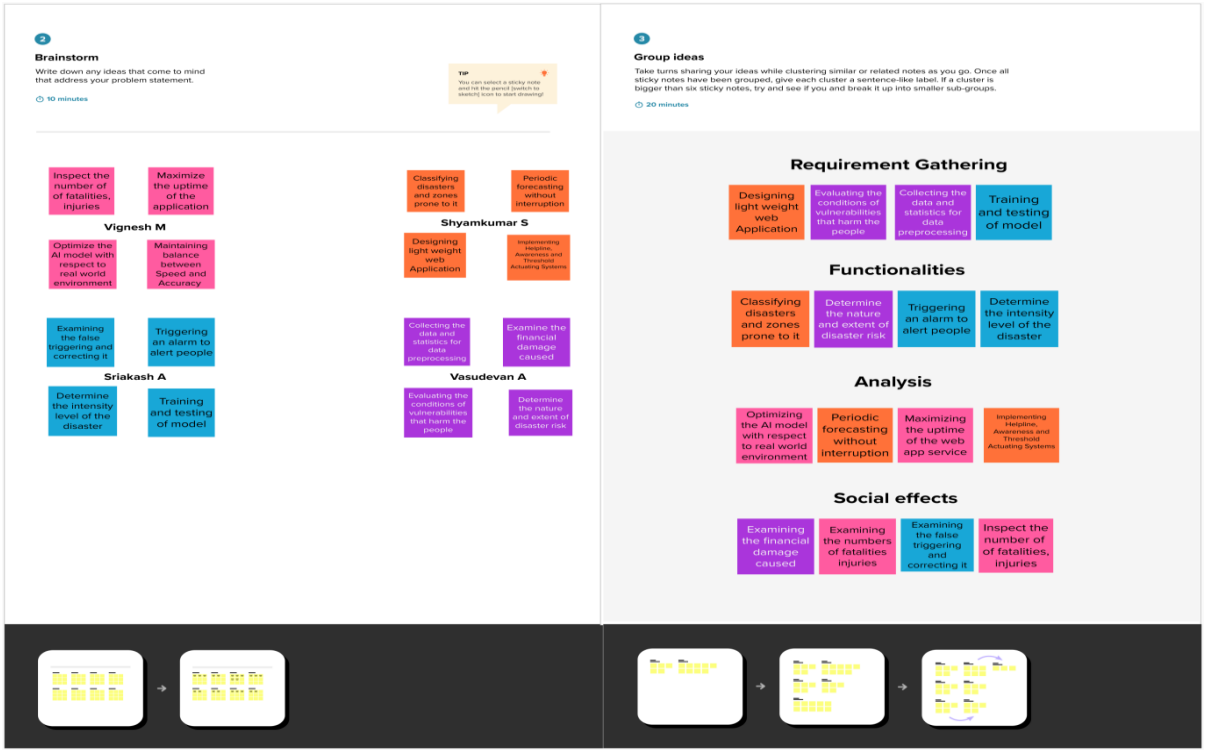
IDEATION & PROPOSED SOLUTION

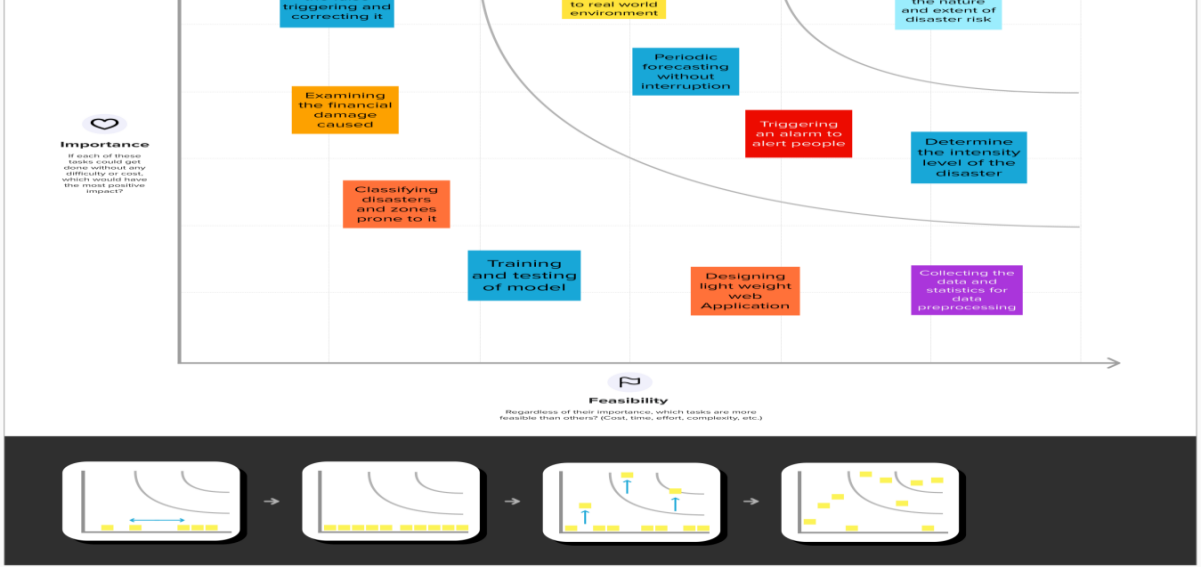
3.1 Empathy Map Canvas



3.2 Ideation & Brainstorming




2
Brainstorm
Write down any ideas that come to mind that address your problem statement.
10 minutes
TIP
You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!
Inspect the number of of fatalities, injuries
Maximize the uptime of the application
Vignesh M
Optimize the AI model with respect to real world environment
Maintaining balance between Speed and Accuracy
Examining the false triggering and correcting it
Triggering an alarm to alert people
Sriakash A
Determine the intensity level of the disaster
Training and testing of model
Classifying disasters and zones prone to it
Periodic forecasting without interruption
Shyamkumar S
Designing light weight web Application
Implementing Helpline, Awareness and Threshold Actuating Systems
Collecting the data and statistics for data preprocessing
Examine the financial damage caused
Vasudevan A
Evaluating the conditions of vulnerabilities that harm the people
Determine the nature and extent of disaster risk
3
Group ideas
Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.
20 minutes
Requirement Gathering
Designing light weight web Application
Evaluating the conditions of vulnerabilities that harm the people
Collecting the data and statistics for data preprocessing
Training and testing of model
Functionalities
Classifying disasters and zones prone to it
Determine the nature and extent of disaster risk
Triggering an alarm to alert people
Determine the intensity level of the disaster
Analysis
Optimizing the AI model with respect to real world environment
Periodic forecasting without interruption
Maximizing the uptime of the web app service
Implementing Helpline, Awareness and Threshold Actuating Systems
Social effects
Examining the financial damage caused
Examining the numbers of fatalities injuries
Examining the false triggering and correcting it
Inspect the number of of fatalities, injuries


4
Prioritize
Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.
20 minutes
Examining the false triggering and correcting it
Optimizing the AI model with respect to real world environment
Determine the nature and extent of disaster risk
Periodic forecasting without interruption
Examining the financial damage caused
Triggering an alarm to alert people
Determine the intensity level of the disaster
Classifying disasters and zones prone to it
Training and testing of model
Designing light weight web Application
Collecting the data and statistics for data preprocessing
Importance
If each of these tasks could get done without any difficulty or cost, which would have the most positive impact?
Feasibility
Regardless of their importance, which tasks are more feasible than others? (Cost, time, effort, complexity, etc.)

3.3 Proposed Solution

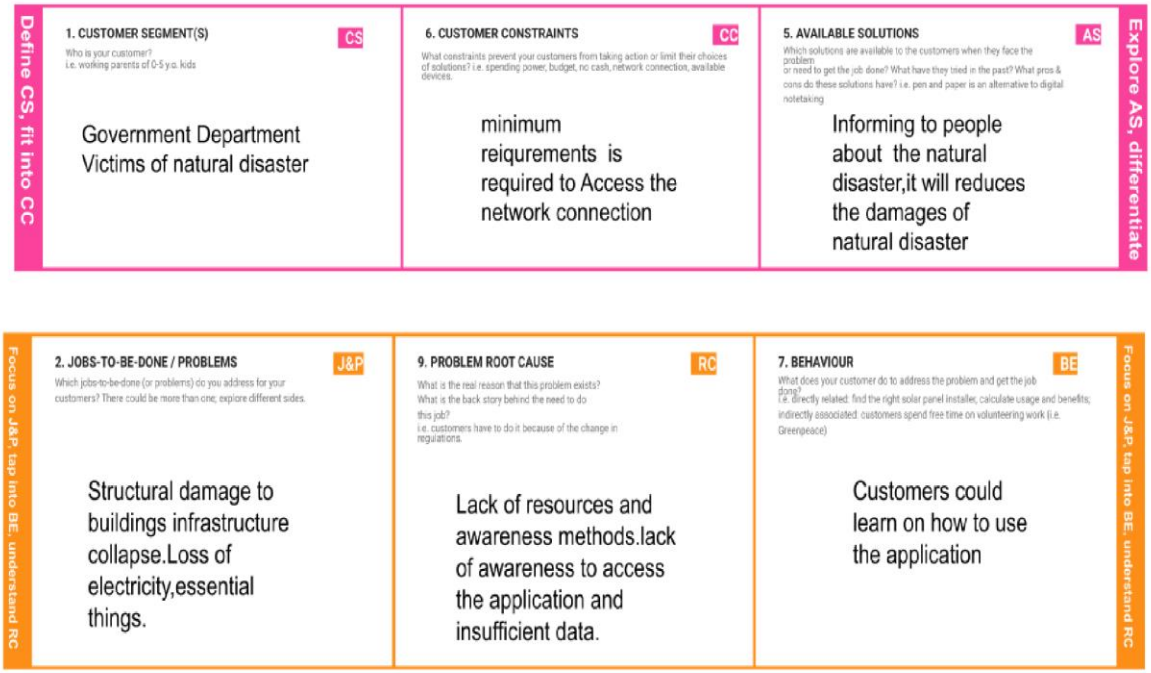
S. No	Parameter	Description
1.	Problem Statement (Problem to be solved)	humans need a way to describe and analyse the disaster early so that they can protect themselves from the damages due to the natural disaster.
2.	Idea / Solution description	This project uses Multi-layered Deep Convolutional Neural Network (pre-trained) model to classify Natural Disaster and calculate the intensity of the Disaster.
3.	Novelty / Uniqueness	To overcome the non-clarity image issues, the project uses the integrated webcam to capture the video frame and compare the data with pre-trained data.
4.	Social Impact / Customer Satisfaction	By the application humans can do the safety precautions to avoid the damages from the natural disasters, reduces the damages and use of Deep CNN algorithm with video frames accuracy improved.
5.	Business Model (Revenue Model)	The software requirements are affordable and it is reliable one.
6.	Scalability of the Solution	Highly expendable, dependable, reliable, scalable and has robustness.

3.4 Problem Solution fit

Project Title: Natural Disasters Intensity Analysis and Classification using Artificial Intelligence

Project Design Phase-I

Team ID: PNT2022TMID38617



CHAPTER 4

REQUIREMENT ANALYSIS

4.1 Functional requirement

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	**Sub Requirement (Story / Sub-Task)**
FR-1	**User Registration**	• Registering via Google Accounts • Registering via Product's own user management system
FR-2	**User Authentication**	• Verification through OTP • Verification through Email Link
FR-3	**Designation of Region**	• Ease of selection of necessary areas to be monitored. • Versatile and Flexible operations on designated areas
FR-4	**Analysis of Required Phenomenon**	• Simple and easy analysis on the specific phenomenon to be observed
FR-5	**Accumulation of required Data**	• Fast and Efficient data gathering capabilities. • regarding past event analysis and future prediction
FR-6	**Organizing Unstructured data**	• Processing of raw and clustered data into clear and refined data which is useful for analysis and prediction tasks
FR-7	**Algorithm selection**	• The freedom to choose from several classes of algorithm to be used in the process. • Customization of algorithm to suit the needs of a specific purpose
FR-8	**Prediction and analysis of data**	• Accurate results of the analysis provided by the process. • Advanced visualization techniques to help visualize the processed data for effective observation
FR-9	**Report generation**	• Restructuring of obtained results into clear and detailed report for future studies

4.2 Non-Functional requirements

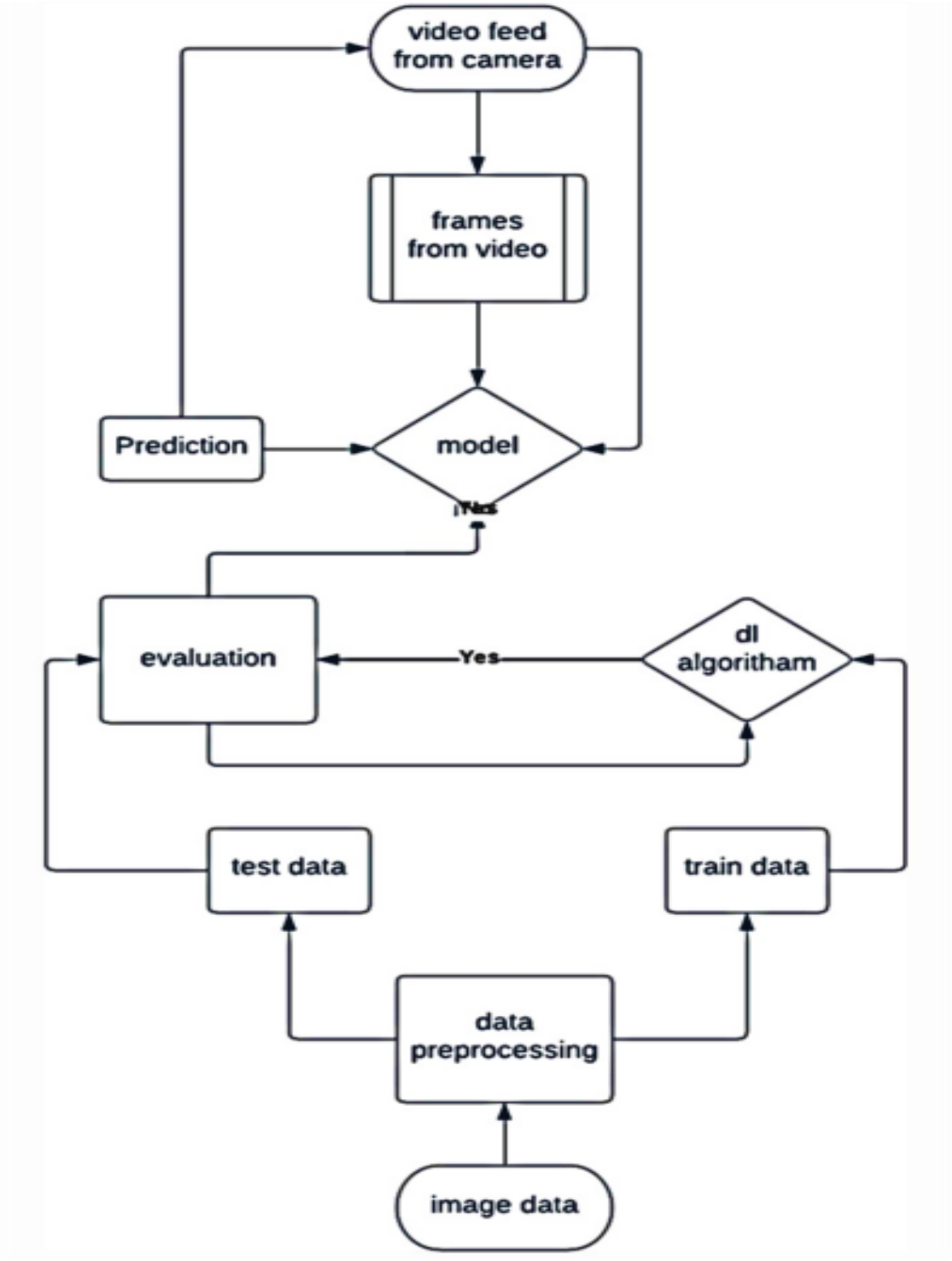
Following are the non-functional requirements of the proposed solution.

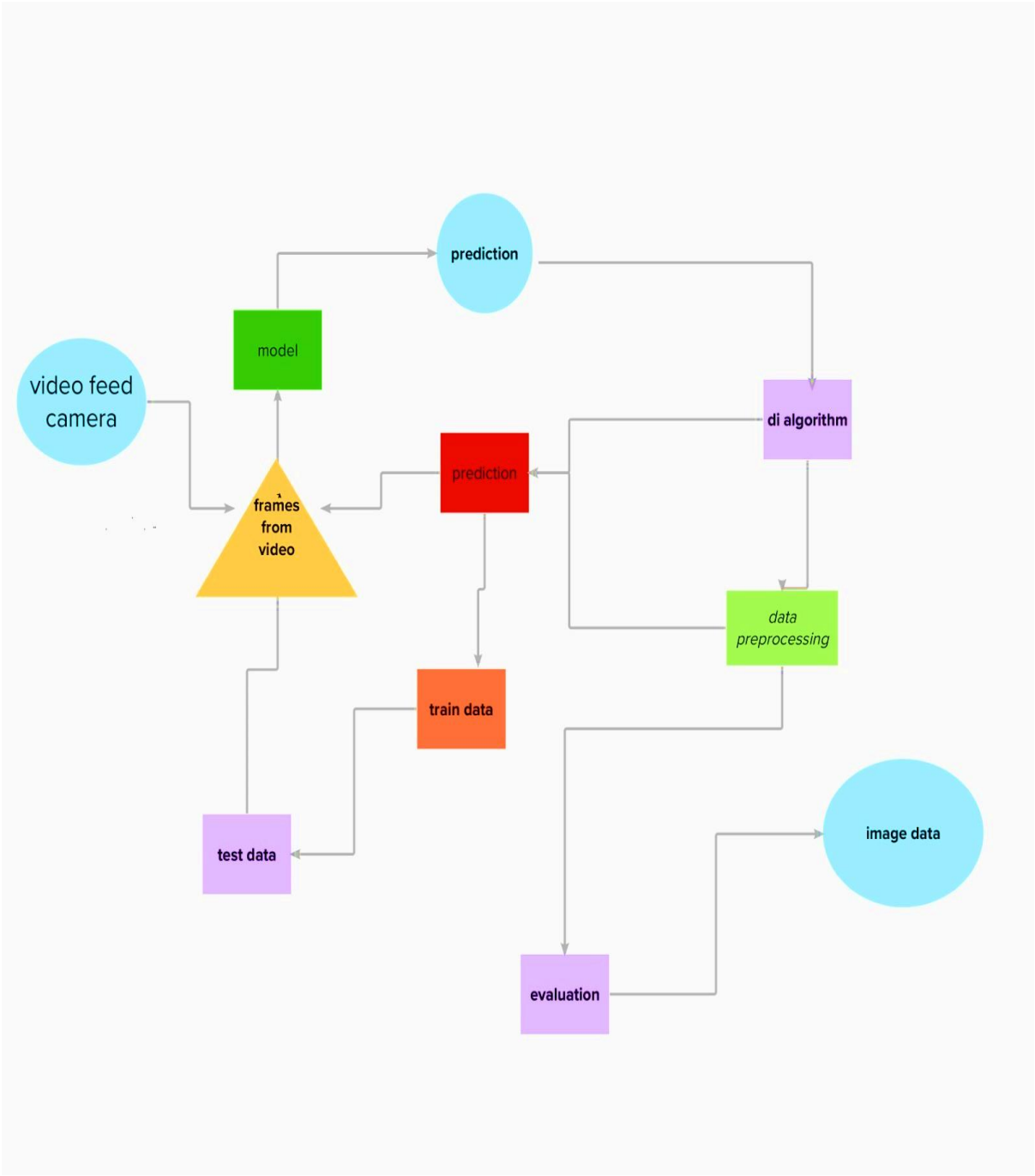
FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	It is easy and quick method to predict the disasters.
NFR-2	**Security**	The secure pattern shares components with monitor and control for logging and control access and for providing audit trails
NFR-3	**Reliability**	it should be highly reliable
NFR-4	**Performance**	It deals with the measure of the system's response time.
NFR-5	**Availability**	t can be available at the any time and we can access during any disasters.
NFR-6	**Scalability**	Disaster damages are measured involves examining the number of fatalities, of injuries, of people affected.

CHAPTER 5

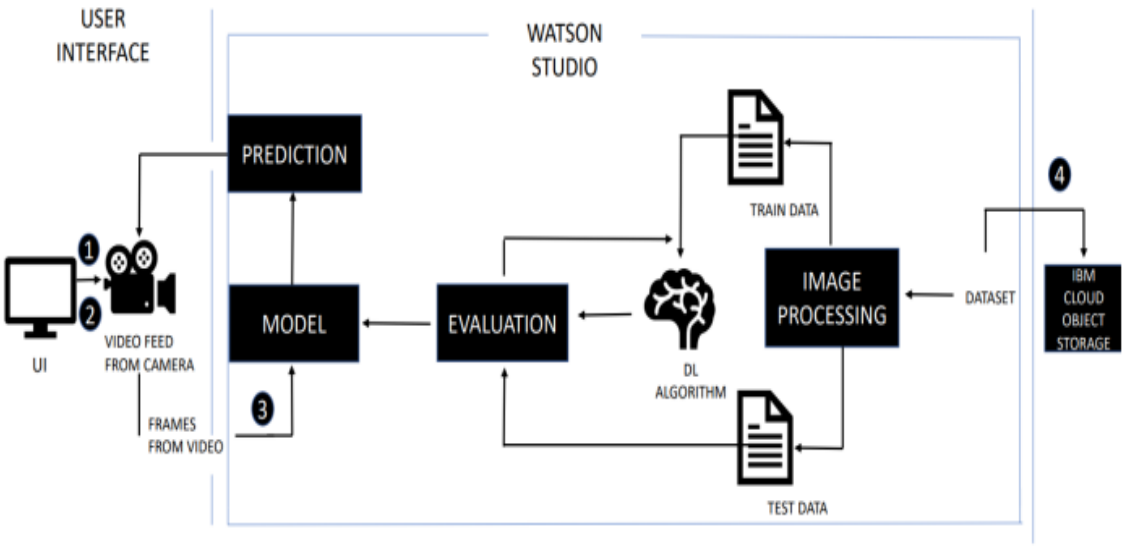
PROJECT DESIGN

5.1 Data Flow Diagrams




prediction
model
video feed camera
di algorithm
prediction
frames from video
data preprocessing
train data
test data
image data
evaluation

5.2 Solution & Technical Architecture



5.3 User Stories

User Stories Use the below template to list all the user stories for the product.

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 login with my password	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password	I can see the dashboard now	High	Sprint-1
	Dashboard	USN-6	As a user, I can update Disaster incidents.	I can update now.	Medium	Sprint-1
Customer (Web user)		USN-7	As a user, I can view Map Data.	I can see Map Data.	Medium	Sprint-1
Customer Care Executive	Authentication	USN-8	As a Community Leader, I can log into the application using my password	I can access my account.	High	Sprint-1
		USN-9	As a Community Leader, I can apply for membership.	I can apply membership	High	Sprint-1
		USN-10	As a Community Leader, I can verify Disaster.	Disaster verification	High	Sprint-1
System Administrator	Membership Approval	USN-11	As a administrator, I can approve the Membership application.	I can approve membership.	High	Sprint-1
	Update Disaster information	USN-12	As a administrator, I can update information about Disaster.	I can update disaster information.	High	Sprint-1

	Disaster verification	USN-13	As a administrator, I can verify disaster.	I can verify Disaster	High	Sprint-1
Community Leader and System Administrator	Disaster Queries	USN-14	Both are can able to ask disaster queries.	We can ask Queries about disaster.	Low	Sprint-2
	Disaster Reports	USN-15	Both are can able to give disaster reports.	Both will give the disaster reports	Low	Sprint-2

CHAPTER 6

PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	5	High	M.VIGNESH A. SRIAKASH
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	5	High	S. SHYAM KUMAR A. VASUDEVAN
Sprint-1	Login	USN-3	As a user, I can log into the application by entering email & password	2	Low	M.VIGNESH A. SRIAKASH
Sprint-1	Designation of Region	USN-4	As a user, I can collect the dataset and select the region of interest to be monitored and analysed.	3	Medium	S. SHYAM KUMAR A. VASUDEVAN
Sprint-2	Algorithm selection	USN-5	As a user, I can choose the required algorithm for specific analysis.	7	Medium	M.VIGNESH A. SRIAKASH
Sprint-2	Training and Testing	USN-6	As a user, I can train and test the model using the algorithm.	7	Medium	S. SHYAM KUMAR A. VASUDEVAN
Sprint-3	Prediction and analysis of data	USN-7	As a user, I can predict and visualise the data effectively.	10	High	M.VIGNESH A. SRIAKASH
Sprint-3	Model building	USN-8	As a user, I can build with the web application	10	High	M.VIGNESH A. SRIAKASH
Sprint-4	Report generation	USN-9	As a user, I can generate detailed report on product data analysis.	10	High	S. SHYAM KUMAR A. VASUDEVAN
Sprint-4	Model deployment	USN-10	As an administrator, I can maintain third party services	5	Low	M.VIGNESH A. SRIAKASH

6.2 Sprint Delivery Schedule

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	15	6 Days	24 Oct 2022	29 Oct 2022	15	30 Oct 2022
Sprint-2	14	6 Days	31 Oct 2022	05 Nov 2022	14	06 N0v 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	08 Nov 2022
Sprint-4	15	6 Days	14 Nov 2022	19 Nov 2022	15	20 Nov 2022

6.3 Reports from JIRA

CHAPTER 7
CODING & SOLUTIONING

7.1 Feature 1

A convolutional neural network is a class of artificial neural networks. It is a Deep Learning algorithm that can take in an input image, assign importance to various objects in the image andbe able to differentiate one from the other. The pre-processing required in a Convent is much lower as compared to other classification algorithms.

The advantage of CNNs is to provide an efficient dense network which performs the predictionor identification efficiently.

Code is attached below

7.2 Feature 2

We developed a multilayered deep convolutional neural network model that classifies the naturaldisaster 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 typeof 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.

Code is attached below.

CHAPTER 8

TESTING

8.1 Test Cases

Date	11-Nov-22		
Team ID	PNT2022TMID38617		
Project Name	Natural Disaster IntensityAnalysis and Classification using Artificial Intelligence		
Maximum Marks	4 marks		

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps to Execute	Test Data	Expected Result	Actual Result	Status	Comments	TC for Automation(Y/N)	BUG ID	Executed By
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	URL FOR THE WEBSITE	Website should be visible	Working as expected	Pass	NA	N	NA	VIGNESH M SHYAM KUMAR S SRIAKASH A VASUDEVAN A
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	URL FOR THE WEBSITE	Application should show below UI elements: a. Header with live stream b. A camera icon c. A button named open	Working as expected	Pass	NA	N	NA	VIGNESH M SHYAM KUMAR S SRIAKASH A VASUDEVAN A
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	URL FOR THE WEBSITE	User should click the button named open	Working as expected	Pass	NA	N	NA	VIGNESH M SHYAM KUMAR S SRIAKASH A VASUDEVAN A
HomePage_TC_OO4	Functional	access camera	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	URL FOR THE WEBSITE	Application should able to access the camera and see the livestream	Working as expected	Pass	NA	N	NA	VIGNESH M SHYAM KUMAR S SRIAKASH A VASUDEVAN A
Camera_TC_OO4	Functional	camera	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 button to capture image	URL FOR THE WEBSITE	Application should able to capture image from livestream	Working as expected	Pass	NA	N	NA	VIGNESH M SHYAM KUMAR S SRIAKASH A VASUDEVAN A
Prediction_TC_OO5	Functional	output window	Verify user is able to see the predicted results in the window		when the image is captured again click button to see the results	URL FOR THE WEBSITE	Application should show the predicted results from the image captured	Working as expected	Pass	NA	N	NA	VIGNESH M SHYAM KUMAR S SRIAKASH A VASUDEVAN A

8.2 User Acceptance Testing

This document serves as a quick reference for the Deep Learning Fundus Image Analysisfor Early Detection of Diabetic Retinopathy project's test coverage and open issues as of the project's release for user acceptance testing.

DEFECT ANALYSIS:

This shows how many bugs were fixed or closed at each severity level and how theywere fixed.

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	4	5	2	3	14
Duplicate	1	0	3	1	5
External	2	3	0	1	6
Fixed	9	2	4	15	30
Not Reproduced	0	0	1	0	1
Skipped	1	0	1	1	3
Won't Fix	0	5	2	1	8
Totals	17	14	13	22	64

TEST-CASE ANALYSIS

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

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	9	0	0	9
Client Application	40	0	0	40
Security	3	0	0	3
Out-source Shipping	3	0	0	3
Exception Reporting	8	0	0	8
Final Report Output	4	0	0	4
Version Control	2	0	0	2

CHAPTER 9

RESULTS

9.1 Performance Metrics

S.No.	Parameter	Values (Percentage)
1.	Model Summary	-96%
2.	Accuracy	Training Accuracy - 96.5% Validation Accuracy -92.3%
3.	Confidence Score (Only YoloProjects)	Class Detected - Nil Confidence Score - Nil

Our Project marks the successive performance by implementing in order to be cost effective andmore reliable to use and to predict the future from the natural disaster that we are ahead of. The successive way includes the objectives, activities and the approaches for the project. It mainly includes the trained dataset which gives an excessive measure of success which helps to overcome the future from this natural disaster.

CHAPTER 10
ADVANTAGES & DISADVANTAGES

Advantages

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 propose a multilayered deep convolutional neural network.

The proposed model works in two blocks: Block-I convolutional neural network (B-I CNN), for detection and occurrence of disasters, and Block-II convolutional neural network (B-II CNN), for classification of natural disaster intensity types with different filters and parameters.

The proposed model achieved the highest accuracy as compared to other state-of-the-art methods due to its multilayered structure. The proposed model performs significantly better for natural disaster detection and classification, but in the future the model can be used for various natural disaster detection processes.

The results were calculated as average statistical values: sensitivity, 97.54%; specificity, 98.22%; accuracy rate, 99.92%; precision, 97.79%; and F1-score, 97.97% for the proposed model. The proposed model achieved the highest accuracy as compared to other state-of-the-art methods due to its multilayered structure.

CHAPTER 11

CONCLUSION

Many researchers have attempted to use different deep learning methods for detection of natural disasters. However, the detection of natural disasters by using deep learning techniques still faces various issues due to noise and serious class imbalance problems. To address these problems, we proposed a multilayered deep convolutional neural network for detection and intensity classification of natural disasters. The proposed method works in two blocks—one for detection of natural disaster occurrence and the second block is used to remove imbalanced class issues. The results were calculated as average statistical values: sensitivity, 97.54%; specificity, 98.22%; accuracy rate, 99.92%; precision, 97.79%; and F1-score, 97.97% for the proposed model. The proposed model achieved the highest accuracy as compared to other state-of-the-art methods due to its multilayered structure. The proposed model performs significantly better for natural disaster detection and classification, but in the future the model can be used for various natural disaster detection processes.

CHAPTER 12

FUTURE SCOPE

The proposed method efficiently differentiated normal and abnormal behaviors of people during a natural disaster. The accuracy of the proposed system is improved by feeding previous encoding outputs to the decoding layers and combining them. Several data mining application were implemented using contents of social media; user generated content helps in disastrous events to gain vast amount of information. The CNN model is used to extract flood images from raw images and color filters are used to refine the desired detection. the proposed system's efficiency and accuracy were tested on several datasets and it outperformed other methods to give the highest results.

The proposed model shows better accuracy as compared to the recently developed techniques. The reason for this is that the proposed technique works in two parts: one for natural disaster occurrence detection and the second one for natural disaster classifications. The overall proposed model works on an image dataset to detect and classify the natural disasters.

Our project accuracy was very well compared to other recently developed natural disaster intensity analysis and classification models. So, our project will help in future to detect and analyze disaster. Due to detection before it happens everyone can aware from the disasters and it saves many lives, properties and environment from disasters.

CHAPTER 13

APPENDIX

13.1 Source Code

Login.html:

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

<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Login Form</title>
  <link rel="stylesheet" href="style.css">
  <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/5.15.3/css/all.min.css" />
</head>

<body>
  <div class="wrapper">

    <header>Login Form</header>
    <form action="#">
      <div class="field email">
        <div class="input-area">
          <input type="text" placeholder="Email Address">
          <i class="icon fas fa-envelope"></i>
          <i class="error error-icon fas fa-exclamation-circle"></i>
        </div>
```

```
            <div class="error error-txt">Email can't be blank</div>
          </div>
          <div class="field password">
            <div class="input-area">
              <input type="password" placeholder="Password">
              <i class="icon fas fa-lock"></i>
              <i class="error error-icon fas fa-exclamation-circle"></i>
            </div>
            <div class="error error-txt">Password can't be blank</div>
          </div>
          <div class="pass-txt"><a href="#">Forgot password? </a></div>
          <input type="submit" value="Login">
        </form>
        <div class="sign-txt">Not yet member? <a href="#">Signup now</a></div>
    </div>

    <script src="script.js"></script>

</body>

</html>
```

Home.html

```
      <!DOCTYPE html>
<html lang="en">
<head>
  <https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/css/bootstrap.min.css>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
```

```
    <meta name="viewport" content="width=, initial-scale=1.0">
    <link rel="stylesheet" type="text/css" href="style.css" >
    <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet" integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9Nao0Yz1ztcQTwFspd3yD65VohhpuuCOm
LASjC" crossorigin="anonymous">
    <title>Natural Disaster</title></title>
</head>
<body style="background-color: #34A0A4">
  <div class="card text-center" >
      <div class="card-header navbar-dark">
        <ul class="nav nav-tabs card-header-tabs">
          <li class="nav-item">
            <a class="nav-link active" aria-current="true" href="home.html"
style="font-size: 24px;">Home</a>
          </li>
          <li class="nav-item">
            <a class="nav-link" href="intro.html" style="font-size:
24px;">Introduction</a>
          </li>
          <li class="nav-item">
            <a class="nav-link" href="upload.html" style="font-size: 24px;">Open
Web Cam</a>
          </li>
        </ul>
        <h3 style="float: right;">AI based Natural Disaster Analysis</h3>
      </div>
    </div>
    <div class = "container" style="text-align: center;">
    <div class="card" style="width: 20rem; padding: 10px; margin: 40px; margin-
left: 40px; display: inline-block">
```

```
<img class="card-img-top" src="images/cyclone.jpg" alt="Card image cap">
<div class="card-body" >
<h5 class="card-title">Cyclone</h5>
<p class="card-text">cyclone, large system of winds that circulates counterclockwise direction north of the Equator and clockwise direction to the south. </p>
<a href="https://en.wikipedia.org/wiki/Cyclone" class="btn btn-primary">Know more</a>
</div>
</div>
<div class="card" style="width: 20rem; padding: 10px; margin: 40px; margin-left: 40px; display: inline-block">
<img class="card-img-top" src="images/earthquake.jpg" alt="Card image cap">
<div class="card-body" >
<h5 class="card-title">Earthquake</h5>
<p class="card-text">A sudden violent shaking of the ground, causing great destruction, as a result of movements within the earth's crust. </p>
<a href="https://en.wikipedia.org/wiki/Earthquake" class="btn btn-primary">Know more</a>
</div>
</div>
</div>
<div class = "container" style="text-align: center;">
<div class="card" style="width: 20rem; padding: 10px; margin: 40px; margin-left: 40px; display: inline-block">
<img class="card-img-top" src="images/flood.jpg" alt="Card image cap">
<div class="card-body" >
<h5 class="card-title">Flood</h5>
<p class="card-text">An overflow of a large amount of water beyond its normal limits, especially over what is normally dry land. </p>
<a href="https://en.wikipedia.org/wiki/Flood" class="btn btn-primary">know more</a>
```

```
      </div>
    </div>
    <div class="card" style="width: 20rem; padding: 10px; margin: 40px; margin-left: 40px; display: inline-block">
      <img class="card-img-top" src="images/wildefire.jpg" alt="Card image cap">
      <div class="card-body" >
        <h5 class="card-title">Wild Fire</h5>
        <p class="card-text">A wildfire is an unplanned, uncontrolled and unpredictable fire in an area of combustible vegetation starting in rural and urban areas. </p>
        <a href="https://en.wikipedia.org/wiki/Wildfire" class="btn btn-primary">Know more</a>
      </div>
      </div>
    </div>
</body>
</html>
```

Intro.html:

```
    <!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta http-equiv="X-UA-Compatible" content="IE=edge">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <link rel="stylesheet" type="text/css" href="style.css" >
   <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-Zenh87qX5JnK2Jl0vWa8Ck2rdkQ2Bzep5IDxbcnCeuOxjzrPF/et3URy9Bv1WTRi" crossorigin="anonymous">
   <title>Natural Disaster</title>
```

```
</head>
<body style="background-color: #34A0A4">
  <div class="card text-center">
    <div class="card-header">
      <ul class="nav nav-tabs card-header-tabs">
        <li class="nav-item">
          <a class="nav-link" aria-current="true" href="home.html" style="font-size: 24px;">Home</a>
        </li>
        <li class="nav-item">
          <a class="nav-link active" href="intro.html" style="font-size: 24px;">Introduction</a>
        </li>
        <li class="nav-item">
          <a class="nav-link" href="upload.html" style="font-size: 24px;">Open Web Cam</a>
        </li>
      </ul>
      <h3 style="float: right;">AI based Natural Disaster Analysis</h3>
    </div>
  </div>
  <h2 style="padding: 50px; margin: 50px; word-spacing: 15px; text-align: center ;line-height: 1.6;">
    China, India and the United States are among the countries in 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. <br><br> However, whether or not you are likely to be
affected by a natural disaster dramatically 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 webcam, which in turn is given to the pre-trained model. The model predicts the type of disaster and displayed on UI.

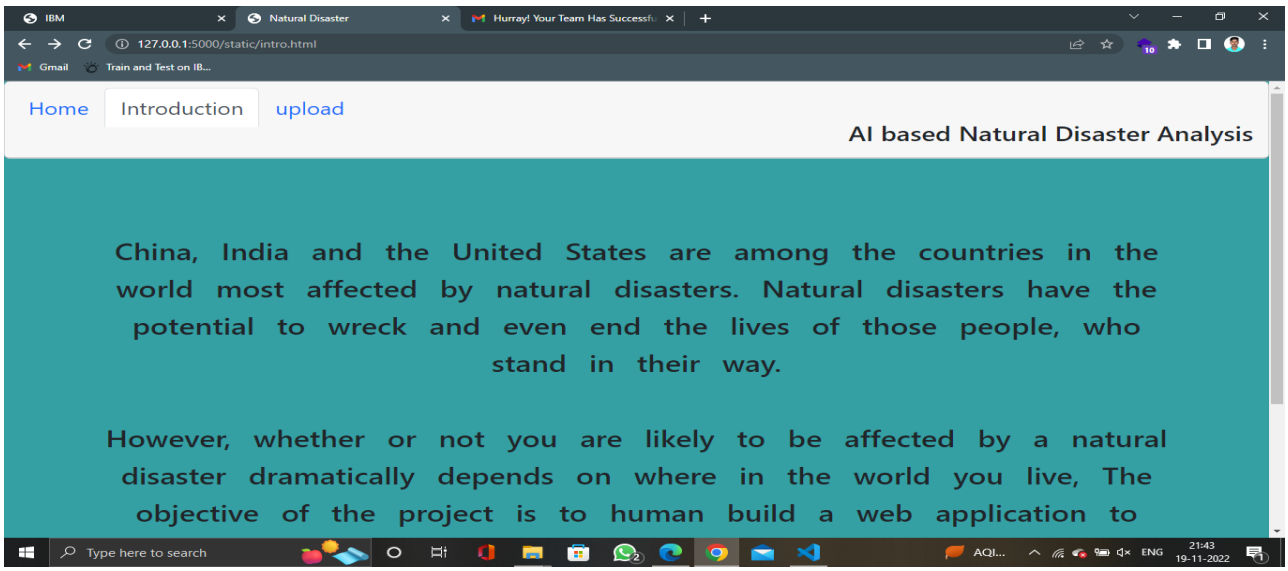
```
    </h2>
</body>
</html>
```

Upload.html

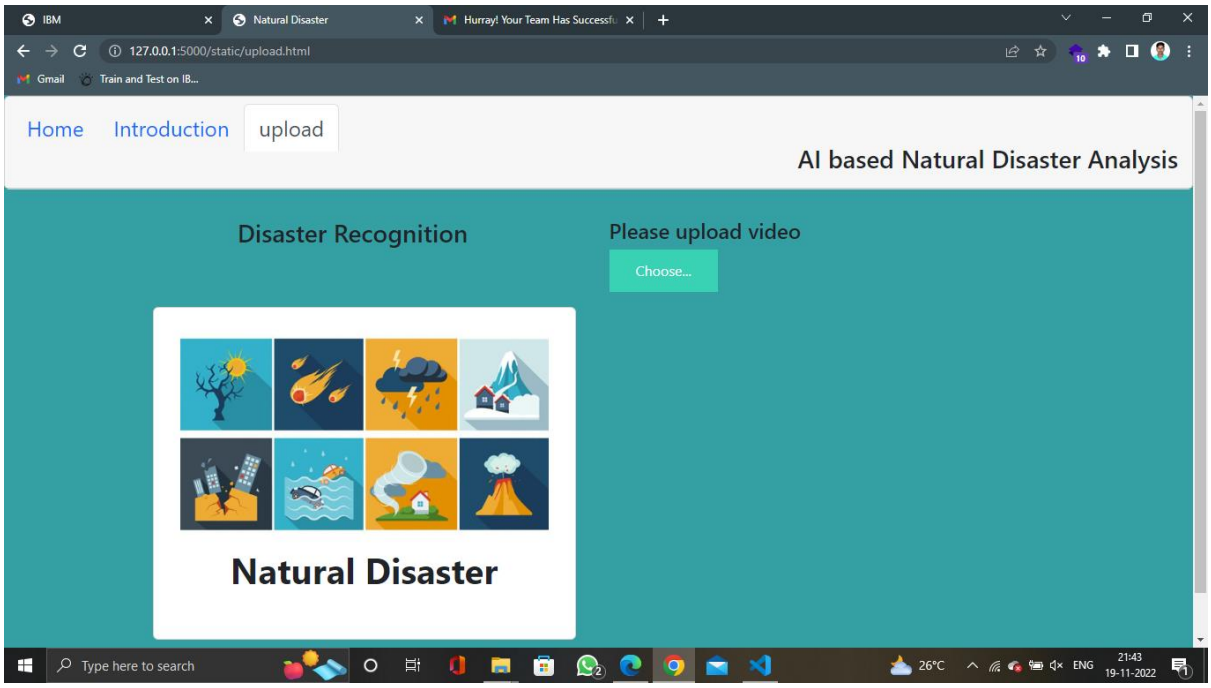
```
        <!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta http-equiv="X-UA-Compatible" content="IE=edge">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <link rel="stylesheet" type="text/css" href="style.css" >
   <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/css/bootstrap.min.css"
rel="stylesheet" integrity="sha384-
Zenh87qX5JnK2Jl0vWa8Ck2rdkQ2Bzep5IDxbcnCeuOxjzrPF/et3URy9Bv1WTRi
" crossorigin="anonymous">
   <title>Natural Disaster</title>
</head>
<body style="background-color:#34A0A4">
   <div class="card text-center">
      <div class="card-header">
        <ul class="nav nav-tabs card-header-tabs">
          <li class="nav-item">
            <a class="nav-link" aria-current="true" href="home.html" style="font-
size: 24px;">Home</a>
          </li>
          <li class="nav-item">
             <a class="nav-link" href="intro.html" style="font-size:
24px;">Introduction</a>
          </li>
          <li class="nav-item">
             <a class="nav-link active" href="upload.html" style="font-size:
24px;">Open Web Cam</a>
          </li>
        </ul>
        <h3 style="float: right;">AI based Natural Disaster Analysis</h3>
      </div>
    </div>
```

```
  <center>
      <div class="card" style="width: 30rem; padding: 10px; margin: 40px;
margin-left: 40px;display:inline-block">
        <img class="card-img-top" src="images/1.png" alt="Card image cap">
        <div class="card-body" >
          <h1 class="card-title">Natural Disaster</h1>
        </div>   </center> <center>
       <form action = "upload.html" method = "POST"
         enctype = "multipart/form-data">
         <input type = "file" name = "filename" />
         <input type = "submit" value="Submit"/>
         </form>
     </center>

     <script
src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.11.6/dist/umd/popper.min.js"
integrity="sha384-
oBqDVmMz9ATKxIep9tiCxS/Z9fNfEXiDAYTujMAeBAsjFuCZSmKbSSUnQlm
h/jp3" crossorigin="anonymous"></script>
    <script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/js/bootstrap.min.js"
integrity="sha384-
IDwe1+LCz02ROU9k972gdyvl+AESN10+x7tBKgc9I5HFtuNz0wWnPclzo6p9vx
nk" crossorigin="anonymous"></script>
</body>

</html>
```

intro.html



upload.html



Home.html