COLLEGE ELECTION SYSTEM

A PROJECT REPORT

Submitted for the partial fulfilment for

the award of the Degree of

Bachelor of Software Applications

Submitted by

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Under the guidance of

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CHENNAI – 600 061

APRIL 2023

BONAFIDE CERTIFICATE

AGURCHAND MANMULL JAIN COLLEGE

This is to certify that the report entitled

COLLEGE ELECTION SYSTEM

Being submitted to the Agurchand Manmull Jain College,

Affiliated to the University of Madras, Chennai

By

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For the partial fulfilment of the award of the Degree of

Bachelor of Software Applications

is a bonafide report of work carried out by him/her under my guidance and supervision

Signature of the Guide **Head of the Department**

Submitted during the viva-voce examination held on …… at Agurchand Manmull Jain College, Chennai.

Internal Examiner **External Examiner**

_____ _____

Acknowledgement

With great pleasure I take this opportunity to express my heartfelt gratitude to all the persons who helped me in making this project work a success.

First and foremost, I praise and thank the God almighty for his unfailing source of strength and inspiration in completion of this project. I wish to acknowledge the following with gratitude who have lent their helping hands with their valuable experience and for their constant guidance in carrying out my project.

I owe my profound gratitude to our Institution and Department Faculty members for constant encouragement and support. I respect and thank to our Principal Dr.N.Venkataramanan and Dean, Dr.M.M.Ramya for giving me an opportunity and providing the facilities to do the project work.

I heartily thank to Dr.A.Udhayakumar, Head(Facilitator), Department of Software Applications for her guidance and suggestions during this project work.I owe my profound gratitude to our project guide Dr.A.Udhayakumar who took keen interest on our project work and guided us all along, till the completion of our project work by providing all the necessary information for developing a good system.

I am also grateful to my parents and friends who have extended their support and co-operation during my project work. And finally, I would like to thank all those who have been supported in the successful completion of my project work.

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INTRODUCTION

1.INTRODUCTION

Theworldis burning.Asglobalwarming continues to display astatistical rise in global averagetemperaturesandvariousenvironmental factors continue tocontribute to the rise in forest fires,theneedforawireless detectionsystem to recognize these firehazards and that can successfullyalertthenecessaryfirstrespondersis becomingmore andmoreapparent. Such a detection and alertsystem would be able to potentiallysave billions of dollars in property,infrastructure, and environmentalcostsanddamages,preservewildlifehabitats and ecosystems that aredirectly affected by forest fires, andprevent thedisplacement ofcountless families from their homesthatneighborforestedareas andregions.Therefore,wehavecome together as an engineering team topropose and develop a prototypesolution to these issues using ouracquired technical knowledge asseniorelectricalengineeringstudentsforourseniordesignproject this semester. In summary, we aim to reduce thesocial,economical and environmentalimpactsbrought byforestfires.

1.1 Project Overview:

Fire can make major hazards in this hectic world. All buildings and vehicles used in public transportation have fire prevention and fire protection systems due to the accelerated number in the fire incidents. Also, many of the firms conduct a mock fire drill in every occurrence of months to protect their employees from the fire. This would help them to understand what to do or what not to do when a fire situation happens. Forests are one of the main factors in balancing the ecology. It is very harmful when a fire occurs in a forest. But most of the time, the detection of forest fire happens when it spread over a wide region. Sometimes, it could not be possible to stop the fire. As a result, the damage of the environment is higher than predictable. The emission of large amount of carbon dioxide (CO_2) from the forest fire damages the environment. As well as it would lead to complete disappearance of rare species in the world. Also, it can make an impact on the weather, and this make major issues like earthquakes, heavy rains, floods and so on.

A research study shows an automatic fire detection can be divided into three groups: aerial, ground and borne detection. The ground-based systems use several staring black and white video cameras are used in fire detection which detect the smoke and compares it with the natural smoke. The main benefit of using this system is high temporal resolution and spatial resolution. So that, the detection is easier.2But these mechanisms still have some drawbacks in detecting the early stage of the fire. So that, it is highly important to introduce a system to detect the fire early as possible.

Moreover, information regarding the seat of the hearth is invaluable for the rapid deployment of fire- fighters. Therefore, early detection, containment at the primary stages and extinguishment of a fireplace before it spreads are crucial for wildfire Management.

1.2 Purpose:

Forest fires as of late have been annihilating both for normal biological system, biodiversity and woodland economy. With expanding populace weight and change in worldwide atmosphere situation, there is an expansion in level of fires that are a significant reason for declining Indian woodlands. As indicated by woodland study report of India, 50 % of backwoods regions in nation are fire inclined (going from 50 to 90 % in certain conditions of nation). Around 6 % of the woods are inclined to extreme fire harms. The reason for this planned framework is to manufacture a dependable fire location framework so as to know dynamic status of backwoods temperature in specific conditions. It is about the sensors and dynamic checking framework to dodge a significant fire and genuine harm to woods.

LITERATURE SURVEY

2.LITERATURE SURVEY

2.1Abstract:

Forest fires are one of the main causes of environmental degradation nowadays. Current surveillance systems for forest fires lack in supporting real-time monitoring of every point of a region at all times and early detection of fire threats. Solution using wireless sensor networks, on the other hand, can gather sensory data values, such as temperature and humidity, from all points of a field continuously, day and night, and, provide fresh and accurate data to the fire-fighting center quickly. However, sensor networks face serious obstacles like limited energy resources and high vulnerability to harsh environmental conditions, that have to be considered carefully. In this paper, we propose a comprehensive framework for the use of wireless sensor networks for forest fire detection and monitoring. Our framework includes proposals for the wireless sensor network architecture, sensor deployment scheme, and clustering and communication protocols. The aim of the framework is to detect a fire threat as early as possible and yet consider the energy consumption of the sensor nodes and the environmental conditions that may affect the required activity level of the network. We implemented a simulator to validate and evaluate our proposed framework. Through extensive simulation experiments, we show that our framework can provide fast reaction to forest fires while also consuming energy efficiently.

2.1 Existing Method

Smoke alarms and heat alarms are currently used to detect fire. One module is not enough to monitor all of the potential hot spots for fires, which is the main drawback of smoke sensor alarms and heat sensor alarms. Being overly cautious at the time is the only way to prevent fire. Even if they are deployed in every nook and cranny, it still won't be enough to constantly produce an efficient output. The price will rise by a multiple as the number of smoke sensors required rises. Within seconds of an accident or fire, the suggested method can generate reliable and

extremely accurate alarms. One piece of software powers the entire surveillance network, which lowers costs. Data scientists and machine learning experts are actively conducting research in this area. The major difficulty lies in reducing inaccuracy in fire detection and timely alerting. The goal of this research is to create a system using IoT sensors that are randomly distributed throughout the forest and to create a powerful self-organized system between the sensors to cover all of the vast areas in the forest that will be used to keep a safe distance from fire damage whenever possible. The sensor has the ability to detect fire in the included area between time intervals of every 5 to 10 minutes. When a fire is detected, every sensor in the area will become active and be given the instruction to halt their normal duties. The idea is to use an Arduino and various IoT sensors to construct an early fire detector making every effort to create a system that is smarter by linking it to a website and keeping track of the statistics created by the Arduino programming. The use of latest technology can help to prevent the catastrophic accidents in forests. The goal is to early identify a forest fire by taking into account a variety of factors, including smoke, temperature, humidity, and flame. Based on the information we obtain from this programming, the forest department will be able to make an informed decision, and the rescue team will be able to reach the precise location on schedule. Think about it if there is heavy traffic in the area and it produces more carbon monoxide than usual. data scientists and machine learning specialists in this field. The major difficulty lies in reducing inaccuracy in fire detection and timely alerting. The goal of this research is to create a system using IoT sensors that are randomly distributed throughout the forest and to create a powerful self-organized system between the sensors to cover all of the vast areas in the forest that will be used to keep a safe distance from fire damage whenever possible. The sensor has the ability to detect fire in the included area between time intervals of every 5 to 10 minutes. When a fire is detected, every sensor in the area will become active and be given the instruction to halt their normal duties. The idea is to use an Arduino and various IoT sensors to construct an early fire detector. making every effort to create a system that is smarter by linking it to a website and keeping track of the statistics created by the Arduino programming. Utilizing cutting-edge technology can aid in preventing disastrous accidents in forests. The goal is to early identify a forest fire by taking into account a variety of factors, including smoke, temperature, humidity, and flame.

Construction

The sensors have an electrolyte covering two of their terminals. The electrodes are traditionally fictitious and are attached to the permeable hydrophobic pia mater by means of a very expensive character. The work(predicate) electrode acquires both the electrolyte and the relaxation information that must be regularly supervised through an open dura mater. The electrodes and housing are typically enclosed in a moldable saddlecloth, which holds a gasoline vestibule concavity for the gasoline and electrical brush. The electrolyte most frequently used is a rock that is acrid.

Internet of things

The internet of things (IoT) is defined as the vast array of physical objects, including furniture, vehicles, buildings, and other items, that are outfitted with sensors, software, cobweb connectivity, actuators, and electronics and use these features to collect and exchange data. In its most basic form, Internet of Things (IoT) is a framework that gives individuals, groups, or animals the ability to transmit data to a network that may not support Christian-to-electronic computer (H2C) or humane-to-human interaction (H2H) and unmatched identifiers.

Data management

An exact air in the Internet of Things is data charge (IoT). When examining a circle of outcomes that are connected and statically dealing with all styles of education, the scope of the provide data and the activities intricate in thumbing of those notice become wise. When the M2M number, which is also the core technology for the Internet of Things, was released, a usable space for wireless communication device manufacturers emerged (IoT). Free range of applications are hampered by this technology.

The following are some of the most pertinent ideas that help us comprehend the opportunities and difficulties associated with data management:

- Data Collection and Analysis
- Big Data
- Semantic Sensor Networking

• Virtual Sensors

• Complex Event Processing.

Conclusion

This project's algorithmic rule for changed sensory parameters has enhanced a system that will lessen error perception and frequently update the deficiency to the expert through IOT landing. In order to identify, complete, and sustain a resilient ecosystem, D2D associations traditionally play a crucial role in the IOT environment. The system as designed is capable of exposing mixture variations, dangerous gases, and fire occurrences via the sensors in a careful manner and capable of updating the complaint to the style expert by the IOT complete secondary MQTT regulation. The revised approach is also applicable to industrial and tenement appliances. However, the aforementioned mechanism is solely intended for news with serious opinions. A future annoyance is the multiple-decision company through the IOT landing.To accomplish this enormous labor, an object is being studied and an exploration is being conducted. It is anticipated that the above practise several-opinion correspondence will also take place in environments with aqiqiy delay due to technological advancements successful in the instant age scenario.

2.2 Reference

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[5] D. Lake, A. Rayes, and M. Morrow, "The Internet of Things," Internet Protocol J., vol. 15, no. 3, pp. 10–19, Sep. 2012. [Online]. Available: http://www.cisco.com/web/about/ac123/ac147/archived_issu es/ipj_15-3/ 153_Internet.html.

2.3 Problem Statement Definition

In the past, fires were discovered using watching towers or satellite images, which the monitoring authority would then use to determine whether or not there was a fire. However, this method was very slow because the fire might have spread to large areas and done significant damage before the rescue crew arrived.

In the watching tower system, a man would remain on the tower at all times to watch the area and report any signs of fire.

This approach was also cumbersome because a man must always be present and the fire may have already spread deep within the forest before the man learned of it.

Since it is well known that some regions, particularly forest areas, are vast, it would be nearly difficult to place a man in every area of the forest from where he could keep watch over the area.

In order to minimise the damage caused by fire, both these approaches—watching towers and satellite images—failed to identify fire as soon as possible. Issues with fire detection include: As mentioned, there were primarily two issues with fire detection:

 (a). Evaluation standards for the fire: Edge is predetermined; if worth exceeds edge, there is a fire; otherwise, there is not.

So, many researchers used machine learning techniques to solve this issue.

Node connections: In older systems, cables were utilised to link the alarm and the detectors.

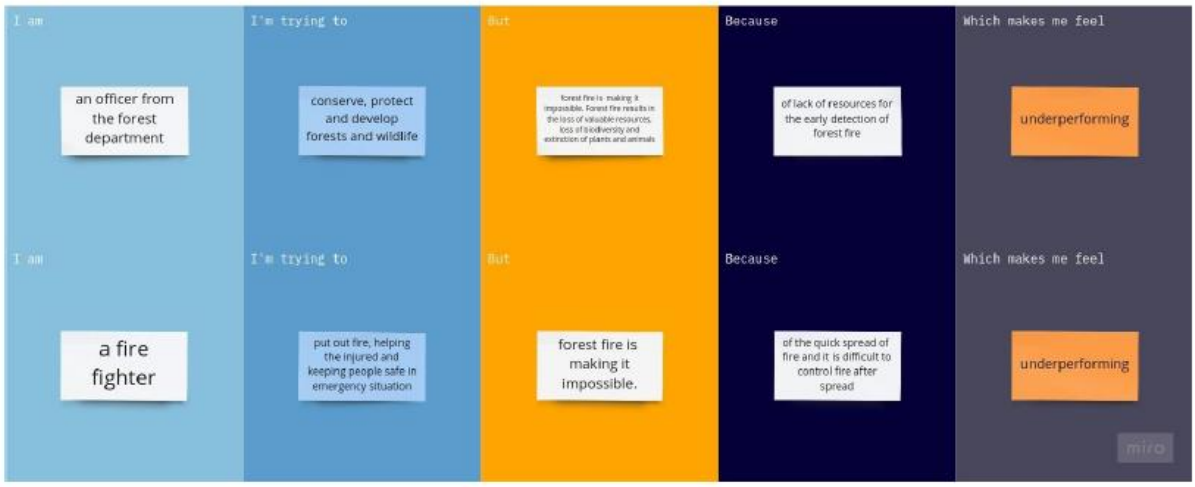
Most cables were made of copper. However, copper cable could be pricey or might have a problem halfway through.

So, employing wireless sensor networks, this issue was solved.

Therefore, with the development of technology, researchers have discovered an effective way to detect forest fires using wireless sensor networks.

By distributing sensor hubs in forested areas that illuminate about fire, fire can be detected.

Customer Problem Statement Template :



Conveying sensor hubs in timberland regions entails putting sensors throughout the forest, primarily in high-risk locations where there is a greater chance of a forest fire starting. Using wireless sensor networks, it is now simple to detect.

ProblemStatement (PS)	**I am (Customer**	**I'm trying to**	**But**	**Because**	**Which makes me feel**
PS-1	an officer from the forest department	conserve, protect and develop forests and wildlife	forest fire is making it impossible. Forest fire results in the loss of valuable resources, loss of biodiversity and extinction of plants and animals	of lack of resources for the early detection of forest fire	underperforming
PS-2	a fire fighter	put out fire, helping the injured and keeping people safe in emergency situation	forest fire is making it impossible.	of the quick spread of fire and it is difficult to control fire after spread	underperforming

IDEATION
&
PROPOSE SOLUTION

3.IDEATION AND PROPOSED SOLUTION

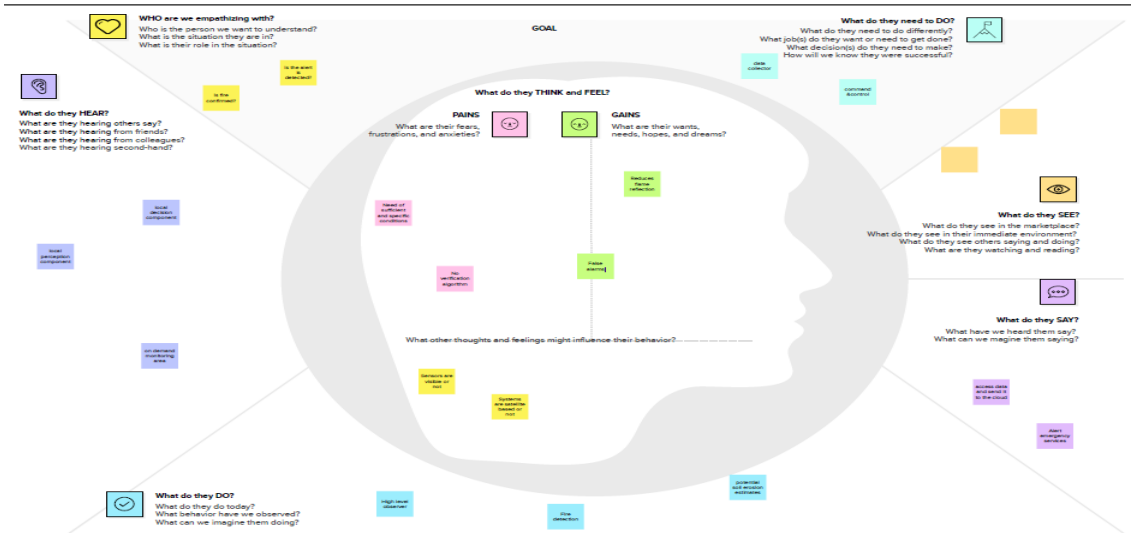
3.1 Empathy map canvas

Teams can use an empathy map as a collaborative tool to learn more about their clients. An empathy map can represent a group of users, such as a customer segment, in a manner similar to user personas. The agile community has embraced the empathy map, which was first developed by Dave Gray.

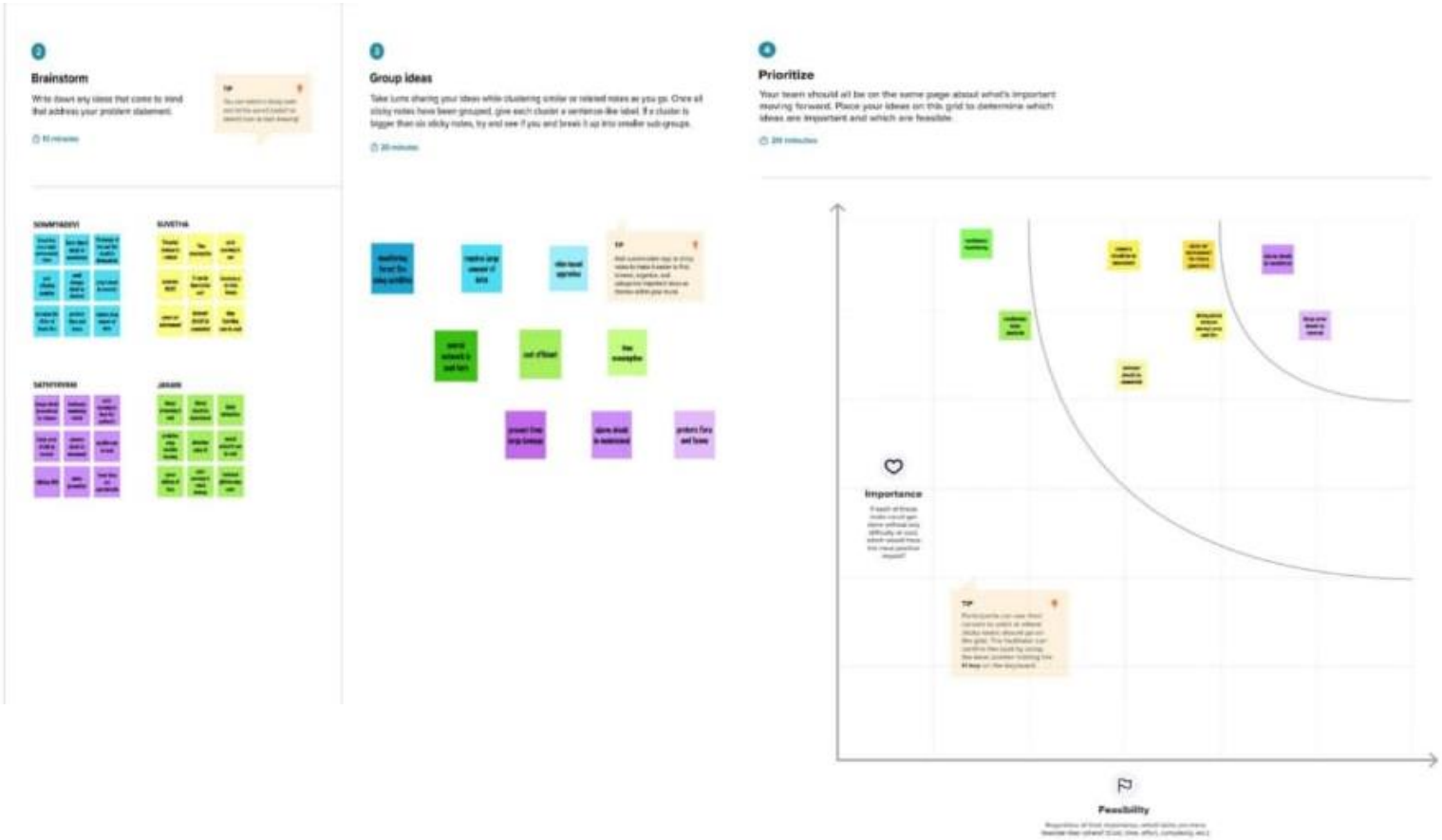
• An empathy map is a useful visualisation template that aids in the analysis of user and customer behaviour and emotions. Empathy maps not only identify behaviours but also point out potential channels for brands to interact with consumers more effectively.

• Data can be directly gathered from users using empathy maps. You can also ask a user to complete an empathy map themselves when combined with user interviews, survey responses, etc. This frequently reveals aspects of the user that may have gone unspoken or unconsidered.

• A category is included in each of the four quadrants to aid in our understanding of the user's perspective. The four empathy map quadrants examine the user's actions, thoughts, and feelings.



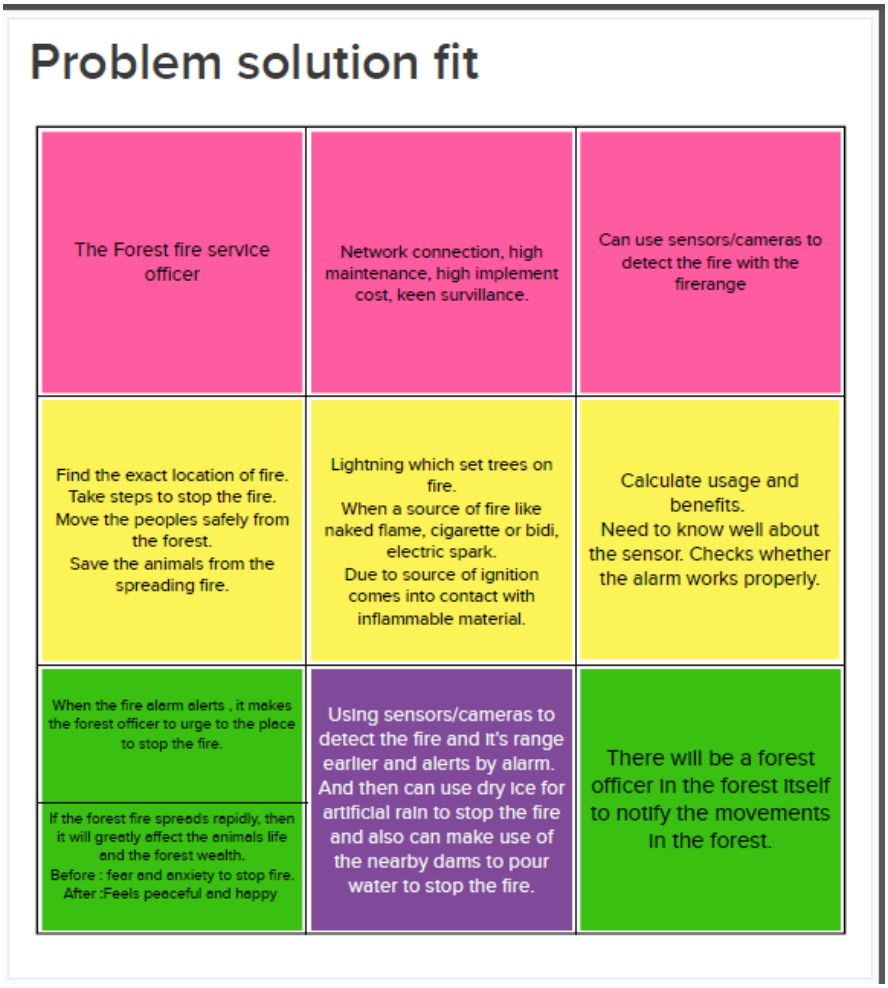
3.2 Ideation and Brainstroming



3.3 Proposed solution

S.No.	Parameter	Description
1	Problem Statement(Problem to besolved)	Formanynationsaroundtheworld,forestandurban fires aremajorissues.Forestfiresharmtheeconomy,and theecosystem,andputpeopleindanger.IntheUnited dStates,there areabout 100,000 wildfires per year. Dangerousflameshaveburnedmorethan9millio onacresofland.
2	Idea /Solutiondescription	Itisevenmorechallengingifthepredictionismadeu sing ground-basedtechniqueslikeacameraorvideo-basedapproaches.Due to theirdependability andeffectiveness,satellitescanbeavaluablesourc eofdatabothbeforeandduring the Fire. the many methods for predicting anddetecting forest fires in real time, with the aim ofinformingthelocalfireauthority.
3	Novelty/Uniqueness	Continuousmonitoring,datagathering,andanaly sis.detectforestfiresearlierbeforetheyspreadtoal arge area.
4	SocialImpact/CustomerSatisfactio n	Instantdetectionofforestfiresandsendinganear ly warningmessagetoreducethedamage.ithelpst osavethelivesofpeople,animals,andtrees.
5	BusinessModel(RevenueModel)	Forestplaysanimportantroleintheeconomy.Itisus ed forcommercialandmedicine.
6	ScalabilityoftheSolution	Thedevelopmentofa forestfireisinfluencedbya numberof factors. It is common knowledgethat wind isone ofthe most important factorsin determininghow aforestfire spreads.Itmakessensethatthemaindirectiona forestfire will spread will be determined by themeteorologicalwindspeed.Smokedetecti onfrom satelliteandgroundcamerasismadepossiblebyc omputervisionmodels.

3.4 Problem Solution Fit



REQUIREMENT ANALYSIS

4.REQUIREMENT ANALYSIS

4.1. FUNCTIONAL REQUIREMENT:

FR No.	FunctionalRequirement(Epic)	SubRequirement(Story/Sub-Task)
FR-1	UserRegistration	RegistrationthroughForm Registration through Gmail
FR-2	UserConfirmation	ConfirmationviaEmail ConfirmationviaOTP
FR-3	Accuratemodel	The model gives accurate results for detection of forest fires.
FR-4	Good hardware	To obtain high quality images to perform real time detection
FR-5	Cloud	We need cloud for storage and deploying the application
FR-6	Website	Easy to use and navigate website that send alerts to authorities when forest fire is detected.

4.2 Non-Functional requirements:

FR No.	Non-FunctionalRequirement	Description
NFR-1	**Usability**	The interface will be easy to use and very user friendly and can be used by anyone.
NFR-2	**Security**	The application will be secure and safe to use.
NFR-3	**Reliability**	It will be taken care such that the application only produces highly accurate results and will accurately detect forest fires.

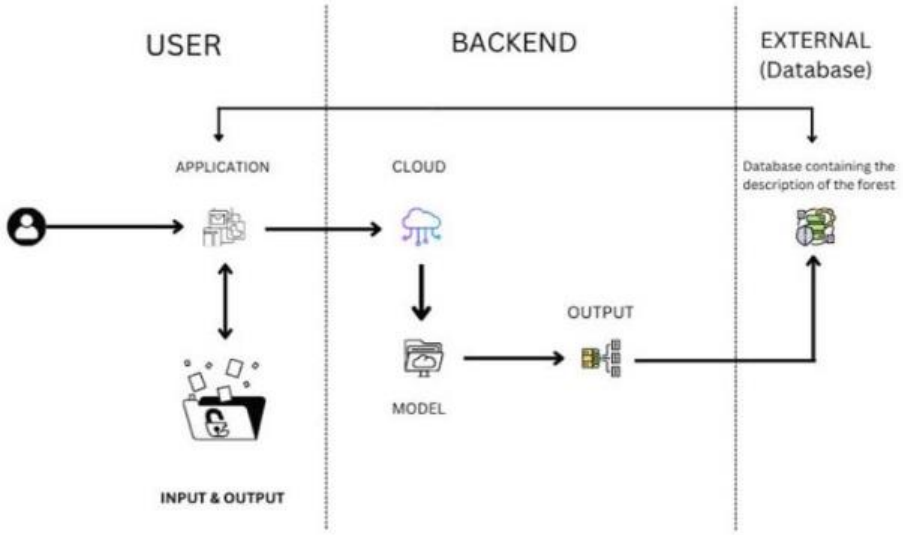
NFR-4	**Performance**	The model will perform detection in few seconds.
NFR-5	**Availability**	It will be available 24/7 will minimal downtime to continuously monitor
NFR-6	**Scalability**	The project is highly scalable and can be scaled up to monitor and detect forest fires in large forest or can also be scaled down to monitor and detect forest fires in particular areas alone

PROJECT DESIGN

5.PROJECT DESIGN

5.1Data Flow Diagrams

It is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically.



5.2Solution & Technical 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:

- Find the best tech solution to solve existing businessproblems.
- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.
- Define features, development phases, and solutionrequirements.

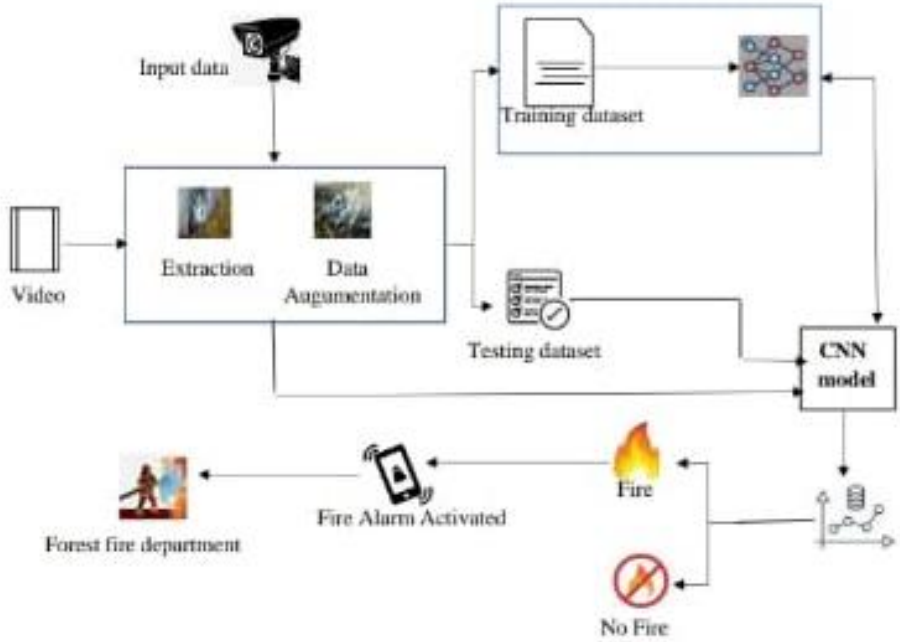

Input data
Training dataset
Video
Extraction
Data
Augmentation
Testing dataset
CNN
model
Forest fire department
Fire Alarm Activated
Fire
No Fire

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	Sensor	Rotates the camera 360 degree every 4 to 6 minutes a day OSS at the tower has wireless connections to the users computer	Optical Sensor can be used
2.	User Interface	The user uses the console to access the interface	Python/HTML ,CSS , Javascript and react.Js
3.	Input	Video Feed	Web Camera/Video on a site
4.	Conversion	Video inputted is converted into Frames	Frame Converter
5.	Fire system	Identifying smoke by clustering motions with a time input to reduce the number of false alarm	Ura Fire System
6.	Dataset	Using Test set and train set , train the model	Data set from Cloud Storage , Database
7.	Cloud Database	Database Service on Cloud	IBM Cloud ,Python Flask.
8.	Infrastructure (Server / Cloud), API	Application Deployment on Local System / Cloud Local ,Cloud Server Configuration , Twilio API to send messages	Java/python ,React.Js ,JavaScript ,HTML ,CSS ,IBM Cloud ,OPEN CV ,Anaconda Navigator ,Local.
9.	Detector	It will send an alert sound if the CNN detects the fire	Sound Alarm
10.	CNN	Gets the image process it and finds whether fire occurs or not	Four algorithms are used Faster-RCNN,R-FCN,SDD,YOLO V3

5.3 User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (web 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-2
	Login	USN-3	As a user, I can register for the application through Gmail single sign on	Registration sucessfull	Medium	Sprint-2
		USN-4	As a user, I can log into the application by entering email & password	Login successful	High	Sprint-1
	Dashboard	USN-5	As a user, I receive notification if any fire is detected	I can receive the notification if I'm the control service	High	Sprint-1
Administrator		USN-1	Admin is able to manage and maintain database	IBM Watson stores all the data	High	Sprint-1

PROJECT PLANNING

&

SCHEDULING

6.PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

Sprint	Functional Requirements (Epic)	User Story Number	User Story/Tasks	Story points	Priority	Team Members
Sprint-1	Image Processing	USN-1	Processing the image to find the fire is detected or not	1	Medium	1.kayshav harshan 2.prasanna kumar
Sprint-1		USN-2	The output would have to give high accuracy	2	High	1.kayshav harshan 2.prasanna kumar
Sprint-2	Video Processing	USN-3	Thedronevideoswillbesplitintoframesto detectthefire	3	High	1.kayshav harshan 2.prasanna kumar
Sprint-3	Alerting	USN-4	Afterthefireisdetectedthealertmessageha ve tobesent.	2	High	1.kayshav harshan 2.prasanna kumar
Sprint-4	Location Tracking	USN-5	Theexactlocationofthedronewillbepredicted and sent along with the alertmessage.	2	High	1.kayshav harshan 2.prasanna kumar

CODING

&

SOLUTIONING

7. CODING & SOLUTIONING

7.1 Coding

```
import keras
from matplotlib import pyplot as plt
from keras.preprocessing.image import ImageDataGenerator
#define the parameters
train=ImageDataGenerator(rescale=1./255,
                                 shear_range=0.2,
                                 rotation_range=180,
                                 zoom_range=0.2,
                                 horizontal_flip=True)
train = ImageDataGenerator(rescale=1/255)
test = ImageDataGenerator(rescale=1/255)
x_train = train.flow_from_directory("/content/drive/MyDrive/forest fire/Da
taset/Dataset/train_set",
                                        target_size=(64,64),
                                        batch_size = 32,
                                        class_mode = 'binary' )
x_test = test.flow_from_directory("/content/drive/MyDrive/forest fire/Data
set/Dataset/test_set",
                                        target_size=(64,64),
                                        batch_size = 32,
                                        class_mode = 'binary' )


x_test.class_indices
x_test.class_indices
#to define the linear Initialisation import sequential
from keras.models import Sequential
#to add layers import Dense
from keras.layers import Dense
#to create Convolutional kernel import convolution2D
from keras.layers import Convolution2D
#import Maxpooling layer
from keras.layers import MaxPooling2D
#import flatten layer
```

```
from keras.layers import Flatten
import numpy as np
import warnings
warnings.filterwarnings('ignore')
model =Sequential()
model.add(Convolution2D(32,(3,3),input_shape=(64,64,3),activation='relu'))
#add maxpooling layers
model.add(MaxPooling2D(pool_size=(2,2)))
#add faltten layer
model.add(Flatten())
#add hidden layers
model.add(Dense(150,activation='relu'))
#add output layer
model.add(Dense(1,activation='sigmoid'))
model.compile(loss = 'binary_crossentropy',
              optimizer = "adam",
              metrics = ["accuracy"])
model.fit_generator(x_train,steps_per_epoch=14,epochs=5,validation_data=x_
test,validation_steps=20)
model.save("forest1.h5")
predictions = model.predict(x_test)
predictions = np.round(predictions)
predictions
print(len(predictions))
#import load_model from keras.model
from keras.models import load_model
#import image class from keras
import tensorflow as tf
from tensorflow.keras.preprocessing import image
#import numpy
import numpy as np
#import cv2
#load the saved model
model = load_model("forest1.h5")
def predictImage(filename):
  img1 = image.load_img(filename,target_size=(64,64))
  Y = image.img_to_array(img1)
  X = np.expand_dims(Y,axis=0)
  val = model.predict(X)
  print(val)
  if val == 1:
    print(" fire")
  elif val == 0:
      print("no fire")
```

```
predictImage("/content/drive/MyDrive/forest fire/Dataset/Dataset/test_set/
with fire/FORESTFIRE (1).jpg")
pip install twilio
pip install playsound
#import opencv librariy
#import cv2
#import numpy
import numpy as np
#import image function from keras
from keras.preprocessing import image
#import load_model from keras
from keras.models import load_model
#import client from twilio API
from twilio.rest import Client
#imort playsound package
from playsound import playsound
#load the saved model
model = load_model(r'forest1.h5')
#define the features
name = ['forest','with forest']
account_sid='ACcd50918435afdf4a48f0b5b00c086b25'
auth_token='5ca3f7bf591627441cefd46af0a4e746'
client=Client(account_sid,auth_token)
message=client.messages \
.create(
    body='forest fire is detected,stay alert',
#use twilio free number
    from_='+14635832381',
#to number
    to='+919025868474')
print(message.sid)
pip install pygobjectdef message(val):

  if val==1:
    from twilio.rest import Client
    print('Forest fire')
    account_sid='ACcd50918435afdf4a48f0b5b00c086b25'
    auth_token='5ca3f7bf591627441cefd46af0a4e746'
    client=Client(account_sid,auth_token)
    message=client.messages \
     .create(
        body='forest fire is detected, stay alert',
        #use twilio free number
        from_='+14635832381',
```

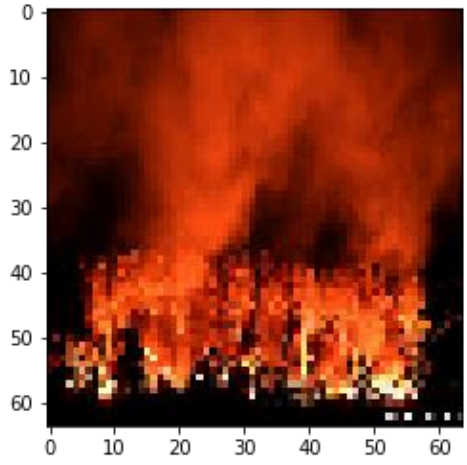
```
        #to number
        to='+919025868474')
    print(message.sid)
    print("Fire detected")
    print("SMS Sent!")
  elif val==0:
    print('No Fire')
from matplotlib import pyplot as plt
#import load model from keras.model
from keras.models import load_model
#import image from keras
from tensorflow.keras.preprocessing import image
img1 = image.load_img('/content/drive/MyDrive/forest fire/Dataset/Dataset/
test_set/with fire/19464620_401.jpg',target_size=(64,64))
Y = image.img_to_array(img1)
x = np.expand_dims(Y,axis=0)
val = model.predict(x)
plt.imshow(img1)
plt.show()
message(val)
```

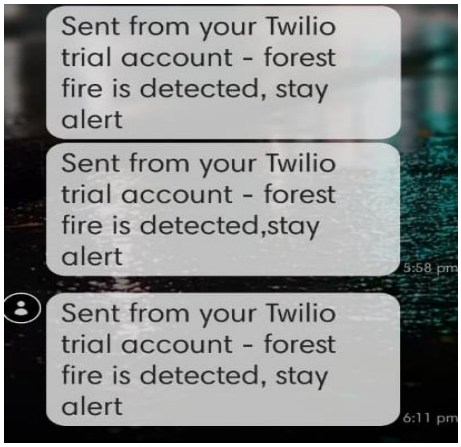
TESTING &RESULTS

8.TESTING& RESULT

Test cases help guide the tester through a sequence of steps to validate whether a software application is free of bugs, and working as required by the end-user. Learning how to write test cases for software requires basic writing skills, an attention to detail, and a good understanding of the application under test (AUT).

8.1 Performance metrics





ADVANTAGES
&
DISADVANTAGES

9.ADVANTAGES & DISADVANTAGES

9.1 Advantages:

- Avoid Smoke Inhalation. The most important reason is perhaps the only one youreally need.
- Early Detection. The earlier a fire is detected, the faster it will be that firefighterswill respond.

9.2 Disadvantages:

- The system is essentially useless if the batteries aren't charged, since it won'twork properly.
- There is a bit of a burden to business owners to always remember to keep thebatteries fresh so the system operates properly when you need it most.

CONCLUSION

10.CONCLUSION

This project will help in early detection of forest fire and the prevention. It also involves the risk factor of analyzing the drone images of affected areas using machine learning algorithm which overcomes the existing project. This system detects the fire conditions in a short time before any fire accidents spreads over the forest area. The scope of using video frames in the detection of fire using machine learning is challenging as well as innovative. If this system with less error rate can be implemented at a large scale like in big factories, houses, forests, it is possible to prevent damage and loss due to random fire accidents by making use of the Surveillance System.

APPENDIX

11.APPENDIX

Github Link :

https://github.com/KayshavHarshan