VirtualEye - Life Guard for Swimming Pools to Detect Active Drowning

IBM-Project-32749-1660211926

NALAIYA THIRAN PROJECT BASED LEARNING ON VIRTUALEYE - LIFE GUARD FOR SWIMMING POOLS TO DETECT ACTIVE DROWNING

A PROJECT REPORT

BY

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(Affiliated College of Anna University, Chennai)

BONAFIDE CERTIFICATE

Certified that this project report **"VirtualEye - Life Guard for Swimming pool to Detect the Active Drowning"** is the Bonafide record work done by **Keerthana T (723719104038), Deepa K (723719104017), Karpagavalli C (723719104034), Kumari Aarju (723719104041) for IBM-NALAIYATHIRAN in VII** semester of **B.E., degree** course in **Computer Science and Engineering** branch during the academic year of **2022 - 2023.**

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ACKNOWLEDGEMENT

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Keerthana T
Deepa K
Kumari Aarju
Karpagavalli C

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1.INTRODUCTION

1.1 Project Overview

Category: Artificial Intelligence

Team ID : PNT2022TMID44015

Skills Required:

- Machine Learning and Artificial Intelligence.
- Neural Networks.
- Natural Language Processing.
- Computer programming & fundamentals
- Python
- HTML
- CSS
- Javascript

Project Description:

Swimming is one of the best exercises that helps people to reduce stress in this urban lifestyle. Swimming pools are found larger in number in hotels, and weekend tourist spots and barely people have them in their house backyard. Beginners, especially, often feel it difficult to breathe underwater which causes breathing trouble which in turn causes a drowning accident. Worldwide, drowning produces a higher rate of mortality without causing injury to children. Children under six of their age are found to be suffering the highest drowning mortality rates worldwide. Such kinds of deaths account for the third cause of unplanned death globally, with about 1.2 million cases yearly. To overcome this conflict, a meticulous system is to be implemented along the swimming pools to save human life.

By studying body movement patterns and connecting cameras to artificial intelligence (AI) systems we can devise an underwater pool safety system that reduces the risk of drowning. Usually, such systems can be developed by installing more than 16 cameras underwater and ceiling and analyzing the video feeds to detect any anomalies. but AS a POC we make use of one camera that streams the video underwater and analyses the position of swimmers to assess the probability of drowning, if it is higher then an alert will be generated to attract lifeguards' attention.

1.2 Purpose

Personal finance management is an important part of people's lives. However, everyone does not have the knowledge or time to manage their finances in a proper manner. And, even if a person has time and knowledge, they do not bother with tracking their expenses as they find it tedious and time-consuming. Now, you don't have to worry about managing your expenses, as you can get access to an expense tracker that will help in the active management of your finances. Also known as expense manager and money manager, an expense tracker is a software or application

that helps to keep an accurate record of your money inflow and outflow. Many people in India live on a fixed income, and they find that towardsthe end of the month they don't have sufficient money to meet their needs. While this problem can arise due to low salary, invariably it is due to poor money management skills.

People tend to overspend without realizing, and this can prove to be disastrous. Using a daily expense manager can help you keep track of how much you spend every day and on what. At the end of the month, you will have a clear picture where your money is going. This is one of the best ways to get your expenses under control and bring some semblance of order to your finances.Today, there are several expense manager applications in the market. Some are paid managers while others are free. Even banks like ICICI offer their customers expense tracker to help them out. Before you decide to go in for a money manager, it isimportant to decide the type you want.

2.LITERATURE SURVEY

2.1 Existing problem

- More children ages 1–4 die from drowning than any other cause of death.
- For children ages 5–14, drowning is the second leading cause of unintentional injury death after motor vehicle crashes.
- 4,000* fatal unintentional drownings—that is an average of 11 drowning deaths per day.
- 8,000† nonfatal drownings—that is an average of 22 nonfatal drownings per day.

2.2 References

1. AkogluE, CetinM, OnlenY, DuranN, SangunO, SavasL, OcakS. Effect of the warm and wet environment of the swimming-pool on the bacterial flora of the external ear canal and development of otitis 11 externa in children who attend a swimming course. Turkish Archives of Otorhinolaryngology. 2006;44(1):29–33.

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3. CuetoS, GuerreroG, AlmonteJLJ, ZevallosA, SugimaruC. Promoting early childhood development through a public programme: Wawa Wasi in Peru. 2009. 3ie Impact Evaluation Report (https: //developmentevidence.3ieimpact.org/search-result-details/impactevaluation-repository/promoting-early-childhood-development-througha-public-programme-wawa-wasi-in-peru/4732, accessed 9 April 2021).

4. Da Silva PereiraA, LanzillottiHS, De Abreu SoaresE. Day care centers attendance and preschool

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BS EN 15288-2, Swimming pools for public use. Safety requirements for operation. Retrieved from: https://shop.bsigroup.com/ProductDetail/?p id=000000000030360257 12

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Drowning Prevention. (2017). The Need. Retrieved from: https://www.drowningprevention.com.au/ German Institute for Standardization. (2019).

German national guideline DGfdB R 94.15 "Test methods for camera-based drowning detection systems under operational conditions" (German Association for Public Swimming Pools). Haizhou Li, Haizhou Li, Kar-Ann Toh and Liyuan Li. (2012). Advanced Topics in Biometrics, World Scientific Publishing Co. Pte. Ltd., ISBN-13 978-981-4287-84-5 Health and Safety Executive. (2018). HSG179, Health and safety in swimming pools (Fourth edition).

2.3 Problem Statement Definition

Customer Problem Statement:

Every year in the United States there are over 4,000* fatal unintentional drownings, including boating-related drowning.

Drowning death rates vary from state to state. The annual age-adjusted drowning death rate in the United States during 2016-2020 was 1.28 deaths per 100,000 people (including boating-related drowning deaths). The map below shows annual age-adjusted unintentional drowning death rates during 2016-2020.

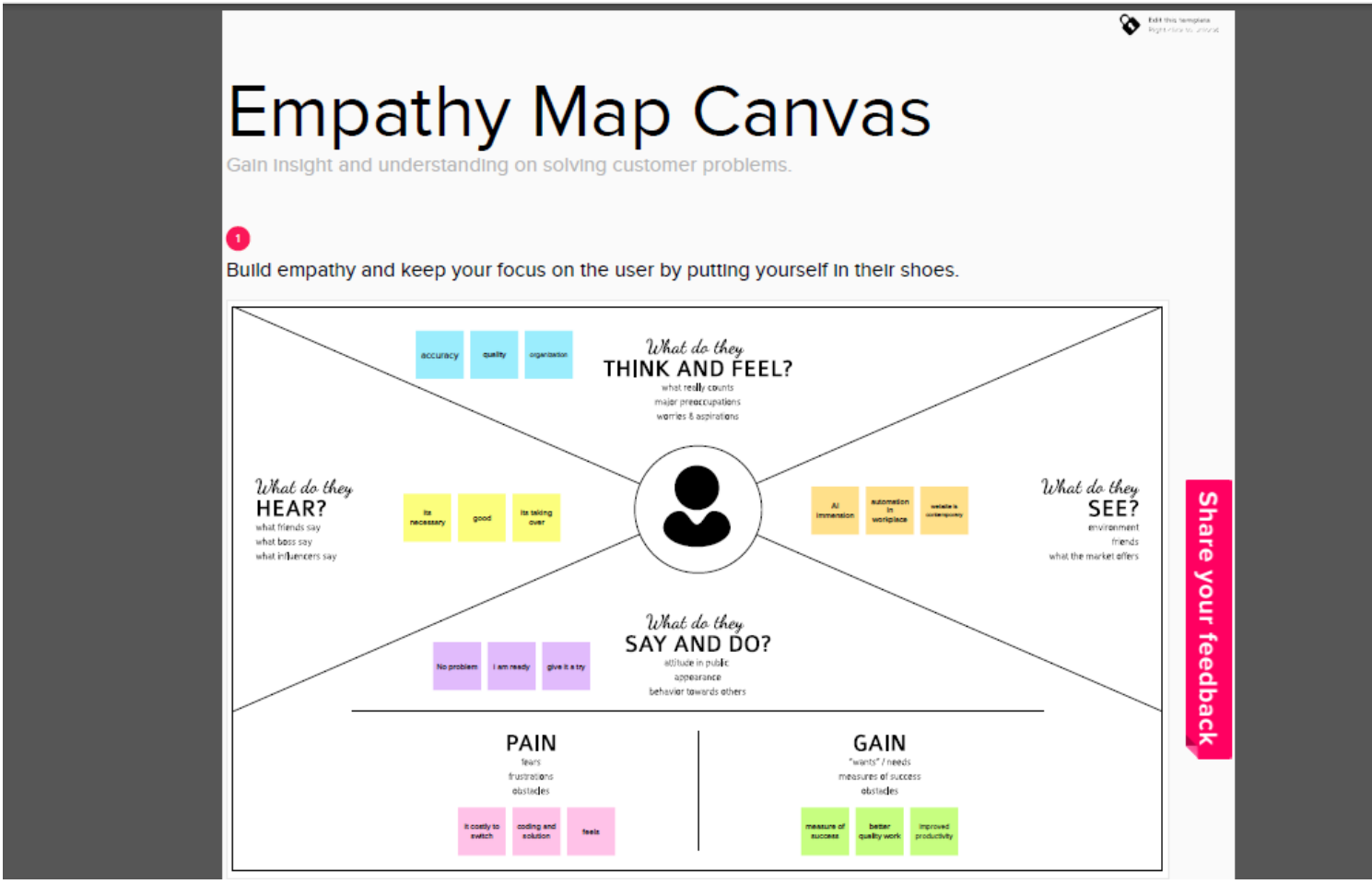
3.IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviour and attitudes.

It is a useful tool to helps teams better understand their users.

Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.

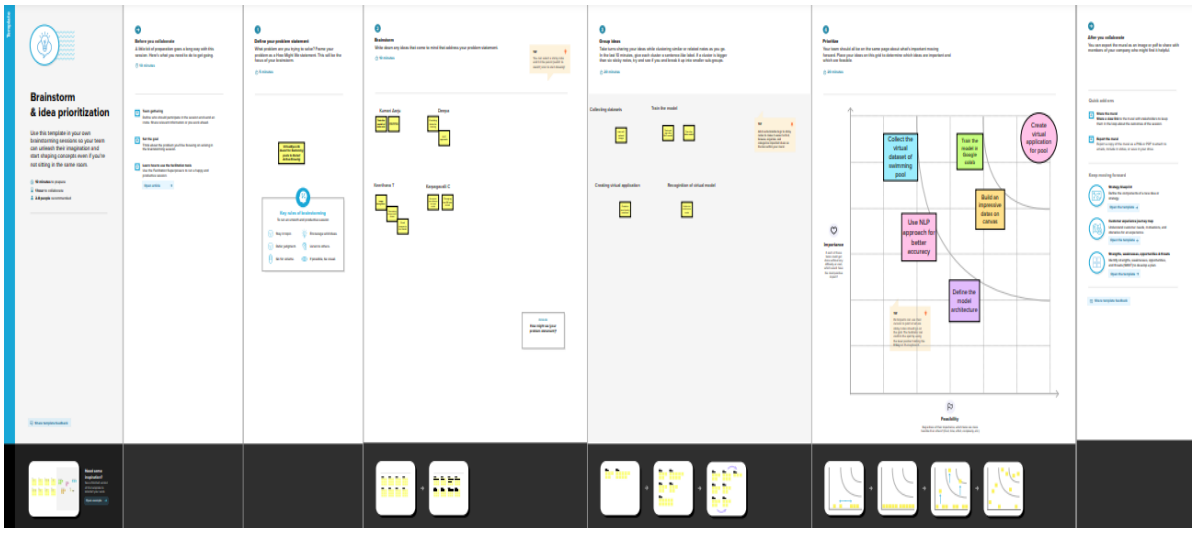


3.2 Ideation & Brainstorming

Step-1: Team Gathering, Collaboration and Select the Problem Statement

Step-2 : Brainstorm,Idea Listing and Grouping

Step-3: Idea Prioritization



3.3 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	To detect a drowning person and to alert the trainer.
2.	Idea / Solution description	By using YOLO method, the drowning person must be detected using machine learning and artificial intelligence techniques and once a person is detected the trainer will be alerted and the drowning person can be saved.
3.	Novelty / Uniqueness	Using YOLO method even if the person is detected once he will be notified to the trainer and alarm sound is played to save the person. By using human detection system if a person is found he will be saved.
4.	Social Impact / Customer Satisfaction	Crucial life of swimmers can be saved. It also increases the confidence of swimmers.
5.	Business Model (Revenue Model)	Once this model becomes a success. This model can be sold to private swimming pools and it can be sold for whooping prices. As it can support the trainers to look for drowning swimmers.

3.4 Problem Solution fit

Project Design Phase-I - Solution Fit Template

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) CS

Who is your customer?
i.e. working parents of 0-5 y/o. kids

Parents (mainly suitable for Working parents) and helpful for persons in Day-Care.

6. CUSTOMER CC

What constraints prevent your customers from taking action or limit their choices of solutions? i.e., spending power, budget, no cash, network connection, available devices.

Discontinuity in signal may cause signal loss and continuous monitoring is not possible.

5. AVAILABLE SOLUTIONS AS

Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital notetaking

Monitoring the child health condition through sensor and send notification in case of problem.

Explore as,differentiate

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS J&P

Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.

- To give better network connection.
- To improve the database to manage the details.
- To improve new technique to save the child from strangers.

9. PROBLEM ROOT CAUSE RC

What is the real reason that this problem exists? What is the back story behind the need to do this job?
i.e. customers have to do it because of the change in regulations.

Lack of continuous network or signal.

7. BEHAVIOUR BE

What does your customer do to address the problem and get the job done?

i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)

Parents giving awareness and tips to the child .but not sure it helps everytime

Focus on J&P, tap into BE, understand RC

3. TRIGGERS TR

What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.

Through Social Media and awareness about child safety

4. EMOTIONS: BEFORE / AFTER EM

How do customers feel when they face a problem or a job and afterwards?
i.e. lost, insecure > confident, in control - use it in your communication strategy & design.

Lack of safety > safety and under monitoring

10. YOUR SOLUTION SL

If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality.
If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.

- Fix web camera or sensor to analysis the surrounding of the child.
- Make confirm about the environment around the kid.

8.CHANNELS of BEHAVIOUR CH

8.1 ONLINE
What kind of actions do customers take online? Extract online channels from #7

GPS tracking and networking

8.2 OFFLINE
What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.

Calculating distance , checking health condition of child when the gadget is off.

4.REQUIREMENT ANALYSIS

4.1 Functional requirement

Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Alarm system	Monitor and detect the drowning person Alert the lifeguard by trigger the alarm
FR-4	Output	Visual representation Image detection Report generation

Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Eco – Friendly.
NFR-2	**Security**	Observing each and every body movement of the swimmers.
NFR-3	**Reliability**	Suitable for all the swimming pools.
NFR-4	**Performance**	Life guard can visually access the developing situation within seconds of the event first occurring and initiate the rescue procedure when necessary.
NFR-5	**Availability**	24/7 monitoring cameras.
NFR-6	**Scalability**	Its comfortable for all swimmers. The lifespan is high. Work more efficiently.

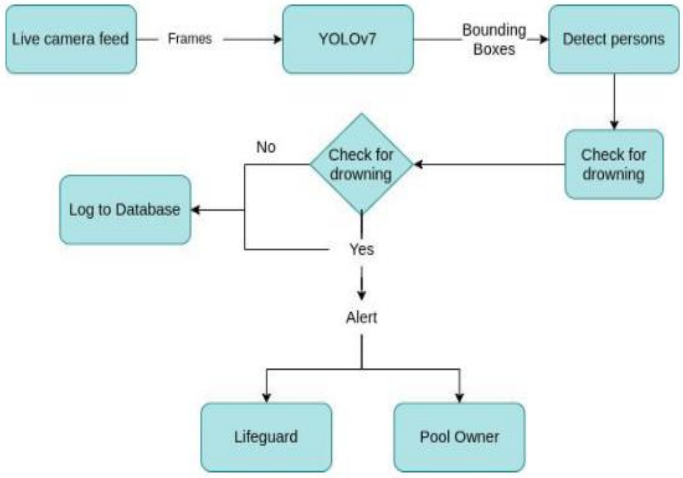
PROJECT DESIGN

4.2 Data Flow Diagrams

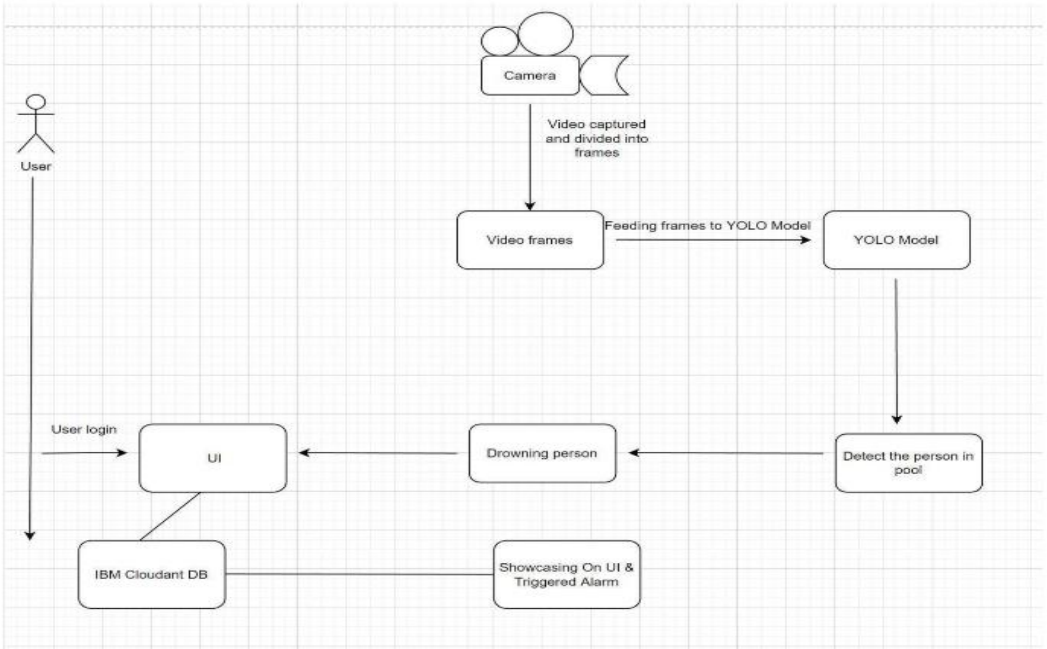
Project Design Phase-II
Data Flow Diagram & User Stories

Data Flow Diagrams:

A Data Flow Diagram (DFD) 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. It shows how data enters and leaves the system, what changes the information, and where data is stored.



4.3 Solution & Technical Architecture



4.4 User Stories

User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Pool owner)	Installation	USN-1	As a pool owner, I can install the cameras and set up the drowning detection system	I can connect the cameras to the cloud-hosted software	High	Sprint-1
	Detecting the drowning persons	USN-2	As a user, I can find the drowning persons by using the drowning detection system	I would receive an alert if a person is drowning	High	Sprint-1
	Notify the lifeguard	USN-3	As a user, I can notify the lifeguard when the system detects a drowning person	I can set up an alarm that would notify the lifeguard	High	Sprint-2
Customer (Lifeguard)	Rescue people	USN-4	As a user, I can rescue the drowning persons from the pool	I can save the drowning person	High	Sprint-2
Customer (Swimmers)	Safety	USN-5	As a user, I can swim without the fear of drowning	I can swim safely with the help of the system and the lifeguard	Medium	Sprint-2
Customer Care Executive	Contact	USN-6	resolve technical issues	I can contact the customer care executive to resolve any issues	Medium	Sprint-3
Adminitsrator	Dashboard	USN-7	Management of the drowning detection system and database management.	I can access the system's logs and any other data instantly	High	Sprint-4

5.PROJECT PLANNING & SCHEDULING

5.1 Sprint Planning & Estimation

ProjectPlanningPhase
ProjectPlanningTemplate(ProductBacklog,SprintPlanning,Stories,Storypoints)

ProductBacklog,SprintSchedule,andEstimation(4Marks)

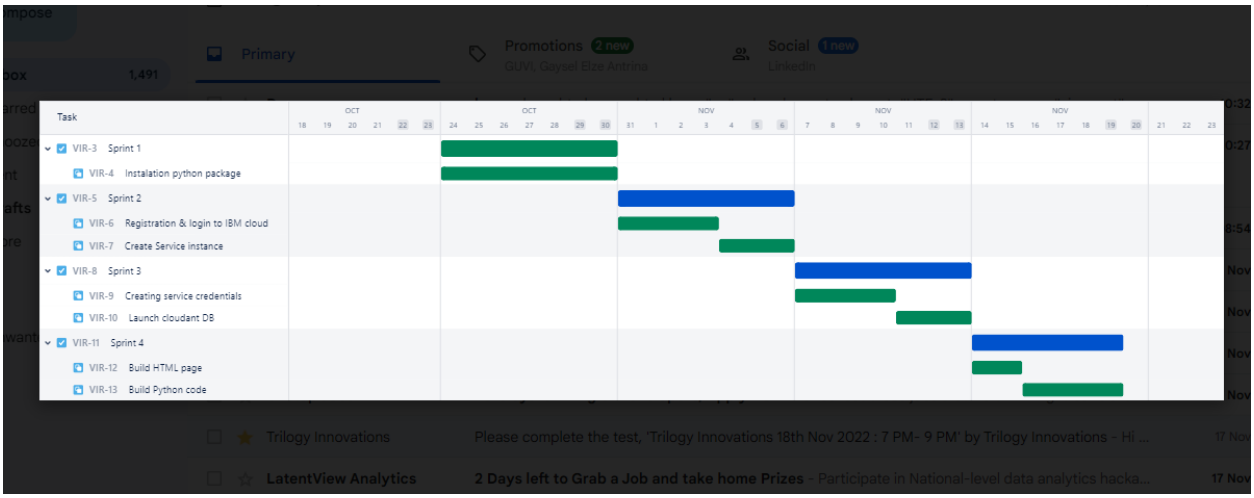
Sprint	Functional Requirement (Epic)	User StoryNumber	UserStory/Task	StoryPoints	Priority	TeamMembers
Sprint-1	Registration	USN-1	Asauser, Icanregisterfortheapplication byenteringmyemail,password,andconfirmingmypassword.	2	High	Keerthana.T
Sprint-1	Login	USN-2	Asauser,Icanlogintotheapplication byenteringemail &password	1	High	Deepa.K
Sprint-2	UploadImageof digitaldocument	USN-3	Asa user,I canabletoinputtheimagesof digitaldocumentstotheapplication	2	Medium	Kumari Aarju
Sprint-2	Prediction	USN-4	Asauser, Icanpredict theword	1	Medium	Karpagavalli.C
Sprint-3	UploadImageof Handwritten document	USN-5	Asauser,Ican abletoinputtheimagesof thehandwrittendocumentsorimagestothe application	2	High	Karpagavalli.C
Sprint-3	Recognizetext	USN-6	Asauser,Ican abletochoosethefontofthetext to bedisplayed	1	Medium	Kumari Aarju
Sprint-4	Recognizedigit	USN-7	Asauser Icanabletogettherecognizeddigitasoutput fromtheimagesofdigital documentsorimages	1	Medium	Keerthana.T
Sprint-4	Recognizedigit	USN-8	AsauserIcanabletogettherecognized digit as output from the images ofhandwrittendocumentsorimages	2	High	Deepa.K

5.2 Sprint Delivery Schedule

ProjectTracker,Velocity&BurndownChart:(4Marks)

Sprint	Total StoryPoints	Duration	SprintStartDate	Sprint End Date(Planned)	Story PointsCompleted (asonPlannedEnd Date)	SprintReleaseDate(Actual)
Sprint-1	2	6Days	24Oct2022	29Oct2022	2	29Oct2022
Sprint-2	2	6Days	31Oct2022	05 Nov 2022	2	05 Nov 2022
Sprint-3	2	6Days	07 Nov 2022	12 Nov 2022	2	12 Nov 2022
Sprint-4	2	6Days	14 Nov 2022	19 Nov 2022	2	19 Nov 2022

5.3 Reports from JIRA



6.CODING & SOLUTIONING

6.1 Feature 1

1. Switch to the z/OS project perspective.
2. Defining the launch configuration that includes specific environment variables or input parameters for the executable file.

   a. On the workbench toolbar, click and select the run option.

   b. In the cofiguration list, click compiled application and then click the new launch configurarion icon.

   c. In the name field, type a name for the launch configuration. This name will be added to a list of options under a run with configuration menu. Choose a name that you can associate with the program, input parameters, and environment variable values that are defined in the launch configuration

   -> On the main tab, it defines the Project, Program name, and Program parameters in the respective fields.

   -> On the system environment tab, it specifies values for environment variables that the executable queries at runtime.

   ->On the common tab, define the type of launch configuration and the perspective which we want to use for each launch mode.

CODE :

Index.html

```
<!DOCTYPE html>
<html >
<head>
<h3>VirtualEye - Life Guard for Swimming Pools to Detect Active Drowning</h3>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1">
<title>Virtual Eye</title>
<link href='C:\Users\ELCOT\Documents\ibmhtml' rel='stylesheet' type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Arimo' rel='stylesheet' type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Hind:300'
```

```
rel='stylesheet' type='text/css'>
<link
href='https://fonts.googleapis.com/css?family=Open+Sans+Condensed:
300'
rel='stylesheet'
type='text/css'>
<!link rel="stylesheet" href="{{ url_for('static',
filename='css/style.css') }}">
PNT2022TMID44015
<link
href='https://fonts.googleapis.com/css?family=Merriweather'
rel='stylesheet'>
<link href='https://fonts.googleapis.com/css?family=JosefinSans'
rel='stylesheet'>
<link href='https://fonts.googleapis.com/css?family=Montserrat'
rel='stylesheet'>
<style>
.header {
top:0;
margin:0px;
left: 0px;
right: 0px;
position: fixed;
background-color: #28272c;
color: white;
box-shadow: 0px 8px 4px grey;
overflow: hidden;
padding-left:10px;
font-family: 'Josefin Sans';
font-size: 2vw;
width: 100%;
height:8%;
text-align: left;
}
```

```
.topnav {
overflow: hidden;
background-color: #333;
}
.topnav-right a {
float: left;
color: #f2f2f2;
text-align: center;
padding: 14px 14px; text-decoration: none; font-size: 18px; } .topnav-
right a: hover { background-color: #ddd; color: black; } .topnav-right
a.active { background-color: #565961; color: white; } .topnav-right {
float: right; padding-right:50px; } .login{ margin-top:-70px; } body {
background-color:#ffffff; background-repeat: no-repeat; background-
size:cover; background-position: 0px 0px; } .login{ margin-top:50px; }
form {border: 0px solid #f1f1f1; margin-left:400px;marginright:200px;}
input[type=text],
input[type=email],input[type=number],input[type=password] { width:
50%; padding: 12px 12px; display: inline-block; margin-bottom:18px;
border: 1px solid #ccc; box-sizing: border-box; } button { background-
color: #28272c; color: white; padding: 14px 20px; margin-bottom:8px;
border: none; cursor: pointer; width: 50%; font-weight:bold; }
button:hover { opacity: 0.8; } .cancelbtn { width: auto; padding: 10px
18px; background-color: #f44336; } .imgcontainer {
text-align: left; margin: 24px 0 12px 0; } img.avatar { width: 30%;
border-radius: 20%; } .container { padding: 14px; } 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: 50%; } }
```

register.html

```
<!DOCTYPE html>
<html >
<head>
<meta charset="UTF-8">
```

```
<meta name="viewport" content="width=device-width, initial-
scale=1">
<title>Virtual Eye</title>
<link href='C:\Users\ELCOT\Documents\ibmhtml' rel='stylesheet'
type='text/css'>
<link href='C:\Users\ELCOT\Documents\ibmhtml' rel='stylesheet'
type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Hind:300'
rel='stylesheet' type='text/css'>
<link
href='https://fonts.googleapis.com/css?family=Open+Sans+Condensed:
300'
rel='stylesheet'
type='text/css'>
<!link rel="stylesheet" href="{{ url_for('static',
filename='css/style.css') }}">
PNT2022TMID44015
<link
href='https://fonts.googleapis.com/css?family=Merriweather'
rel='stylesheet'>
<link href='https://fonts.googleapis.com/css?family=JosefinSans'
rel='stylesheet'>
<link href='https://fonts.googleapis.com/css?family=Montserrat'
rel='stylesheet'>
<style>
.header {
top:0;
margin:0px;
left: 0px;
right: 0px;
position: fixed;
background-color: #28272c;
color: white;
box-shadow: 0px 8px 4px grey;
```

```
overflow: hidden;
padding-left:10px;
font-family: 'Josefin Sans';
font-size: 2vw;
width: 100%;
height:8%;
text-align: left;
}
.topnav {
overflow: hidden;
background-color: #333;
}
.topnav-right a {
float: left;
color: #f2f2f2;
text-align: center;
padding: 14px 14px;
text-decoration: none;
font-size: 18px; } .topnav-right a: hover { background-color: #ddd; color:
black; } .topnav-right a.active { background-color: #565961; color:
white; } .topnav-right { float: right; padding-right:50px; } .login{ margin-
top:-70px; } body { background-color:#ffffff; background-repeat: no-
repeat; background-size:cover; background-position: 0px 0px; } .login{
margin-top:50px; } form {border: 0px solid #f1f1f1; margin-
left:400px;marginright:200px;} input[type=text],
input[type=email],input[type=number],input[type=password] { width:
50%; padding: 12px 12px; display: inline-block; margin-bottom:18px;
border: 10px solid #ccc; box-sizing: border-box; } button { background-
color: #28272c; color: white; padding: 14px 20px; margin-bottom:8px;
border: none; cursor: pointer; width: 50%; font-weight:bold; }
button:hover { opacity: 0.8; } .cancelbtn { width: auto; padding: 10px
18px; background-color: #f44336; } .imgcontainer { text-align: left;
margin: 24px 0 12px 0;
}
```

```
img.avatar {
width: 30%;
border-radius: 20%;
}
.container {
padding:10px;
background-color:pink;
margin:auto auto;
}
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: 50%;
}
}
</style>
</head>
<body style="font-family:Montserrat;">
<div class="header">
<div style="width:50%;float:left;font-
size:2vw;textalign:left;color:white; padding-top:1%">Virtual
Eye</div><div class="topnav-right" style="padding-top:0.5%;">
<a href="{{ url_for('index')}}">Home</a>
<a class="active" href="{{ url_for('login')}}">Login</a>
<a href="{{ url_for('register')}}">Register</a>
</div>
```

```
</div>
<div id="login" class="login">
<form action="{{url_for('afterlogin')}}" method="post"><div
class="imgcontainer">
<img style=""
src="https://i0.wp.com/upload.wikimedia.org/wikipedia/commons/th
umb/4/4
c/Stylized_eye.svg/1920px-S
tylized_eye.svg.png?resize=565%2C226&ssl=1" alt="Avatar"
class="avatar">
</div>
<div class="container">
<input type="email" placeholder="Enter registered email ID"
name="_id"
required><br>
<input type="password" placeholder="Enter Password" name="psw"
required>
<button type="submit">Login</button><br>
</div>
</form>
</div>
</body>
</html>
```

base.html

```
<html lang="en">
<head>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-
scale=1.0">
<meta http-equiv="X-UA-Compatible" content="ie=edge">
<title>High Quality Facial Recognition</title>
<link
href="https://cdn.bootcss.com/bootstrap/4.0.0/css/bootstrap.min.
css" rel="stylesheet">
```

```
<script
src="https://cdn.bootcss.com/popper.js/1.12.9/umd/popper.min.j
s"></script>
<script
src="https://cdn.bootcss.com/jquery/3.3.1/jquery.min.js"></script
>
<script
src="https://cdn.bootcss.com/bootstrap/4.0.0/js/bootstrap.min.js
"></script>
<link href="{{ url_for('static', filename='css/main.css') }}"
rel="stylesheet">
<style>
.bg-dark {
background-color: #42678c!important;
}
#result {
color: #0a1c4ed1;
}
</style>
</head>
<body style="background-color:black";>
<header id="head" class="header">
<section id="navbar">
<h1 class="nav-heading"></i>Virtual Eye</h1>
<div class="nav--items">
<ul>
<li><a href="{{ url_for('index')}}">Home Page</a></li>
<li><a
href="{{ url_for('logout')}}">Sign out</a></li>
<!-- <li><a href="#about">About</a></li>
<li><a href="#services">Services</a></li> -->
</ul>
</div>
</section>
```

```
</header>
<div class="container">
<div id="content" style="margin-top:2em">
<div class="container">
<div class="row">
<div class="col-sm-6 bd" >
<h2><em style="color:green;">STUDYING THE BODY PATTERN TO
DECTECT
ACTIVE DROWNING</em></h2>
<br>
<p><h3><B style="color:green;">VirtualEye - Life Guard for Swimming
Pools to Detect Active Drowning</B></h3></p>
<img
src="https://130e178e8f8ba617604b8aedd782b7d22cfe0d1146da69a52
436.ssl.c
f1.rackcdn.com/facialrecognition-use-triggers-gdpr-fine-
showcase_image10-a- 12991.jpg"
style="height:240px"class="img-rounded" alt="Gesture">
</div>
<div class="col-sm-6">
<div>
<h4 style="color:green;">Upload
Image Here</h4>
<form action = "http://localhost:5000/" id="upload-file"
method="post"
enctype="multipart/form-data">
<label for="imageUpload" class="uploadlabel">
Choose File
</label>
<input type="file" name="image"
id="imageUpload" accept=".png, .jpg, .jpeg,.pdf">
</form>
<div class="image-section" style="display:none;">
<div class="img-preview">
```

```
<div id="imagePreview">
</div>
</div>
<div>
<button type="button" class="btn btn- info btn-lg "
id="btnpredict">Analyse</button>
</div>
</div>
<div class="loader" style="display:none;"></div>
</body>
</div>
</div>
</div>
<footer>
<script src="{{ url_for('static', filename='js/main.js') }}"
type="text/javascript"></script>
</footer>
```

logout.html

```
<!DOCTYPE html>
<html >
<head>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-
scale=1">
<title>Virtual Eye</title>
<link href='https://fonts.googleapis.com/css?family=Pacifico'
rel='stylesheet' type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Arimo'
rel='stylesheet' type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Hind:300'
rel='stylesheet' type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Open+Sans+Conde
nsed:300' rel='stylesheet'
type='text/css'>
```

```
<link href='https://fonts.googleapis.com/css?family=Merriweather'
rel='stylesheet'>
<link href='https://fonts.googleapis.com/css?family=Josefin Sans'
rel='stylesheet'>
<link href='https://fonts.googleapis.com/css?family=Montserrat'
rel='stylesheet'>
<style>
.header {
top:0; margin:0px;
left: 0px; right: 0px;
position: fixed;
background-color: #28272c; 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: blue;
}
.topnav-right a { float: left; color: #f2f2f2;
text-align: center; padding: 14px 16px; text-decoration: none; fontsize:
18px;
}
.topnav-right a:hover { background-color: blue; color: blue;
}
.topnav-right a.active { background-color: #565961; color: white;
}
.topnav-right { float: right;
padding-right:100px;
}
.login{
margin-top:-70px;
}
```

```
body {
background-color:#ffffff; background-repeat: no-repeat;
backgroundsize:cover; background-position:
0px 0px;
}
.main{
margin-top:100px; text-align:center;
}
form { margin-left:400px;margin-right:400px;}
input[type=text],
input[type=email],input[type=number],input[type=password] { width:
100%;
padding: 12px 20px; display: inline-block; margin-bottom:18px; border:
1px blue;
box-sizing: border-box;
}
button {
background-color: blue; color: white;
padding: 14px 20px; margin-bottom:8px; border: none; cursor: pointer;
width: 20%;
}
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 sign in Register

Successfully Signed Out!

Signin for more information

Sign in

prediction.html

Virtual Eye

- Home Page
- Sign out

Virtual Eye- Life Guard for Swimming Pools to Detect Active Drowning

Swimming is one of the best exercises that helps people to reduce stress in this urban lifestyle. Swimming pools are found larger in number in hotels, and weekend tourist spots and barely people have them in their house backyard. Beginners, especially, often feel it difficult to breathe underwater which causes breathing trouble which in turn causes a drowning accident. Worldwide, drowning produces a higher rate of mortality without causing injury to children. Children under six of their age are found to be suffering the highest drowning mortality rates worldwide. Such kinds of deaths account for the third cause of unplanned death globally, with about 1.2 million cases yearly. To overcome this conflict, a meticulous system is to be implemented along the swimming pools to save human life. By studying body movement patterns and connecting cameras to artificial intelligence (AI) systems we can devise an underwater pool safety system that reduces the risk of drowning. Usually, such systems can be developed by installing more than 16 cameras underwater and ceiling and analyzing the video feeds to detect any anomalies. but AS a POC we make use of one camera that streams the video underwater and analyses the position of swimmers to assess the probability of drowning, if it is higher then an alert will be

generated to attract lifeguards' attention.

Thanks for the opportunity to create this project

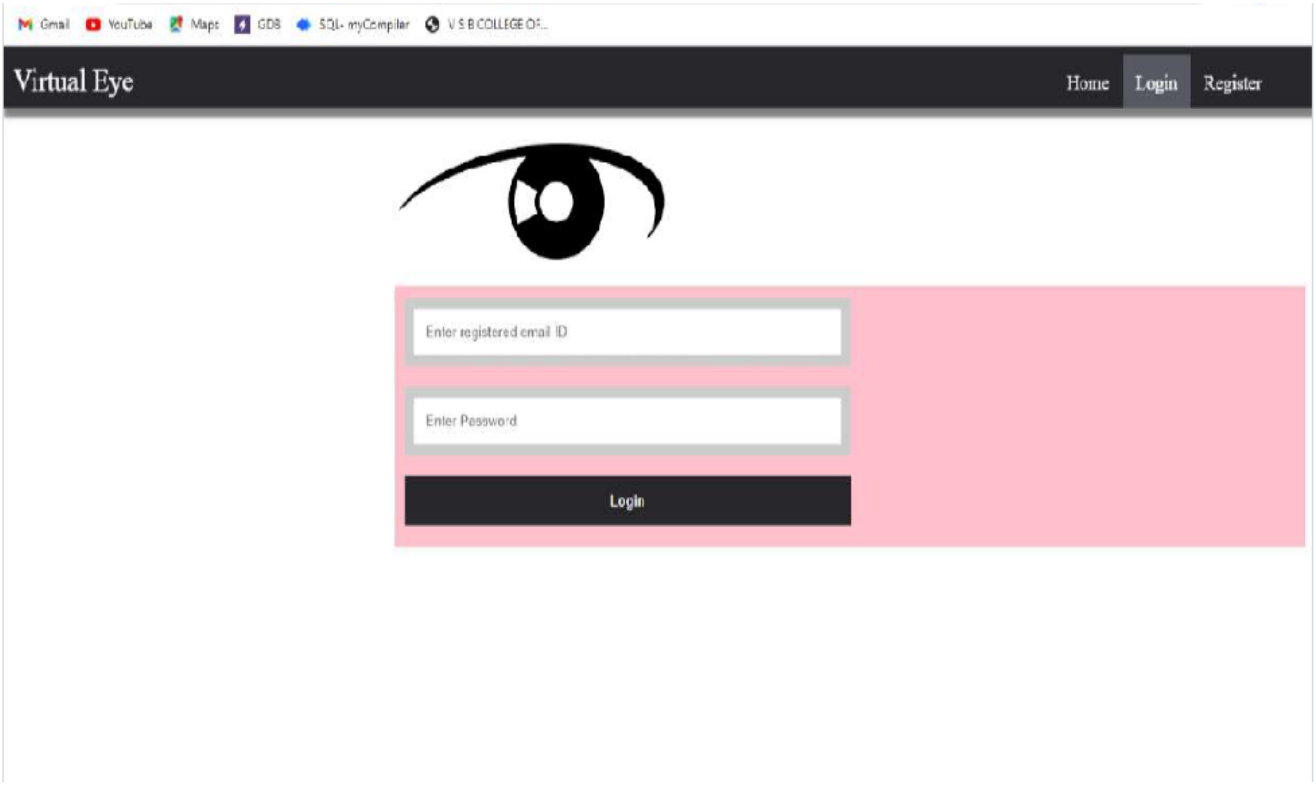
6.2 Feature 2

```
PYTHON CODE:
import json
import wiotp.sdk.device
import time
myConfig = {
"identity":
{ "orgId": "hj5fmy",
 "typeId": "NodeMCU",
"deviceId":"12345"
},
"auth": { "token": "12345678" } }
client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None)
client.connect()
while True:
name ="smartbridge"
 #in area location
#latitude=17.4219272
 #longitude=78.5488783
#out area location
 latitude=17.4219272
longitude=78.5488783
myData={'name':name,'lat':latitude,'log':longitude}
client.publishEvent(eventId="status",msgFormat="json",
data=myData,qos=0,onpublish=None)
print("Data published to IBM IOT platform:",myData)
time.sleep(5)
client.disconnect()
```

7.TESTING

7.1 Test Cases

User Acceptance Testing



8.RESULTS

8.1 Performance Metrics

The individual virtual eye is **a computer model of a human eye that accounts for its optical properties**, and which is designed to contribute to all fields of research where ray tracing has been used so far. However, it does not include yet the human crystalline lens

9. ADVANTAGES & DISADVANTAGES

Virtual eye technology helps observe and measure eye movements, pupil dilation, point of gaze, and blinking to see where subjects of a study focus their visual attention, what they engage with, and what they ignore.

- VR is a fragmented market. ...
- Content creation tends to be customized and, oftentimes, expensive. ...
- VR is often an isolating, individual experience – it takes you somewhere else, a place removed from the existing environment. ...
- VR is slow for demos.

11.CONCLUSION

This literature review has discussed the various complexities of DDS within the health and safety landscape, as well as the wider implications of their use on the sport and leisure industry. It has also shed light on needed for more evidence in this area. From reviewing what literature 10 currently exists on the topic, it is clear the evidence-base would benefit from qualitative research on the experiences of lifeguards and their interactions with DDS, as well as quantitative evidence showing DDS application to real-world scenarios. Claims expressing the risks of DDS negatively affecting lifeguarding performance should also be further investigated, and efforts made across the industry to ensure all publicly available information and guidance surrounding DDS is current and upto-date.

The Drowning Detection System Briefing note (Sport England, 2011) was published before documents such as HSG179 (4th edition), which is periodically updated, and ISO_20380 – operators should ensure that the sources they are using for DDS research do not draw from predated editions of health and safety law and guidance. Again, co-operation is required between all with an interest in

the improvement of pool safety, to share data, information and learning on DDS, including but not restricted to results and findings from any DDS standards tests carried out. For by building and maintaining a robust evidence-base in this area, policy makers, operators, and suppliers can feel confident in their decision-making around the improvement of safety in public swimming pools.

12.FUTURE

The project assists well to record the virtual eye life guard in general. However, this project has some limitations:

- The application is unable to maintain the backup of data once it is uninstalled.
- This application does not provide higher decision capability.

To further enhance the capability of this application, we recommend the following features to be incorporated into the system:

- Multiple language interface.
- Provide backup and recovery of data.
- Provide better user interface for user.
- Mobile apps advantage.

13.APPENDIX

Source Code Github Link :

https://github.com/IBM-EPBL/IBM-

Project-32749-1660211926

Project Demo Link :