Ideation Phase
Ideation

Date	9 October 2022
Team ID	PNT2022TMID51072
Project Name	Virtual Eye - Life Guard For Swimming Pools ToDetect Active Drowning
Maximum Marks	2 Marks

VIRTUAL EYE

Brainstorm & idea prioritization

In this session we aim to achieve a good base for beginning our project. With clear understanding of the task in hand, the next step would be to collectively put in our thoughts/ imagination and end with a proper feasibility study.

Ground Rules

- Be Creative
- Rule out every possible ideas and improvements
- Make your points clear and purposeful
- Don't hesitate. (Every point is noteworthy)
- Arguments are good ALA it lands beneficial
- Have various perspectives towards the problem

1

Choose your best "How Might We" Questions

Share the top 5 brainstorm questions that you created and let the group determine where to begin by selecting one question to move forward with based on what seems to be the most promising for idea generation in the areas you are trying to impact.

10 minutes

QUESTION 1
How might we detect and differentiate active drowning with the least possible error rate?

QUESTION 2
How might we automate the alert systems so as to provide crutial stats and info to the rescue team ?

QUESTION 3
How might we optimize the detection algorithm to yield results in the least time?

QUESTION 4
How might we bring more privacy, yet use camera for detection?

QUESTION 5
How might we optimally use minimal hardware to get the most accurate information in an around the environment?

2

Brainstorm solo

Have each participant begin in the "solo brainstorm space" by silently brainstorming ideas and placing them into the template. This "silent-storming" avoids group-think and creates an inclusive environment for introverts and extroverts alike. Set a time limit. Encourage people to go for quantity.

10 minutes

High level testing must be carried out before real world deployment.

Proper hyperparameters must be found for the model

Systematic and Efficient algorithms to be followed

Requires HD cameras for good quality frames to be processed

Underwater cameras a possible solution to detect humans under deep water

24/7 Power supply is must for the system to run & report

Provide critical and proper message to the rescue team

Make sure the stakeholders know, how the system works.

Make sure the stakeholders understand that there is a possibility for a false alarm as well

optimized feed transfer to achieve live reallay will less BW to get the classifiable video of underwater footage

able to process absolute drowning and also alterting the rescue team of passive possibilities as a probable instance

setup an ACS and suggestive ways to ensure the information reaches in one or more ways as this deals with critical life saving situation

ensuring ways where there is a 100% guarentee of spotting a drowning person by placing multiple cameras strategically to active results in unpredictable situations

ensuring the video feed is not being recorded or saved instead being used only for detection which is later discarded

using alternative source of energy such as solar to make a green system but making sure to always have backup supply

having an integration with fitness band companies to get vital stats of a swimmer to have better information and predict possibilities of a drowning incident

having retro reflective indicators given to children and newbies and teaching them signals to make the drowning detection easy

having considered the metrics and variance of different age groups and also different swimming environments both controlled and liesure

The AI should be trained with more samples for better results

There should be manual alert system in case of detection failure

More cameras should be used to improve accuracy.

power backup should be there in case of powercut.

The network connectivity should be good for faster alert trasmission.

cameras should be maintained properly for good results

How will be the accuracy level in the system?

Will the system detect properly if the pool is clumsy?

System should detect multiple drowning and should report the same

What happens if animals were encountered in the pool?

Will the system detect properly if the pool is clumsy?

Use powerful algorithm to get trained from various datasets.

For privacy purpose the video stream should not be stored.

The system shouldnt annoy others

cameras can be mounted on the bottom of floating boards for large swimming pools.

AI should be trained in such a way that it should detect multiple drowning

3

Brainstorm as a group

Have everyone move their ideas into the "group sharing space" within the template and have the team silently read through them. As a team, sort and group them by thematic topics or similarities. Discuss and answer any questions that arise. Encourage "Yes, and..." and build on the ideas of other people along the way.

15 minutes

TIP
You can use the Voting session tool above to focus on the strongest ideas.

Privacy

ensuring the video feed is not being recorded or saved instead being used only for detection which is later discarded

For privacy purpose the video stream should not be stored.

User Perspective

Make sure the stakeholders know, how the system works and understand the possibility for system work.

The system should not annoy the swimmers

Make sure the stakeholders understand that, there is a possibility for a false alarm as well

Features

having an integration with fitness band companies to get vital stats of a swimmer to have better information and predict possibilities of a drowning incident

having retro reflective indicators given to children and newbies and teaching them signals to make the drowning detection easy

When more people are drowning there will be a problem to detect all so multiple cameras should be used to eliminate such problems.

Will the system detect properly if the pool is clumsy?

Cameras & Hardwares

cameras should be maintained properly for good results

Cameras should be mounted on Underwater and bottom of floating boards for detecting drowning effectively especially on large swimming pools.

System should detect multiple drowning and should report the same

Network and Connectivity

The network connectivity should be good for faster alert trasmission.

optimized feed transfer to achieve live reallay will less BW to get the classifiable video of underwater footage

Power

24/7 Power supply and power backup must for the system to run & report proper alerts to rescue team.

using alternative source of energy such as solar to make a green system but making sure to always have backup supply

power backup should be there in case of powercut.

AI and ML

Proper hyperparameters must be found for the model

able to process absolute drowning and also alterting the rescue team of passive possibilities as a probable instance

The AI should be trained with more samples for better results

AI should be trained in such a way that it should detect multiple drowning

High level testing must be carried out before real world deployment.

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

1. Input devices
2. Alerting systems
3. Backup and ACS

1. Achieving all features

1. Model and Dataset
2. Privacy
3. Renewable Backup
4. Connectivity

1. Cameras in floating boats

1. User perspective
2. Guidelines

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.)