IDEATION PHASE
LITERATURE SURVEY

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Project Name	VirtualEye - Life Guard for Swimming Pools to Detect Active Drowning

Abstract-Life Guard have an important role in saving person if in any trouble on water bodies. To make their role a little less complex,a drowning person detector can be used to alert them if any in trouble.Life Guard saves that drowning person.

Introduction:

Drowning:

Drowning is the process of experiencing respiratory impairment from submersion/immersion in liquid. Drowning outcomes are classified as death, morbidity and no morbidity. Agreed terminology is essential to describe the problem and to allow effective comparisons of drowning trends. Thus, this definition of drowning adopted by the 2002 World Congress on Drowning should be widely used.

Drowning is a leading killer. The latest WHO Global Health Estimates indicate that almost 236 000 people lost their lives to drowning in 2019. Just over 50% of these deaths occur among those aged under 30 years, and drowning is the sixth leading cause of death worldwide for children aged 5-14 years. Over 90% of drowning deaths occur in low- and middle-income countries. Drowning prevention interventions range from community-based solutions, such as day care for children and barriers controlling access to water, to effective national policies and legislation around water safety, including setting and enforcing boating, shipping and ferry regulations. Much more needs to be done to prevent drowning, and achieving commitments made under the Sustainable Development Goals will not be possible without addressing drowning prevention.

Prevention:

There are many actions to prevent drowning. Installing barriers (e.g. covering wells, using doorway barriers and playpens, fencing swimming pools etc.) to control access to water hazards, or removing water hazards entirely greatly reduces water hazard exposure and risk.

Community-based, supervised child care for pre-school children can reduce drowning risk and has other proven health benefits. Teaching school-age children basic swimming, water safety and safe rescue skills is another approach. But these efforts must be undertaken with an emphasis on safety, and an overall risk management that includes a safety-tested curricula, a safe training area, screening and student selection, and student-instructor ratios established for safety.

Effective policies and legislation are also important for drowning prevention. Setting and enforcing safe boating, shipping and ferry regulations is an important part of improving safety on the water and preventing drowning. Building resilience to flooding and managing flood risks through better disaster preparedness planning, land use planning, and early warning systems can prevent drowning during flood disasters.

Developing a national water safety strategy can raise awareness of safety around water, build consensus around solutions, provide strategic direction and a framework to guide multisectoral action and allow for monitoring and evaluation of efforts.

WHO Response:

The *Global report on drowning* provides recommendations to governments to tailor and implement effective drowning prevention programmes to their settings, improve data about drowning, and develop national water safety plans. The report also points out the multisectoral nature of drowning and calls for greater coordination and collaboration among UN agencies, governments, key NGOs and academic institutions to prevent drowning.

In May 2017, WHO released *Preventing drowning: an implementation guide*. This publication builds on the *Global report on drowning* and provides concrete guidance for drowning prevention practitioners on how to implement drowning prevention interventions.

At country level, WHO has worked with Ministries of Health in some low- and middle-income countries to prevent drowning through the use of barriers controlling access to water and the establishment of day care centres for pre-school children. In addition, WHO has also funded research in low-income countries exploring priority questions related to drowning prevention. At a regional level, WHO organizes training programmes and convenes workshops to draw together representatives of governments, NGOs and UN agencies working on drowning prevention.

Life Guard:

A lifeguard is responsible for the safety of people in an area of water, and usually a defined area immediately surrounding or adjacent to it, such as a beach next to an ocean or lake. The priority is to ensure no harm comes to users of the area for which they are responsible. Lifeguards often take on this responsibility upon employment, although they can also be volunteers.

The conditions resulting in drowning are summarized by the 'drowning chain' in which each link can lead directly to an incident, or contribute to a succession of links.[2] It consists of lack of education about water safety or local conditions, a lack of safety advice (for example, about rip currents at a beach) a lack of protection (like no flotation device for a weak swimmer), lack of safety supervision, or an inability to cope with conditions (strong surf with a weak swimmer).
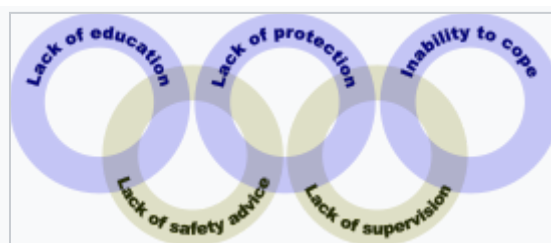
The drowning chain

The drowning chain provides a clear basis for preventing drowning which includes:[2]

- education and information
- provision of warnings
- denial of access
- supervision
- training in survival skills

The lifeguard is able to provide all these elements to help prevent drownings (or other incidents) in their area of responsibility, and for this reason this should be the primary focus of a lifeguard's activities, as it is better to stop an incident from occurring rather than reacting once it has occurred.[2] This means that the effectiveness of a lifeguard unit can be measured not by the number or rapidity of rescues, or the skill with which they are executed, but by the absence or

reduction of drownings, accidents, and other medical emergencies. Prevention is an effective skill that is vitally important to a lifeguard because it can aid in maintaining the safety of the aquatic patrons.

A lifeguard's key duties (usually as part of a team, but in some places, lifeguards may be required to work on their own) are to:[3]

- Enforce rules to prevent problems/injuries
- Maintain concentrated observation of the duty area and its users in to anticipate problems (this will enable the lifeguard to intervene with one of the drowning prevention measures) and to identify an emergency quickly.
- Supervise the use of other equipment when allocated to that duty (such as water slides or any other activities taking place)
- Effect rescues and initiate other emergency action as necessary
- Give immediate first aid in the event of injury to a bather or other incident
- Communicate with bathers and other users to fulfill the above tasks
- Help clean areas around pool or beach to ensure the safety of patrons

Lifeguards may have other secondary duties such as cleaning, filing paperwork, checking a swimming pool's chlorine and pH levels, or acting as a general information point. It is important that lifeguards never allow their secondary responsibilities to interfere with their primary responsibilities.[4]

Lifeguards may also be required to attend occasional in-service meetings to strengthen their lifeguarding skills.

Lifeguards can be found patrolling many different types of water, and each type has its own unique features, duties and challenges. Locations where lifeguards can be found include:

1. **Ocean beach** – Lifeguards are commonly associated with beaches on the seashore, and this is often considered the most challenging environment to lifeguard due to the influence of external factors such as weather, currents, tides and waves. Life Guards have to be in peak physical condition in order to accommodate these conditions properly. Lifeguards are often required to complete additional training to be able to service ocean beach areas.
2. **Inland body of water (Waterfront)** – Lifeguards can also look after open water areas such as rivers, or even lakes or ponds where swimmers may congregate.
3. **Swimming pool** – Most large pools, either indoor or outdoor, are required by law to be patrolled by lifeguards. Nonetheless, smaller pools often do not have qualified personnel.
   ○ **Water park** – Whilst water parks are a type of swimming pool, they can be considered a unique type of facility as they may involve additional features such as water slides or wave generators, or shallow pool play areas

- ○ **Ocean lagoon or tidal pool** – These enclosed areas use seawater, but like a pool have a limited and contained area, but have the potential for additional hazards above and beyond an artificial pool
  - ○ Waterfront – Lifeguards can look after in a non-surf, open-water areas such as lakes, rivers, streams, and lagoons that are found at public parks, resorts, summer camps and campgrounds.
4. **Open ocean** – In some cases, people may swim in the open ocean from a boat (such as a cruise ship) and lifeguards may be employed for safety in this instance.

Observation:

-Life Guard plays important role in security of person in water bodies

-With proper equipment he saves people from danger

-Life Guard should be trained well to help people

-Life Guard lacks ability to see every single area of water body

Conclusion:

-To overcome this lacking ability a camera detector can be made and fit in some areas

-These camera can detect a drowning person and alert the guard

-Help in easing Life Guard job and save many more life