Monitoring & Rescue System for Swimming Pools

Introduction

Our project aims to enhance public safety and health response systems across Saudi Arabia, aligning with the Ministry of Health and Saudi Red Crescent Authority's statistics. We focus on integrating advanced technologies to improve emergency responses and health service equity, supporting the Kingdom's Vision 2030.

Problem Statement

Saudi Arabia sees significant regional variations in emergency responses, with disparities in drowning incidents, including 2-3 daily during summer and a total of 275 in 2023. Our project targets these issues by using advanced technology to improve response efficiency and ensure equitable service distribution across the country.

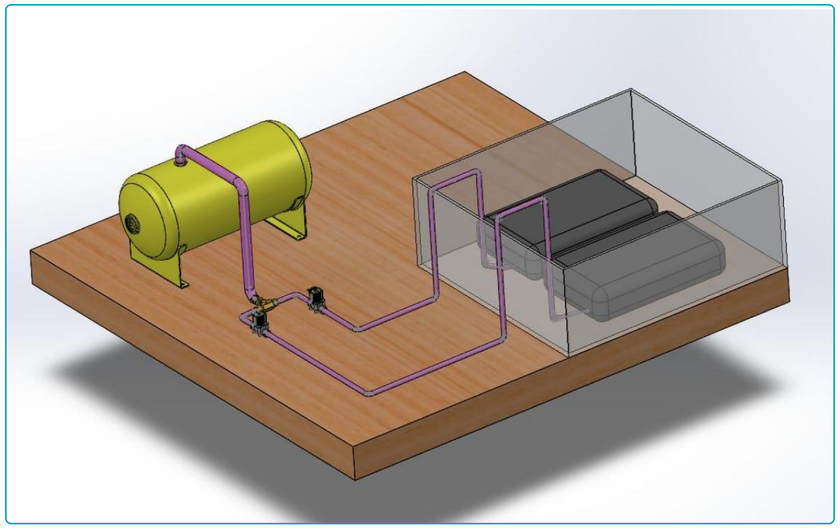
Constraints

- Pools only (no beaches, lakes, etc.)
- Flat Pool Floor
- Sizing is custom to each pool

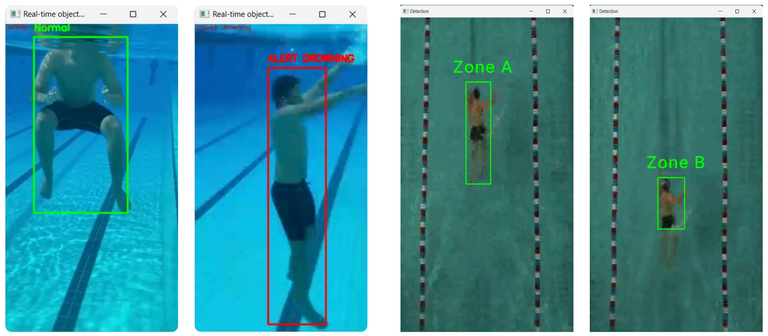
Specifications

- Rescue time under 10 seconds.
- Panel installation or removal time under 10 minutes.
- Computer vision model accuracy at 80%.
- Notification of drowning incident within 2 seconds.
- Panels support up to 150 kg.
- Out-of-pool equipment space limited to 2 m^2.
- Power consumption below 1 kWh.

CAD Model



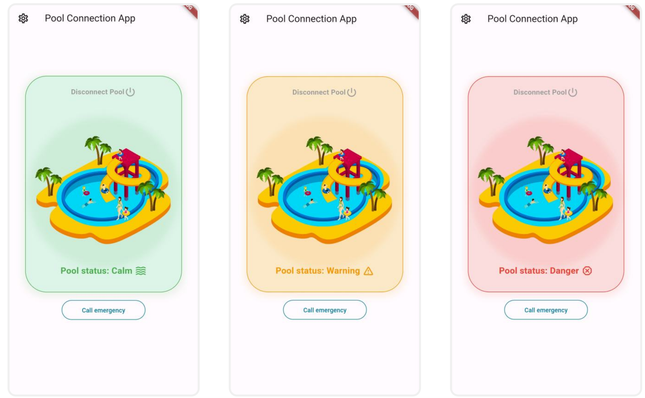
Computer Vision



Inside Pool Camera

Above Pool Camera

Mobile App Interface



Calm Status

Warning Status

Danger Status

Project Impact

We implemented advanced technology to reduce emergency response times and improve health service analytics. This has enhanced health service effectiveness and access, particularly in underserved regions, aligning with national sustainable health goals.

Conclusion

Our project will significantly improve emergency health services across Saudi Arabia, creating a more resilient health system. By enhancing current capabilities and laying foundations for future innovations, we contribute to long-term health security and sustainability.

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