

The background of the slide is an abstract, fluid pattern of swirling colors. It features deep blues, teals, and greens, with some lighter, almost white, highlights that create a sense of movement and depth, reminiscent of marbled paper or underwater currents.

# Unmanned marine life quality monitoring device

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# The problem

Monitoring a tiny sample of water only.

Why not monitor water quality from a broader area and then take average for an even accurate reading?

An abstract geometric artwork featuring a dark background with various overlapping shapes in colors like yellow, orange, red, green, blue, and purple. The shapes include rectangles, circles, and triangles, some of which are semi-transparent, creating a layered effect. A prominent yellow vertical bar is on the left, and a large orange circle is in the center. A red shape with a black comb-like pattern is on the right, and a blue shape with yellow lines is at the bottom.

# The solution

IoT will add efficiency, speed and accuracy to the system.

Manual procedure is tiresome, prone to errors and time taking.

## Connected Components

Following are the sensors/components connected with the STM32 board

1. STM32 board
2. Capacitive sensor
3. DHT11 or 22
4. IR sensor
5. Capacitive sensor and
6. Grove sunlight sensor
7. A servo motor
8. A relay

# Data Collected

*All the data coming from sensors is expected to be numerical data that can be stored in a .CSV or .json file or in a database like sqlite.*

## Collective Intelligence, things to learn, effect of actions of actuators, overall effectiveness

All the data combined will give us ability to analyse the water sample. We expect our algorithm to combine all data, analyse it, calculate average, reduce uncertainty and produce correct results.

We'll learn data processing, factors that can affect our calculations, moving data from MCU to cloud for storage to showing it to the user in dashboard. We won't act. We'll just leave the device setting the parameters, that's it.

We're just moving a device in water. It has no effect on anything. When it comes to effectiveness of sensors, I'm not sure about how their readings will be effective or if we would have to take multiple readings and then average them out to get the right one.

# Constraints

Power Source

Internet  
Connectivity/communication

Water insulation research

# Plan and metrics

Have a device with a rechargeable power resource, plus always have an active working internet connection and it should be less prone to failure especially the sensors.

Async  
Programming/Threading

Less thread switching

Choice of algorithm, data-structure  
and programming language