Underwater Robot Detection System Based on Fish's Lateral Line

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Summury :

This research involves underwater robot based on the fish lateral line. Dynamics conditions of the free surface wave equation. Structurally, the geometry shape of the detection system is printed by a 3D printer. It is found that the direction of the near-field pressure source can distinguished. The pressure amplitude of the sampled signals are extracted to be prepared for the next step to estimate the vertical distance between the center of the pressure source and the lateral line. Additionally, the underwater vehicle's perception of the environment is also an important focus . Any change under the water will directly determine whether the vehicle can work properly because of the particularity and complexity of the underwater environment. The primary purpose of this robot is to detect underwater metals while also measuring two water parameters: pH and temperature.

Sensore :

Temperature sensors (LM35 series)

PH sensors (WQS)

Imaging Sensor (1/3" CMOS)

Pressure Sensor (MS5803-05ba)

Micro-Controller :

STM32F207ZGT6 micro-controller whose core is Cortex-M3.

Other Device :

Metal Detector

DC Motors

L293D Motor Driver

Camera

Pros :

* The use of STM32F207ZGT6 micro-controller whose core is Cortex-M3micro-controllers is a good choice as they are low-power, high-performance, and can handle multiple tasks simultaneously.

* The camera can provide live video footage, which can be useful for navigating the robot and observing underwater life.

* Multiple sensors are being used to take different parameters from water, which can provide valuable information about the underwater environment.

Cons :

*The camera may not be able to capture clear footage if the water is murky or if there is poor visibility.

* The underwater environment can be harsh and unpredictable, which can pose challenges for the robot and its sensors.

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