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Title: Development of a prototype of a natural disaster prevention system using the arduino platform

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Introduction

It looks to present how technology, when applied correctly, can play a very important role in society, contributing in a positive way.

Thanks to tools like Arduino and the large number of components available on the market, it has been possible to obtain the disaster prevention system.

The main objective of the project is to monitor and warning in case of a possible flood, considering the growth in the flow of the rivers.

It will also have other functionalities that contribute to the same objective and provide a more complete product that is more beneficial for society.

Methodology

The idea of developing a prototype to help the rural population with natural disasters involves developing research on Arduino, how the components connect to it, considering how the components that are linked to it connect and function, and which devices are necessary to provide a solution to the problem of flooding.

Results

With the implementation of the three different types of sensors (ultrasonic, force or weight and temperature) all the necessary information is collected for the system to function as expected.

The ultrasonic sensor is to measure distance using ultrasonic waves, counting the time between emission and reception.

The force sensor combined with a servomotor will help close the barrier of the bridge.

The temperature sensor monitors this value in the environment and with preset values it will issue a prevention alert when temperatures are very high or low to avoid any risky situation that affects the integrity of people.

Results

Four actuators (LCD screen, buzzer, LEDs, servomotor and DC motor) were used to visually and audibly alert when an event occurs and avoid catastrophes.

The three LEDs, to indicate how serious the water rise is.

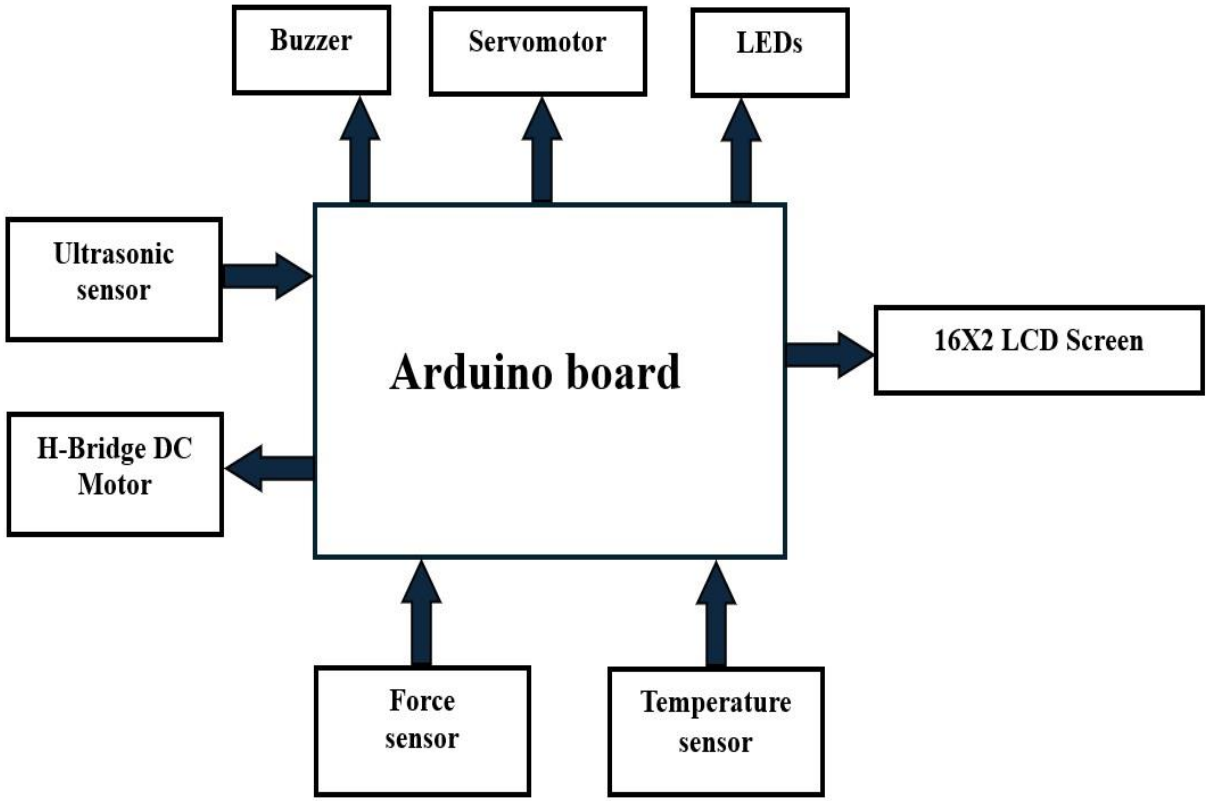
The LCD screen, to display information on flow rate, water level and temperature.

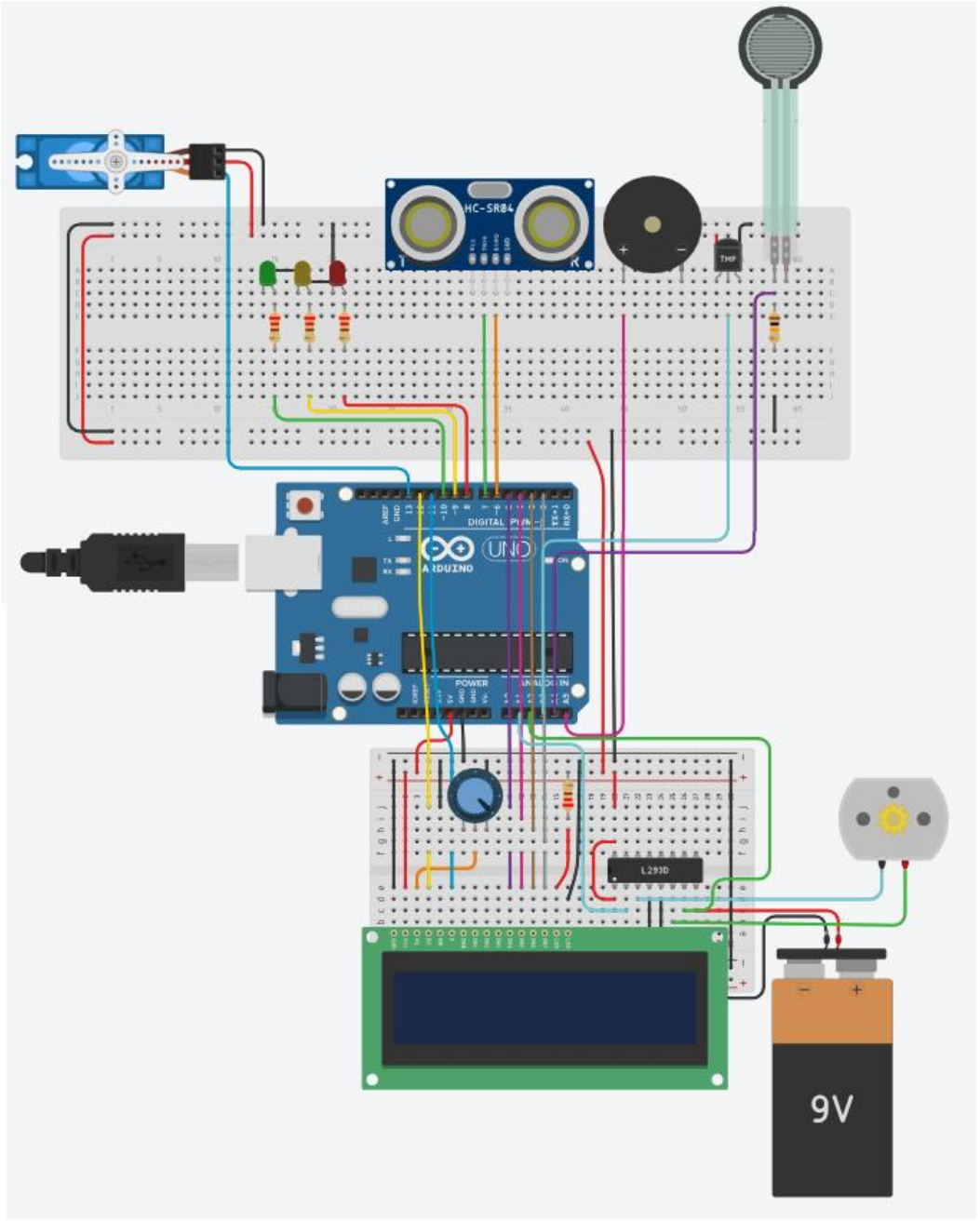
The DC motor will help us close or open the flow gate, to prevent overflow and thus avoid any catastrophe.

The servomotor has the function of opening and closing the barrier to regulate the passage of vehicles across the bridge.

Finally, the buzzer will help with an alarm in case an emergency occurs and notify the entire community of what is occurring.

Annexes


Buzzer
Servomotor
LEDs
Ultrasonic sensor
Arduino board
16X2 LCD Screen
H-Bridge DC Motor
Force sensor
Temperature sensor


HC-SR04
UNO
ARDUINO
L293D
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Conclusions

This project wants to:

Help the population to avoid catastrophes.

Notify in advance any type of anomaly recorded by the sensors.

The system is designed to be implemented in areas mostly affected by flooding, caused by river overflows.

It was possible to achieve what was proposed to obtain the total functionality of the circuit.

There has been a greater understanding of the use of technological tools such as Arduino, which allows small ideas to become large projects for social good.

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Background

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