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Project Based Experimental Learning(Nalaiya Thiran)

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Project Title

SmartFireALarm - IoT Enabled Industry specific fire management system

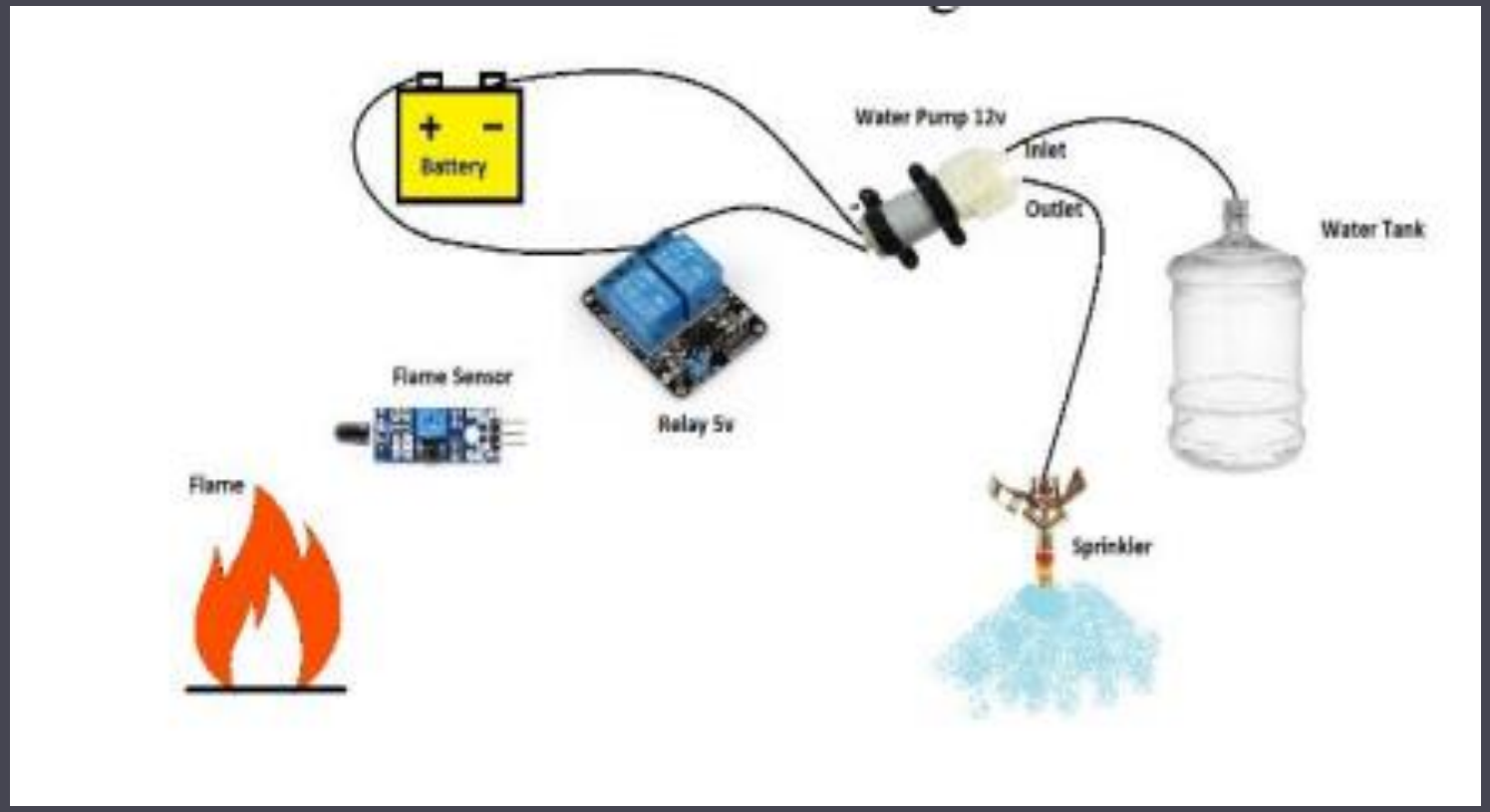
Description:

- This study aims to implement a smart fire detection system that would not only detect the fire using integrated sensors but also alert property owners, emergency services, and local police stations to protect lives and valuable assets simultaneously.
- The proposed model in this paper employs different integrated detectors, such as heat, smoke, and flame.
- To get real-life data without putting human lives in danger, an IoT technology has been implemented to provide the fire department with the necessary data.
- Finally, the main feature of the proposed system is to minimize false alarms, which, in turn, makes this system more reliable.
- The experimental results showed the superiority of our model in terms of affordability, effectiveness, and responsiveness as the system uses the Ubidots platform, which makes the data exchange faster and reliable. .
- The proposed system evaluates the situation and initiates an automatic water sprinkler where the water unit was designed separately

Components Required:

- Smoke sensor
- Temperature sensor
- Esp32
- Jumper wires
- Sprinkler
- Water pump
- Battery
- Relay

Technical Architecture:



Advantages and Disadvantages:

Advantages:

- This study considers the existing issues and build an efficient and effective fire detection system based on IoT technology, gas, temperature, and smoke sensors to collect the data accurately and rapidly.
- This system structure enhances the efficiency and effectiveness of fire detection.
- Moreover, using the Ubidots platform in this system made the data exchange faster and reliable.
- Hence, the proposed system overcame the challenges of the issues of affordability, effectiveness, and responsiveness.

Disadvantages:

- Lack of internet/connectivity issues.
- Added cost of internet and internet gateway infrastructure.
- This study's proposed approach obtained an average response of 10 seconds to detect the fire and alert the property owner.

Future Scope

- The smart fire detection system can help people to smartly prevent fire from the early stage.
- IoT sensors are capable of providing Real time temperature and fire alerts through web apps like whatsapp.
- One of the enhancement directions is integrating machine learning with the system to predict the potentiality of fire based on the collected data from different sources in the future.
- The proposed system can be used in industries,homes and other areas to for the early prevention of fire effectively.

THANK YOU FOR YOUR ATTENTION.