

IOT BASED FIRE SURVEILLANCE ROBAT

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ABSTRACT

Firefighting is a momentous and perilous job. The fire has to rapidly & safely extinguish by a firefighter to prevent more damage and destruction. It is desirable to design a robot that can detect fire and extinguish the fire as quickly as possible. In this study, a robot has developed that can extinguish the fire, can work manually by using a web app. Besides, the Robot can transmit real-time data using IoT gateway so that the real scenario can be observed. In addition, a pumping motor is being used to spray water, controlled by the web. This article can detect human presence who is stuck in fire placed by this project.

Keyword : - IoT, Sensors, ESP32

1. INTRODUCTION

Robotics is one of the fastest growing engineering fields of today. Robots are designed to remove the human from dangerous work and make their work easy. The project is to design and develop an intelligent robot to detect dangerous fire and protect the people from it. As an engineer's we have to design a prototype that could autonomously detect the fire and extinguish it. The Fire Fighter Robot is designed to search for a fire in the house or industry for extinguish the fire. There are several existing types of vehicles for firefighting at home and extinguish forest fires. Our proposed robot is designed to be able to work on its own or be controlled remotely. By using such robots, fire identification and rescue activities can be done with higher security without placing fire fighters at high risk and dangerous conditions. In other words, robots can reduce the need for fire fighters to get into dangerous situations.

1.1 PROBLEM STATEMENT

Fire-fighting task is one of the extreme and dangerous tasks to be carried out by human beings generally or specifically the firefighters. Theoretically, the execution of the routine and basic fire-fighting tasks can be assisted or partially replaced by robots. Hence, this IOT project owns the practicality of implementation in the real industry based. This project requires me to design and implement an Autonomous Fire-Fighting Mobile Platform that has the practicality of implementation in the real hazardous sites, attract my field of interests and attentions. Upon the completion of this project, the AFFMP, which is equipped with the basic fire-fighting knowledge is hoped to share out the burden of fire-fighters and reduce the risks associated with the fire-fighting tasks encountered by the fire-fighters tremendously

2. LITERATURE SURVEY

A literature survey is a check of scholarly initiators (similar as printed work, research papers, and so on) connected to a determined content or survey question. It is frequently written as part of a thesis, discussion, or exploration paper, in order to stick your work in relation to being knowledge. It shows beyond doubt of the authors' in- depth apprehension and knowledge of their department concern. It gives the surroundings of the research. Portrays the scientific penmanship plan of testing the research result. Make Brighter on how the comprehension has converted within the department. So, basically thorough below research papers we have created our project.

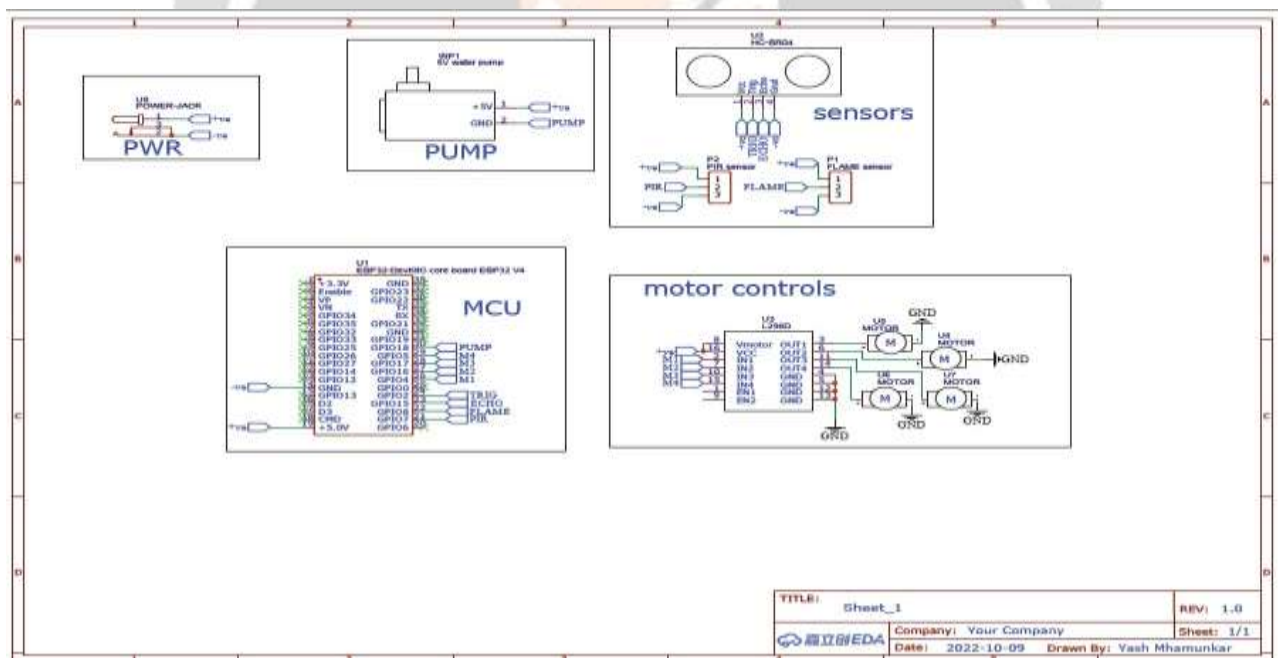
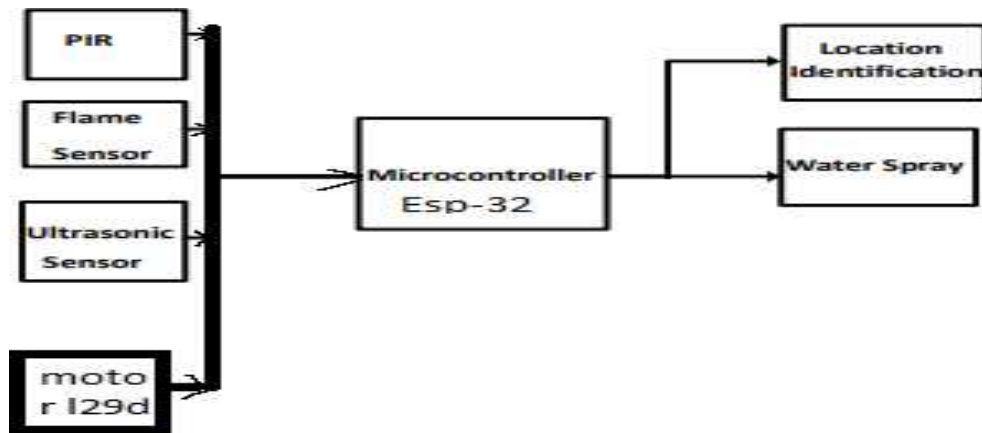
Year of publication	Title	Author	Publication paper conference
2018	A Variable Geometry Tracked Vehicle With Independent Track Control	M. Yusof, T. Dodd, Pangolin	Field Robotics, pp. 917-924.
2019	Development of fire fighter robot	Mohd Aliff ¹ , MI Yusof ³ , Nor Samsiah Sani ²	(IJACSA) International Journal of Advanced Computer Science and Applications, Vol. 10, No. 1, 2019
2022	Development and Implementation of Fire Fighting Robot	Md. Rasheduzzaman, Abdul Awal, Sk. Md. Golam Mostafa	Electrical and Electronic Engineering, International Islamic University Chittagong

3. PROPOSED SYSTEM

The hardware part is the main section of the development of a system or Robot. Different types of sensors like flame sensors for detecting fire, PIR sensors for detection of human and Ultrasonic sensors for measuring the distance between object and Robot has employed. Four gear motor, L293D motor driver, used for controlling speed and direction of the motor. Besides, a DC submersible pump also used for spraying water at the fireplace. One more main part in this we are adding one feature that if the robot is the hospital or other place and the robot is connected to that particular area wifi server and the host or the admin of that are is also connected to that wifi than if the robot will detect the fire than it will send the message to the admin or host that at this point the fire has taken the place and you have to go to someother safe place.

3.1 BLOCK DIAGRAM

3.2 CIRCUIT DIAGRAM



3.3 CIRCUIT DIAGRAM DISCRPTION:

When the battery is turned on the system boots up and esp 32 start to detect the sensors which are present in the system after checking the sensor which have booted or not it starts to read the data received form the sensors, while there are motor present in the system which have wheels for movement helps the apparatus to move as desired form the user, In this proposed model used two gear motors voltage for dc gear motor is 5v. The main advantages of gear motors are that it can carry more weight. The speed of the gear motor is high. The esp 32 has a built in camera which helps to find path for the user as it streams the data live to its user which is controlling the movement of the setup. For this Robot used a 05V water pump, it sprays water whenever it detects fire by any of the flame sensors. Flame sensors in each direction of the Robot. So that whenever flame detects any side of the Robot, Robot can perform its operation at any instant preciously.. There is a water pump connected in the system which has water present in it. If fire is detected by the system sensors the system notify the user and activities the water to start extinguishing the fire The PIR sensor is one kind of IR sensor. It detects infrared radiation. ZRD-09 Pyroelectric infrared sensor module adopts high performance PIR sensor, Fresnel lens, Pyroelectric dedicated chip and High- performance voltage regulator circuit. It has the features, as low static power consumption, wide operating voltage, and high sensitivity. It has repeatable and non-repeatable trigger terminal to be selected, thus this module can be set according to the actual demand, convenient to use., thus the PIR sensor used in this project for detecting human presence who is stuck in fire places.

4. CONCLUSIONS

In conclusion, fire surveillance robots represent an exciting application of IoT technology in the field of fire safety. These robots can operate autonomously, detect potential fire hazards in real-time, and even provide firefighting capabilities, reducing the risk of injury and damage caused by fires. As IoT technology continues to advance, we can expect fire surveillance robots to become more sophisticated and effective. For example, they may incorporate advanced machine learning algorithms to better detect and respond to fire hazards, or they may be equipped with more advanced sensors to monitor a wider range of environmental factors. The future scope for fire surveillance robots is vast, and they have the potential to transform the field of fire safety in the coming years .As more organizations and industries adopt IoT technology, we can expect to see more widespread deployment of fire surveillance robots in a variety of settings, from factories and warehouses to public spaces and residential buildings. Overall, fire surveillance robots are an innovative and effective solution to the challenges of fire safety, and they represent an exciting future for IoT technology in this field.

5. REFRENCES

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BIOGRAPHIES (Not Essential)

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