



Wireless Multipurpose Robot

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Abstract

There are a number of situations in which it isn't always viable for a human operator to do an activity on their own, due to a level of threat or involved. The threat can be anything like a fire may begin in some factory or in some faraway locality. For example, in the cotton generators, gasoline storehouses, and so on, leakages in the electric field may lead to massive harm, inflicting heavy losses financially and additionally destroying regions round it. Instead of compromising human lives, it is advisable to hire robot structures for performing difficult duties. Robotic systems are far advanced in ensuring the accuracy of the device beneath unfavorable instances where a human may lose his/her life. Our objective is, making a fire extinguishing robot with embedded gadget along with a wireless Bomb Disposal robot. The bomb technician controls the robot using a software at control web page. Robot is manufactured for discovering the fire, earlier than something goes out of manage, and sooner or later operate with fireplace-combatants decreasing the risk for humans.

1. Introduction

The expression robot changed into derived from Czech word robota meaning a compelled laborer. From there on numerous distinctive trends are being efficiently carried out till date inside the area of robotics inside the form of manipulators, humanoids, micro robots and so forth. Because the trend of the enterprise is transferring from the contemporary country of automation to robotization. The robot era is advancing rapidly. Our venture as electronic Engineers is to construct a prototype machine that would discover and also extinguishing the fire. It also targets the lowering of atmospheric pollution. The robo-model designed by us is a command control robot. The robo-model attains instructions from the commander as control signals and the required actions are performed. The concept used for the robo-model is that it is designed to search for a fireplace and extinguish the fire with the assist of water spray and to locate if any bomb is present.

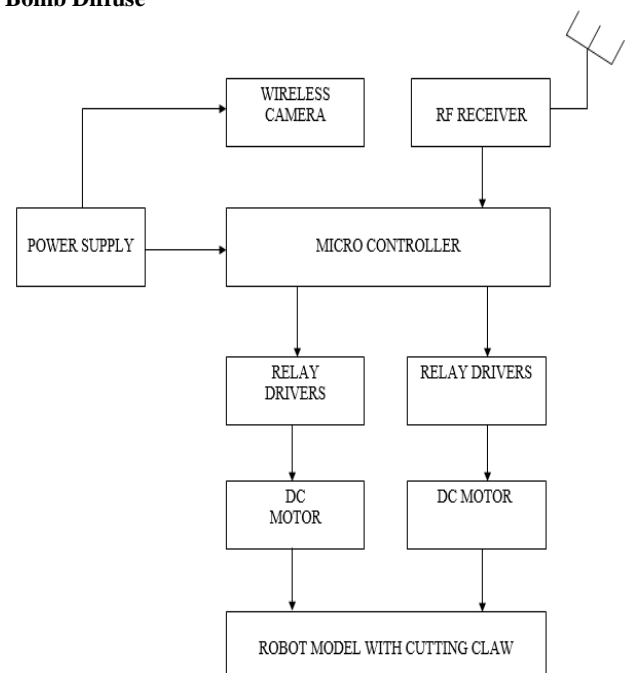
2. Literature Survey

A proposal which set us for finishing the undertaking became the Trinity university Firefighting Robotics opposition. Certain constraints along with map size, different varieties of room, their positions, time required by the robo-model for travelling to the arena and robot length have been recreated for this challenge with a purpose to degree the achievement of the robot towards existing requirements. Also, the research took us to some other initiatives which were formerly involved in the challenge. All the papers that we came across, positive patterns started to seem that helped apprehend one-of-a-kind sections of the challenge handy. To start with, the fireplace detection approach for using sensors with ultraviolet technology with their excessive range and ability of hitting upon fires thru partitions. Additionally, the maximum famous hearth extinguishing machine turned into an air fan.

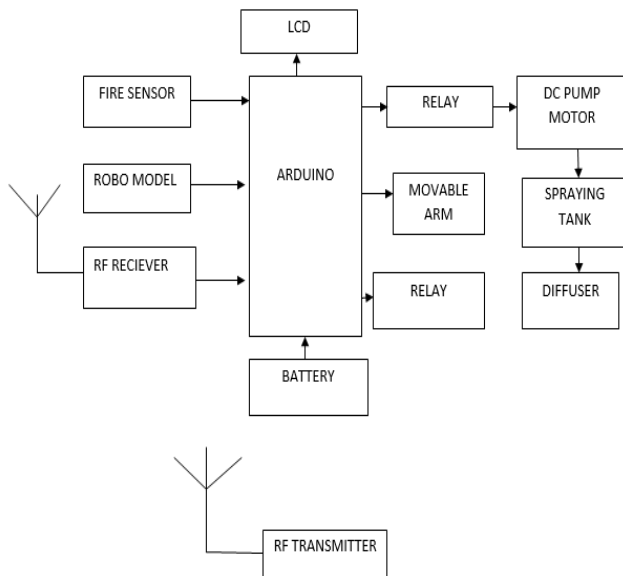
regarding a small scale robo-model and simplest candle for showing off, it is very green in phrases of the way easy it's miles to put into effect and the way smooth it's miles for extinguishing at the fireplace. Navigation and maps are usually finished via following the wall.

3. Block Diagram

Bomb Diffuse



Fire Extinguisher



4. Components

- Photodiode

A photodiode is a semiconductor device that converts light into an electrical current. The current is generated when photons are absorbed in the photodiode.

- Arduino Uno

It is a microcontroller board based on the ATmega328P. It consists of 14 digital input/output pins, 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button.

- LCD Display

The lcd module is made of 16 pins and can be operated in 4 or 8 bit mode. Here we are used LCD module in 4-bit mode.

An lcd has two glass panels, with the liquid crystal cloth sandwiched in among them. The transparent electrodes covers the inner surface of the glass plates, which makes the liquid crystal molecules to hold a specified orientation angle.

- Metal Sensor

Metal Touch Interface module and number 13 comes with LED build a simple circuit to produce a touch cue lights 13 comes with digital interfaces of the LED, the metal touch sensor connected digital three interfaces, when a metal touch Sensor senses a key signal, LED lights, otherwise off. just like the classic claw, they are made from metal and are pretty heavy-duty, but they also features brass sleeves in the joints which make them more rigid and less likely to come loose. The claw opens to about 2" and depending on the servo motor used, it can pick up some relatively heavy articles. The new spring-loaded clutch helps protect your servo gears from damage and also increases the gearing to 2:1, allowing the servo to act over its entire range and provide more gripping power. These also have a mounting plate on the bottom which accepts standard spacing found on servo mounts.

- Relay

A relay is an electrically operated device. It has a control system and (also called input circuit or input contactor) and controlled system (also called output circuit or output contactor). It is frequently used in automatic control circuit. To put it simply, it is an automatic switch to controlling a high-current circuit with a low-current signal.

- RF Transmitter

Antennas like this are sometimes called receivers. A transmitter is a different kind of antenna that does the opposite job to a receiver: it turns electrical signals into radio waves so they can travel sometimes thousands of kilometers around the Earth or even into space and back.

- RF Receiver

A small electronic device used to transmit and/or receive radio signals between two devices is known as RF module. In a system it is often desirable to communicate with another device wirelessly. RF communications incorporate a transmitter and a receiver.

- L293 Motor Driver

The most common method to drive DC motors in two directions under control of a computer is with an H-bridge motor driver. H-bridges can be built from scratch with bi-polar junction transistors (BJT) or with field effect transistors (FET).

5. Applications

We have designed a robot to the bomb disposal squad but this can be used for other purposes also. It is able to be used by:

- It can be used by local police in hostage situations
- By military for reconnaissance missions.
- Nuclear: Can be used for handling risky or radioactive substances.
- It could help medical doctors to carry drug treatments from one ward to another.
- May be utilized in Server rooms for instant action in case of fireplace.
- The utility of the multipurpose robot has been described as a collection of the chemical industry, nuclear plant life, navy storage centers, as well as mine fields.

6. Conclusion

The Wireless Multitasking Robot paper has been designed so that it can be used in any field. It aims to reduce death and harm to human life. It has lot of applications in many environments and cases. For example, one scenario it can be used to extinguish fire other case it can be used by disposal squad. There is always scope for improvement in this project. For instance adding navigational maps and live feed.

7. Future Scope

Further things may be brought as mentioned

- Step climbing mechanism: - Step mountaineering mechanism is used for the use of the staircase so that it will help the person to transport from one floor to other floor.
- Wi-Fi video transmission: - Wi-Fi video transmission is used to hold the consumer away from the bomb web page and control it from a secure distance.
- Imaginative and prescient sensing method:- The digi cam is installed above the robot and is capable of pan and tilt. Its image is displayed on a screen so that users can select a function with a pointing tool.
- Removable Arm: The gripper connected to the robot arm is constant for the time being, it'll best work with the particular shaped of items. An arm that can be removed and replaced via another gripper can solve this trouble.
- artificial Intelligence At gift the robot does no longer have the capability to make decisions on its own this is there's no built in primarily based merely on the decisions made by way of the stop person of the robotic manage utility. consequently synthetic

Intelligence can be provided to the robot for making the process of choice-making a good deal quicker and reliable

- Night time vision digi cam:- For night time mode or places where mild is low a night vision, digi cam can be set up at the robot with a view to growth the visibility in case there is no light at all.

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