Detection of Alive Human in Earth Quake Areas Using Arduino Controller

Sumathi R[1] sumathir@skcet.ac.in, Nandhini S[2],17euee094@skcet.ac.in,, Kurinji priya G[3]17euee074@skcet.ac.in, Nishaa S[4], 17euee103@skcet.ac.in,, Joshima A[5]17euee068@skcet.ac.in

[1]Professor, Department of Electrical and Electronics Engineering,

Sri Krishna College of Engineering and Technology, Coimbatore, India2, 3, 4,

5Students,Department of Electrical and Electrical and Electronics Engineering, Sri

Krishna College of Engineering and Technology, Coimbatore, India

ABSTRACT

In this project, a replacement approach for detective work alive humans in destructed environments employing a mobile automaton is projected. After natural disasters like earthquake and wave several humans can get at bay beneath fallen buildings, trees and broken vehicles a number of them are aware enough to shout dead set the rescue team to save lots of them however some are in unconscious state having no energy to decision dead set the rescue team. So, those individuals are left at bay while not being saved and even die. This paper presents the Alive Human detection. The event of automaton is split into 3 components that is that the hardware, electronic, and programming. The automaton has 4 DC motors for driving system and castor wheel for giving direction. Various sensors also are interfaced with Arduino Uno Board. Thermal camera to check for alive humans and for the programming half, Arduino IDE language was accustomed pass into to the developed application software system and shows the gap of survivors.

Keywords:Arduino-controller,Thermalcamera,software Application

1.INTRODUCTION

The Main objective of this project is style and Fabrication of Wireless Controlled Rough piece of land Vehicle to ob- serve an alive human in Earthquake Areas and to extinguish fireplace caused by earthquake victimization Thermal camera and Embedded Controller. Some of the common impacts of earthquakes embrace structural damage to buildings, fires, harm to bridges and highways, initiation of slope failures, state change, and wave.

The types of impacts rely to an oversized degree on wherever the earthquake is located: whether or not it's preponderantly urban or rural, densely or sparsely inhabited, extremely developed or under- developed, and in fact on the flexibility of the infrastructure to resist shaking. A median of 3.5 million people square measure tormented by earthquakes once a year. Earthquakes usually cause severe harm to urban centers, leading to the

loss of life and harm to homes and alternative infrastructure.

According to the sector of Urban Search and Rescue (USAR), the likelihood of saving a victim is high among the first forty eight hours of the operation, after that, the likelihood becomes nearly zero. All of those tasks square measure per- formed largely by human and trained dogs, typically in terribly dangerous and risky situations. The rescuer could become a victim UN agency must be rescued. Detecting humans in earth quake areas is such tough thing. this can be far more risky operation to involve rescue team in this method. As a result of at that time earthquake the wall conditions aren't stable and potentialities of dangerous gases.

Fig. 1. Destructed environment

2.EXISTING SYSTEM

The existing analysis paper deals with the planning and modeling of step ascension automaton supported the well- known rocker bogie mechanism in ANSYS rigid body dy- namics module. The robots typically suffer from unwanted development like slip, sticking out and floating whereas as-cension steps and stairs, which might cause instability of the automaton. The Taguchi technique manner accustomed chosen as associate degree improvement tool to create flight of center of mass on the brink of line whereas all wheels confine contact with ground throughout ascension stairs. Taguchi technique was adopted because of its simplicity and worth effectiveness each in formulating the target perform and satisfying multiple constraints at the same time. at intervals the improvement, seven kinematic parameters of rocker bogie mechanism were optimized that embrace four link lengths (I1, I2, I3) and machine radius (R1, R2, R3). The kinematic model of projected mechanism has been simulated in ANSYS Rigid body dynamics. 3 totally different shapes of typical stairs were designated as user conditions to work out a strong best resolution. The result obtained shows the variation of center of mass position with time, variation of speed of joint with time, variation of force with time. The rocker-bogie suspension- based rovers square measure with success initiated for the Mars expert and Mars Exploration Rover (MER) and Mars work (MSL) missions conducted by apex house exploration agencies throughout the earth . The projected suspension was presently the foremost favored style for each house exploration company indulges at intervals the business of house analysis. The motive at intervals the analysis initiation was to understand mechanical style and its blessings of Rocker- bogie suspension therefore on hunt down quality to implement it in typical loading vehicles to extend their potency and additionally to lower the upkeep connected expenses of typical suspension

3.PROPOSED SYSTEM

In this project, a brand new approach for sleuthing alive humans in destructed environments employing

a mobile mechanism is projected. Human detection in a pilotless space will be done solely by an automated system. The projected system uses a mobile camera which could be a thermal mode camera to o observe the alive human body as thermal camera works by sleuthing temperature by recognizing and capturing totally different levels of infrared emission. The mobile camera record, transmit and analyze the conditions of human body and therefore the surroundings. once a hearth accident that's been detected by the thermal camera the mechanism uses a hearth extinguisher that releases carbonic acid gas so as to extinguish the hearth. Ultrasonic sensors square measure utilized in the system to calculate the distance of the human or any obstacle that's within the path of the robot. The message is passed from the inaudible sensing element to the Bluetooth. A Bluetooth is additionally fitted for communication purpose through that we will get the main points of the space and temperature employing a mobile application. Alternative sensors like temperature sensors are additional to the system so as to find the hearth accidents that square measure caused by earthquakes.
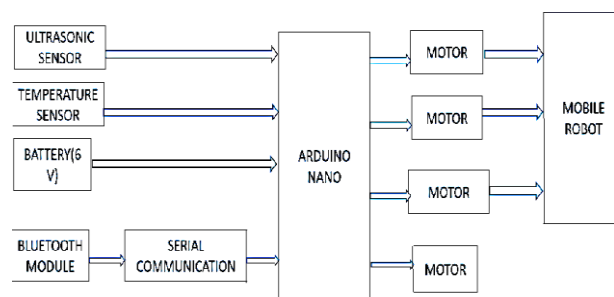

Fig 2. Block diagram

4. BLOCK DIAGRAM DESCRIPTION

4.1 ARDUINO CONTROLLER

Arduino is an open-source electronics platform and it is easy- to-use and understand. Arduino boards are made to read inputs such as light on a sensor, a finger on a button, or a Twitter message- and it turn into an output activates a motor, turn on an LED, publish something online. We can modulate and control the Arduino by giving instructions to microcontroller on the board. In our idea, we use Arduino to control the mechanism of input sensors, motors and their outputs.

4.2 THERMAL CAMERA

Thermal cameras detect temperature by recognizing and capturing different levels of actinic ray. This light is invisible to the optic, but will be felt as heat if the intensity is high enough. From there, the micro bolometer records the temperature then assigns that pixel to an appropriate color.

4.3 L293D MOTOR DRIVER

The L293D IC receives signals from the microprocessor and transmits the relative signal to the motors. It is two voltage pins, one in all which is employed to draw current for the working of the L293D and also the other is employed to use voltage to the motors. Controller operating voltage isn't enough to drive high voltage loads. This Driver will help to drive motor using controller logical inputs. It helps the motor to run mobile robot.

4.4 BLUETOOTH: HC-05

HC-05 module is a straightforward to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wire- less serial connection setup. Serial port Bluetooth module is fully qualified Bluetooth V2. 0+EDR (Enhanced Data Rate) 3Mbps Modulation with complete 2.4GHz radio transceiver and baseband. Bluetooth module ver2.0 is employed during this process to transmit the data to the user. With help of this, we pass the information regarding the location

4.5 ULTRASONIC SENSOR

Ultrasonic sensors work by send out a sound wave at a frequency above the range of human decibel. The transducer of the sensor acts as a microphone to receive and send the ultrasonic sound. Our ultrasonic sensors, like many others, use a single transducer to send a pulse and to receive the echo. With the help of mechanism, we measure the distance between victim and mobile robot.

4.6 LCD DISPLAY

They work by use of liquid crystals to provide a picture. The liquid crystals are embedded into the video display, and there's some type of backlight accustomed illuminate them. The particular liquid show is created of many layers, as well as a polarized filter and electrodes. Here it is used to display message about alive people

4.7 TEMPERATURE SENSOR

A temperature sensing element is electronic device that measures the temperature of its surroundings and converts the information into electronic data to record, monitor, or signal temperature changes
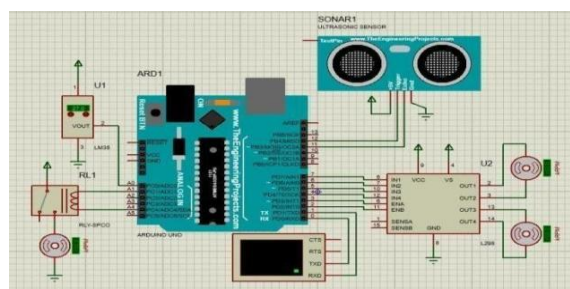
5. CIRCUIT DIAGRAM

Fig 3:Circuit Diagram

6. HARDWARE DIAGRAM

Fig 4: Hardware Diagram

7. CONCLUSION

The project work has been completed favorable outcome. The project hardware functions satisfactorily as per the model. The project work was developed when conducting variety of experiments before finalizing model work, this reduced the bottle necks and that we didn't face abundant issue within the final integration method. In general the complete development of the project work was informative and that we might gain loads of expertise by approach of doing the project much. We have a tendency to might perceive the sensible constraints of developing such systems concerning that we have studied by approaching of lectures within the theory categories, It was satisfying to envision numerous theoretical aspects work before US in reality follow of that we have detected through lectures and of that we have studied within the books.

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