

Live Human Detection Robot

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Abstract

In this paper, a new approach for detecting alive human beings in natural and man-made disasters using a specific set of sensors, ATMEGA16 Microcontroller, existing GSM technology and PLC systems. Many areas of world are getting affected due to sudden natural calamities like earthquakes, floods, wild-fires, storms and human induced disasters industrial and transportation accidents and one of the threatening to humans that is terrorists' attacks. We observe that people dies by getting trapped in these drastic disasters on large scale just because they didn't get help at the instant of time when they required to be rescued. So the proposed alive human being detection system uses a specific set of sensors that includes PIR, temperature, vibration, IR, Ultra sonic detector, etc. which gives the information about the presence of alive human body. GSM technology will give an alerting message to control room of the affected sites' to give proper rescue to the affected victims through PLC logical programming. Also we are using HMI system. Therein a microcontroller ATMEGA16 holds all of these sensors which deals with movable robot systems. By this project it will be a great help indeed to rescuers in detection of the more & more alive human beings at the disaster sites at proper time. This is also user friendly, economical, semi-autonomous and efficient device by software programming interfacing for detection.

Keywords: Human Nature, PLC logical Programming, GSM Technology.

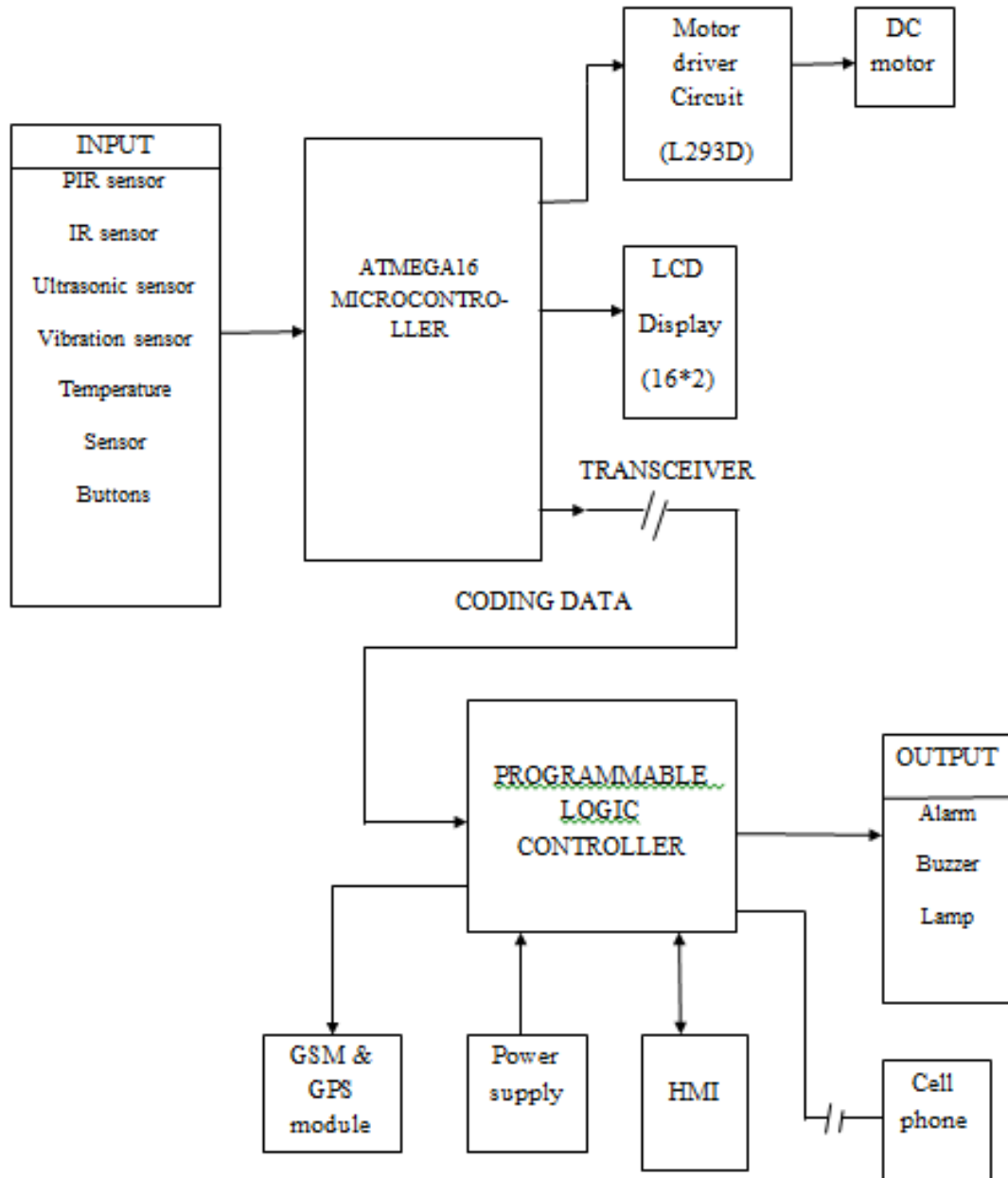
I. INTRODUCTION

Nowadays most of the people of a country live in urban city. As cities are growing, the population density is enumerately increasing. The high population density makes any disaster, such as natural or human disaster, much more drastic accidents. The complexity to deploy rescue teams is also put to stake .Indeed a disaster may destroy the critical and huge infrastructures of a city which alters the effectiveness of the rescue teams greatly. Disaster sites may be complex and hazardous to be reached for rescue and there are a great threat and risk linked to rescue workers and survivors trapped in such accidental sites. These disasters can disrupt economic and social balance of the society and this can be categorized into natural and human induced disasters. Natural disasters include floods, storms, cyclones, bush fire earthquakes etc. whereas human induced disasters include transportation accidents, industrial accidents, major fires etc. Hence in this project, we focus on a system named as 'a live human being detector' which will work in disaster environments of manmade structures like collapsed buildings, war fields etc. It can be assisted for firemen, police, and disaster agencies with appropriate reconnaissance, site evaluation, human detection etc.

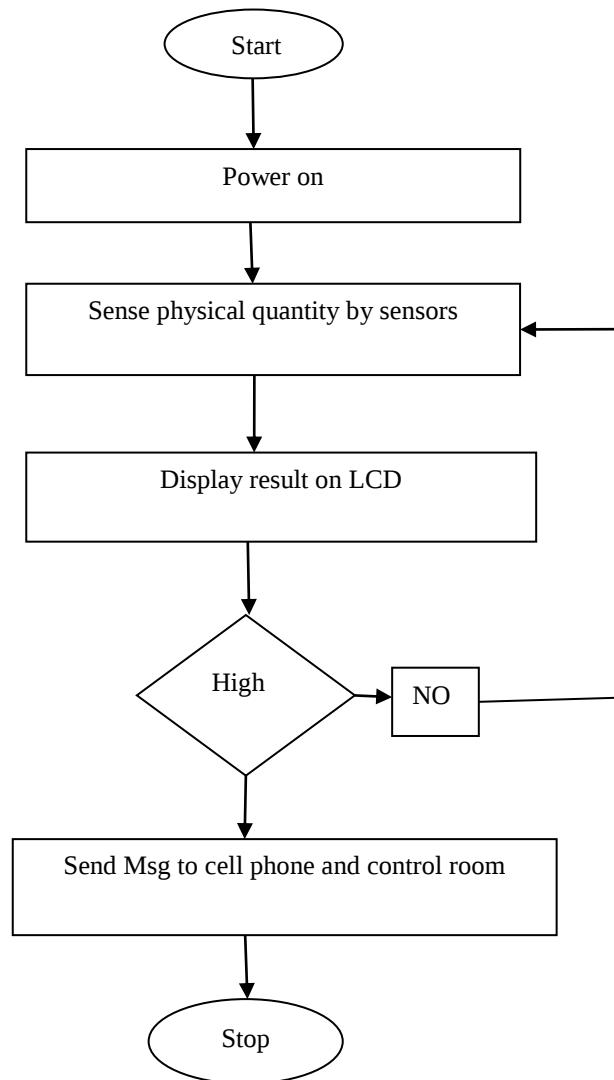
Three proposed methods referred nowadays for 'a live human being detector' in the existing technology is alive human body detection Embedded system using reliable specific set of sensors like PIR, IR and temperature sensor that gives information about the presence of an alive human body and a low quality camera to acquire a video of scene of the environment in which the set of sensors trigger the camera to show live scene. The video is then displayed on pc or laptop which is enhanced by Matlab programming. The second method is using the wireless Zigbee technology interfaced with microcontroller 8051. The main aim of this project was to proposed the Wireless multipurpose Robot which can be controlled through PC using Zigbee interface and navigates around the disaster areas and tries to find the humans who need help .The third method includes ATMEGA16 microcontroller interfaced with various set of sensors which is mobile and status of sensors displayed by LCD and the PLC system which is static. PLC interfaced with the HMI and GSM system. So in this PLC and ATMEGA16 microcontroller interfaced with each other as transceiver .This method is reliable and efficient as it gives early indication of disaster affected sites

to the rescue team or the control room. So the third method is thus selected by us and aim of this work is to provide a semi-autonomous, heterogeneous, and user friendly sensor suite robot for human detection in the disaster environment. Conditions in a disaster area are extreme with many unknown parameters. Victims may be covered in debris, trapped in voids, or entombed, making it difficult to find them and determine their state of health. This is why it will be important to choose a set of different sensors which are complementary and able to operate in these conditions.

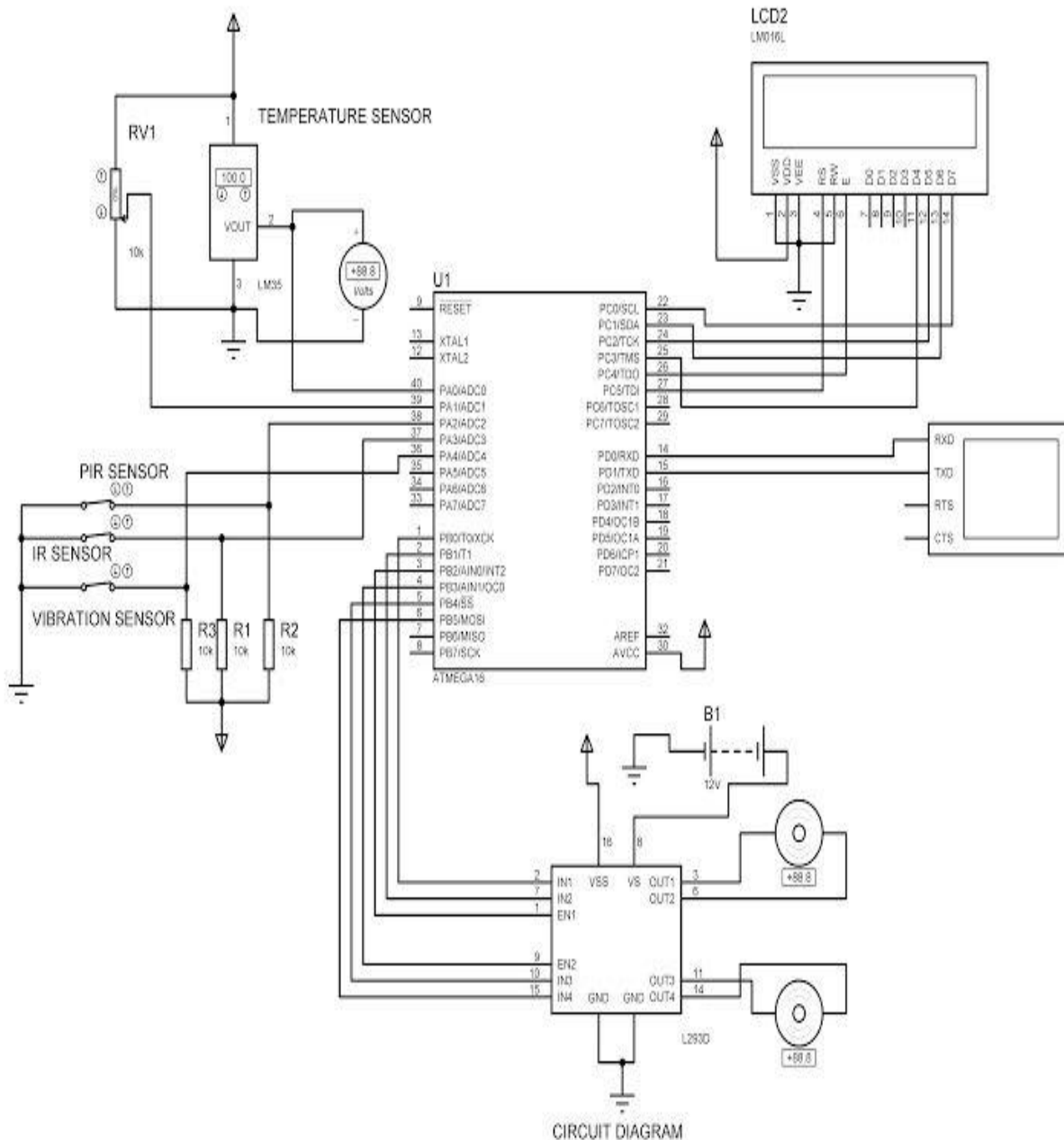
II. BLOCK DIAGRAM



III.FLOWCHART



IV. CIRCUIT DIAGRAM



V. SOFTWARE IMPLEMENTATION

A. WPLSoft :

WPL soft is a software for PLC (Programmable logic controller). When PLC is in operation, use WPLSoft to monitor the set value or temporarily saved value in timer (T), counter (C), and register (D) and force On/Off of output contacts. In this Ladder logic is used to develop software for PLCs used in industrial control applications. In WPL soft programming as well as simulation is also possible so ae used WPL software.

B. PROTEUS:

Proteus is a best simulation software for various designs with microcontroller. We choose this because of availability of almost all microcontrollers in it. So it is a handy tool to test programs and designs for electronics hobbyist. we can simulate our programming of microcontroller in Proteus Simulation Software .After Simulating circuit in Proteus Software we can directly make PCB design with it so it could be an all in one package for all users.

C. BASCOM :

BASCOM AVR is a very powerful and easy-to-use compiler for the AVR series of micro controllers developed by Atmel. The program comes with a very user-friendly interface and a set of simple commands, and provides more flexibility than other programs in this category. Anybody with some basic knowledge of C or C++ can write a successful program using BASCOM, as most of its functions and its statement structure is similar to those in C. The best thing about BASCOM AVR is that it can directly burn any flash file into a micro controller using just four wires connected to computer's parallel port (printer port, or LPT port). Program's simulator, syntax checker, and emulator tools can help to scan program for errors checking.

VI. APPLICATIONS

- In military applications to detect the presence of human being
- In rescue operations where human reach is impossible
- In disaster management
- In crisis management
- This equipment can be used at mines, earthquake prone place

VII. FUTURE SCOPE

- During the emergency situations and especially in urban disasters, this project will be a great requirement.
- The disasters can be sensed in a quicker time and the rescue operation will be there for the stake to help the victims.
- The invention of this device will be user friendly and advanced in technology.

VIII. CONCLUSION

By this project it will be a great help indeed to rescuers in detection of the human beings at the disaster sites. This is also user friendly, economical, semi-autonomous and efficient device by software programming interfacing for detection. This proposed model system will be a combination of a stationary and a mobile robot system especially for the disaster affected chaotic areas.

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