SPY BOT:A BOOM FOR CAMOUFLAGING

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ABSTRACT:-

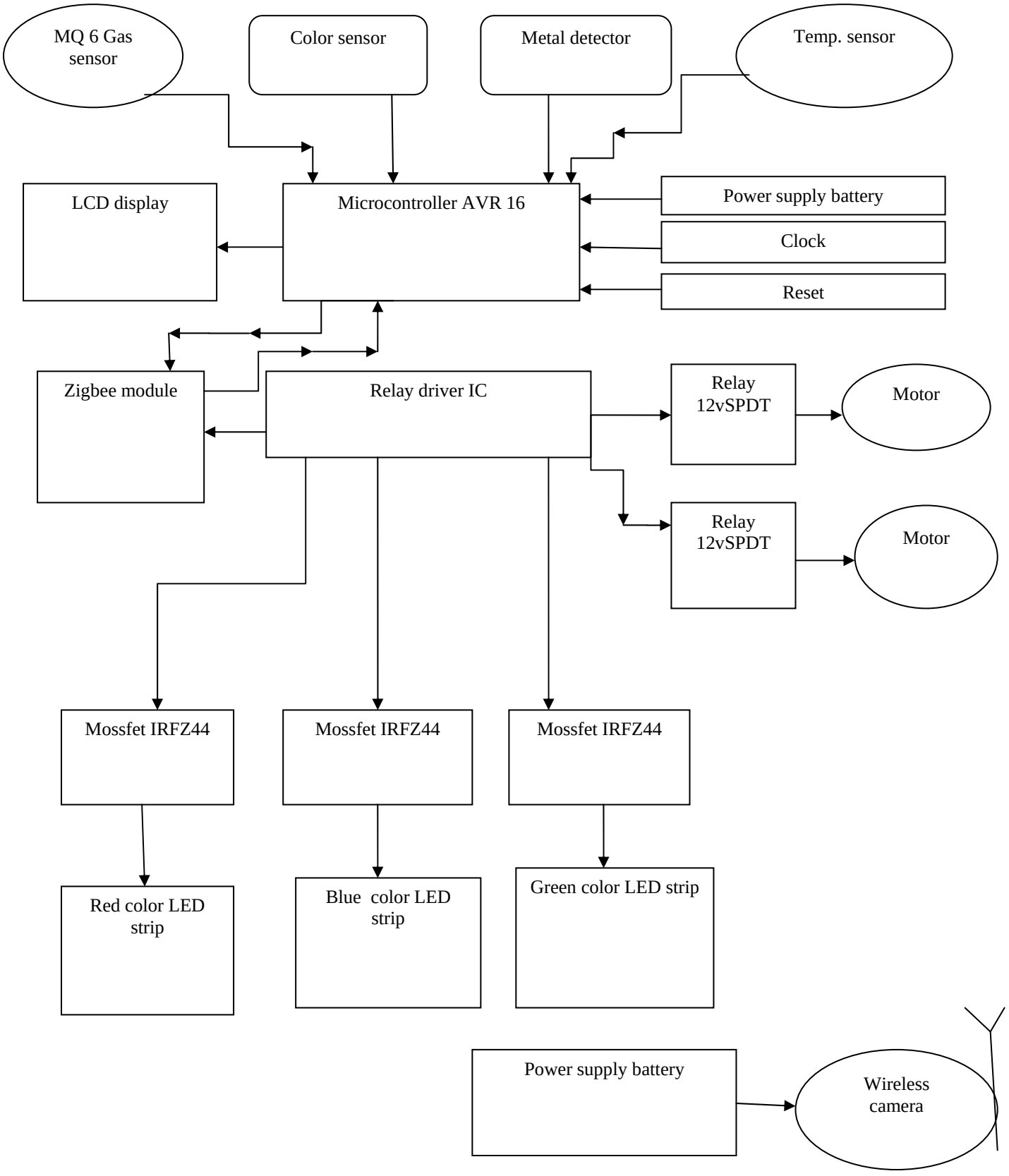
The objective behind making this project deals out with satisfying various functional needs such as secretly spying or keeping surveillance over a desired target location. We also aim to achieve a few more additional comprehensive needs such as detection of gas, temperature sensing, metal detection, displacing any suspected object from its original position.. We have leveraged our robot with an advantage of monitoring both audio and video parameters. The most eye catching feature of our bot along with enveloping the would be able to change its body colour that it treads along. We have achieved our main goal by aggregating individual robotic functions in a single robotic package. This bot can either be used for keeping an eye or a supervisory control on intrusion making it function like a spy bot or with the additional features as that we have added to this robot could serve as an important unmanned vehicle which could actually combat with the opponents or enemies in the war fields. Thus how making it a multifunctional, all in one bot that could be used to serve more than one application areas.

1. INTRODUCTION

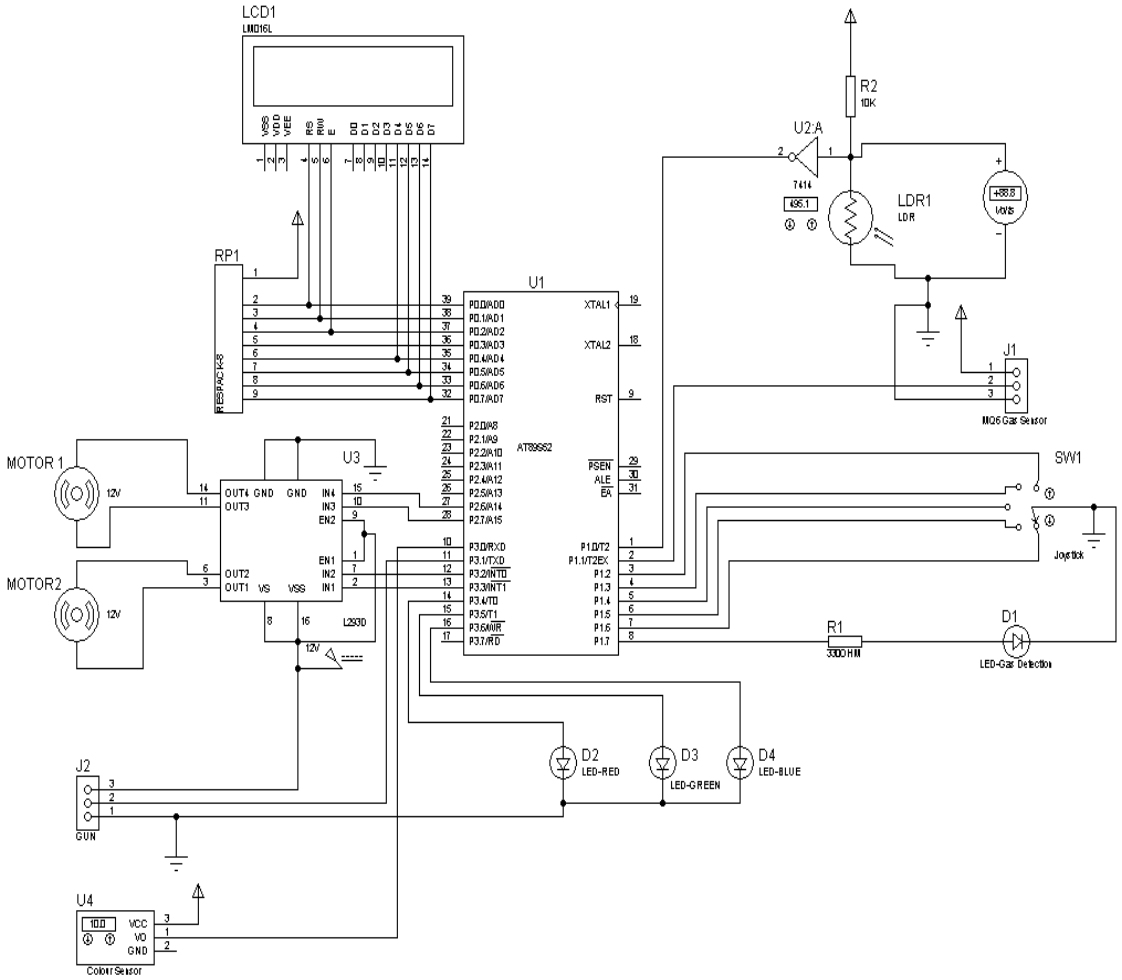
A robot is a mechanical or virtual agent, usually an electro-mechanical machine that is guided by a computer program or electronic circuitry. Merriam-Webster defines robot as “a machine that looks like a human being and perform various complex acts; a device that automatically performs complicated, often repetitive tasks; a mechanism guided by automatic controls.” ISO describes a robot as “an automatically controlled reprogrammable, multipurpose manipulator programmable in three or more axes, which may be either fixed in place or mobile for use in industrial automation applications”. Robots are making a considerable impact on many aspects of modern life, from industrial manufacturing to healthcare, transportation, and exploring deep space and sea. Tomorrow, robots will be as personal as today’s personal computers. MRS is becoming most important areas of research in Robotics, due to the challenging nat involved in research and to the multiple potential applications to areas such as autonomous sensor networks, building surveillance, transportation of large objects,monitoration of air and underwater pollution , detection of forest fire, transportation systems, and,

search and rescue after large-scale disasters. Even problems that can be handled by a single multi-skilled robot may benefit from the alternative usage of a robot team, since robustness and reliability is increased by combination of several robots which are individually less robust and reliable. Research is going on to focus on smoothing the movements; however, speed is less important than the robot's flexibility. Soft robots are useful because they are resilient and can maneuver through very constrained spaces.

BLOCK DIAGRAM AND DESCRIPTION



Interfacing of Components with Micro-Controller



The objective behind making this project deals out with satisfying various functional needs such as secretly spying or keeping surveillance over a desired target location. So to overcome over motive we had interface various component with Micro-Controller to control our robot according to our command. First of all to control the movement of the robot we will interface the joystick (Input Device) to GPIO port of Micro-Controller i.e. from port P1.2 to P1.6 to control the movement of wheels of robot driven by motors which will interface with microcontroller through relay which is connected to the GPIO port P2.6, P2.7 and to the interrupt port P3.2 & P3.3 of microcontroller. For secretly spying we are adding the feature of camouflaging in our robot to overcome this feature we are using colour sensor (Input Device) connected to the GPIO port P3.0 which is going to detect the colour of the surface and accordingly camouflage the robot through RGB LED Strips (Output Device) connected to the GPIO port P3.4 to P3.6 of microcontroller. Not only this but also we aim to achieve a few more additional comprehensive needs such as detection of gas, firing on a specific target, displacing any suspected object from its original position, and we would enable it to work as a rescue operator under hostile conditions. For gas detection we are going to use the MQ6 gas detector sensor which is connected to the GPIO port P1.1 of microcontroller which in result lead to the glow of a Gas Detector LED interfaces with GPIO port P1.7 of microcontroller. To view the images in front of the robot me are going to attach a camera on the robot connected to the GPIO port P2.0 of microcontroller. To fire on the specific target we are attaching an electrically triggering gun on the robot which is interface with GPIO port P3.1 of microcontroller and to lift the object we are attaching the mechanical arm on the robot which is interface with the GPIO port P2.1 of microcontroller. We are also working on our bot to work under dark surroundings such as night times to have this feature we are going to use the LDR and flash light or IR led. LRD will detect the intensity of the surrounding light and accordingly turn on the flash or IR LED to overcome the dark circumstances LDR will interface with GPIO port P1.0 of microcontroller and flash or IR led will connect to GPIO port P2.2 of microcontroller.

Software specification:

ZIGBEE

ZigBee is an open global standard built on the IEEE 802.15.4 Mac/Phy. ZigBee is a network layer above the 802.15.4 layers and it supports advanced mesh routing . The ZigBee specification is developed by a growing consortium of companies that make up the ZigBee Alliance. The Alliance is made up of over 300 members, including semiconductor, module, stack, and software developers

ZigBee defines three different device types: coordinator, router, and end devices.Node Types / Sample of a Basic ZigBee Network Topology

XBee and XBee-PRO features:

Small form factor ,True plug and-communicate wireless capability Optimized for low cost, low data rate applications, Long battery life , Robust security, High data reliability ,Product interoperability – Modules are interchangeable and pin-for-pin compatible with each other ,XBee-PRO Mod

FUTURE SCOPE

- Can be configured for multicolour camouflaging.
- Metal Detector can be added at the base of the robot for detecting land mines.
- X-ray can be used for detecting any hazardous material like bombs.
- For its operation in self operated mode or autonomous mode
- Automatic obstacle detection Surface detection can be achieved
- We have made our bot to work under dark surroundings such as night times Rules yield 2-3x the range of standard ZigBee Modules (300' – 1000').

CONCLUSION

- In order to strengthen the security and defence in any country like ours we desperately require robotic system which will forearm our defence system. In the recent past our world has witnessed plethora of terrorist activities and in them we had encountered tragic loss of
- life and property. Such humongous loss would have been avoided if we would have strong life saving robotic system in place. To avoid such disasters TECHNOLOGICAL power must exceed HUMAN power. Human life and time are priceless. It's our duty to take an initiative to design a model of an apt robot that meets combatant needs. So to avoid terror attacks, to ensure more security at the border and high density areas it's wise to maintain a world class military technology in accordance with combatant needs. Even every nation needs its own defence system for their integrity and security.
- Hence in order to make this world a beautiful place to live, we desperately require robot which will assist us in our endeavours. In such a way construction of these robots will carry nation's name, fame globally.

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