

Multi-Tasking Application Based Robotics

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Abstract

Robotics is Ocean of innovation which is all around created in the present age to have the fundamental needs and swap of human for auxiliary, constructional and to meet the branch of innovation which is existed up to the development. So we proposed an application based robotics which is called Military Surveillances Robot (MSR). Itself about making a multitude of humanoids however usage of robotics innovation for battling fear and shielding the country. Along these lines, military robots require not be humanoids or they not really need to convey weapons, they are only those Robots that can help the armed forces. The open doors offered by these technologies are endless to have 4 application which is appeared beneath One is fire maker, ceasing the fire with water, overwhelming stroke firearm and controlled by means of Android.

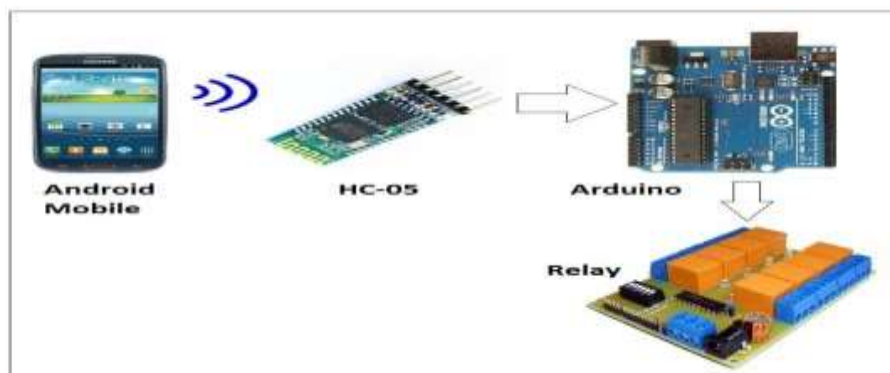
Index Terms : Serial Communication, Bluetooth, Arduino, Relay

I. INTRODUCTION

The vision of robot armed force isn't a present day idea. The presentation of military robots is gone once more from 1898 by the presentation of radio water crafts by Nicola Tesla. It was imagined by numerous visionaries in the most recent century. They were utilized by Germans and Russians in Second World War. The Teletanks were outfitted with DT machine guns, flamethrowers and. The utilization of Goliath which is a versatile landmine in World War II by the Third Reich's forces additionally set apart as a defining moment ever. What's more, today the improvement in this innovation is very much exhibited by military robots in Afghanistan and Iraq. In this situation the robot is worked with Android Mobile to make safeguard like human to against individuals. Where Human's life put an imperative part we give this robots to make more significant life. With a flamethrower a mechanical combustible gadget intended to extend a long, controllable stream of flame. They were utilized as a part of the model lab's to see much and obviously better utilizing Mosquito Hit as a gas for the task to toss the fire. Utilizing metal roller instrument with dc engine as pushing source as a front which is clarified beneath. Substantial Homemade solenoid to store the gas and discharge the factor as far as Pressure scale indicator (PSI) to dial up. A few flamethrowers venture a flood of touched off combustible fluid; some undertaking a long gas fire. That is very much connected here with substitution of Cartridge. To build up the application we utilized shroud programming to make the application controlled by means of serial communication.

II. SYSTEM ANALYSIS

The fundamental Objective of the MSR is controlled with the essential square Representation which is demonstrated as follows. This kind of robot is to use in safeguard task likewise where overwhelming flame structure.



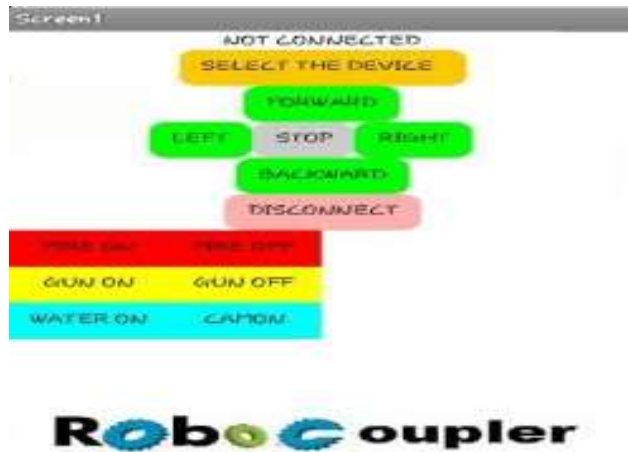


Fig 1. Block diagram

Fig 2. Android App

A. The hotspot for whole robot is Android gadget to control the fundamental trademark guideline in frame flag portrayal by means of ASCII characters. The above Block outline points that the communication from android versatile will transmit through ace Bluetooth application and Bluetooth slave that is HC-05 module is to get the transmitted ASCII and given to the controller so the controller legitimizes the work done to happen and relay triggers according to the need to happen. The voltage for whole framework is 12v 1.2Ah is included for whole beneficiary station.

B. Hardware required

- क Android Device
- क Arduino Board
- क HC-05 Bluetooth module
- क Relay Board
- क Battery 12v 1.2Ah

C. Software Requirement

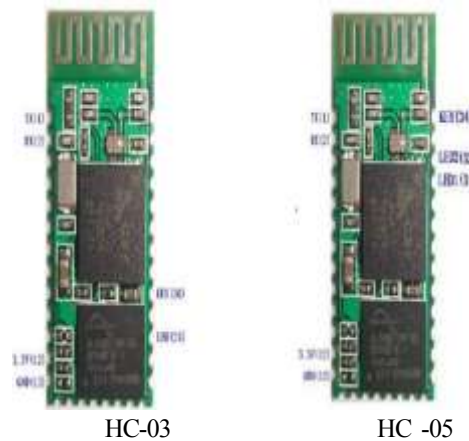
- क Arduino
- क Eclipse

1) *Android Device:* Android is a versatile working framework (OS) in light of the Linux piece and right now created by Google. With a UI in light of direct control, Android is composed principally for touch screen cell phones, for example, advanced cells and tablet PCs, with specific UIs for TVs (Android TV), autos (Android

Auto), and wrist watches (Android Wear). The Operating System utilizes touch inputs that freely compare to true activities, such as squeezing, swiping, tapping and turn around squeezing to control on-screen objects, and a virtual console. In spite of being basically intended for touch screen input, it additionally has been utilized as a part of amusement supports, advanced cameras, consistent PCs (e.g. the HP Slate 21) and different gadgets.

2) *HC-05*: Bluetooth Serial module's task needn't bother with drive, and can speak with the other Bluetooth gadget who has the serial. Yet, communication between two Bluetooth modules requires no less than two conditions:

- ☞ The communication must be between master and slave.
- ☞ The password must be correct.



However, the two conditions are not sufficient conditions. The slave module is also compatible with each other i.e, the function of HC-04 and HC-06, HC-03 and HC-05 are mutually compatible with each other. The command set of HC-03 and HC-05 are more flexible than HC-04 and HC-06's.

Generally, the Bluetooth of HC-03/HC-05 is recommended for the user.



Arduino	bluetooth
5V	VCC
Gnd	Gnd
D11	Rx
D10	Tx

Fig: 3:Bluetooth Pin diagram

3) *Arduino*:

The ace for robot is Arduino as a result of chief and controller relying on the client characterized charges to influence it to provoke with restrictive relying on the ASCII principles by utilizing communication called serial communication or UART. Serial Used for communication between the Arduino board and a PC or different gadgets. All Arduino sheets have no less than one serial port (otherwise called a UART or USART): Serial. It conveys on computerized pins 0 (RX) and 1 (TX) and additionally with the PC through USB. In this way, in the event that you utilize these capacities, you can't likewise utilize pins 0 and 1 for advanced information or yield. You can utilize the Arduino condition's worked in serial screen to speak with an Arduino board. Tap the serial screen catch in the toolbar and select a similar baud rate utilized as a part of the call to begin().The Arduino Mega has three extra serial ports: Serial1 on pins 19 (RX) and 18 (TX), Serial2 on pins 17 (RX) and 16 (TX), Serial3 on pins 15 (RX) and 14 (TX). To utilize these pins to speak with your PC, you will require an extra USB-to-serial connector, as they are not associated with the Mega's USB-to-serial connector. To utilize

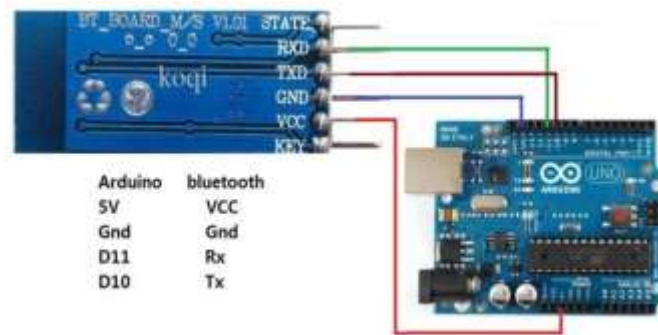


Fig 4: Bluetooth Communication with Arduino

them to communicate with an external TTL serial device, connect the TX pin to your device's RX pin, the RX to your device's TX pin, and the ground of your Mega to your device's ground.

D. Design of the Robot

The robot is totally composed with wood for harder development to make greater adaptability and PCB utilized for welding the Relay.

Relay Boards:

A relay is an electrically worked switch. Numerous relays utilize an electromagnet to mechanically work a switch, however other working standards are additionally utilized, for example, strong state relays. Relays are utilized where it is important to control a circuit by a low-control motion (with finish electrical detachment amongst control and controlled circuits), or where a few circuits must be controlled by one flag. Relays were utilized widely in phone trades and early PCs to perform legitimate tasks.

A sort of relay that can deal with the high power required to straightforwardly control an electric engine or different burdens is known as a temporary worker. Strong state relays control circuits with no moving parts, rather utilizing a semiconductor gadget to perform exchanging. Relays with adjusted working qualities and in some cases different working curls are utilized to shield electrical circuits from over-burden or blames; in present day electric power frameworks these capacities are performed by advanced instruments still called "defensive relays".

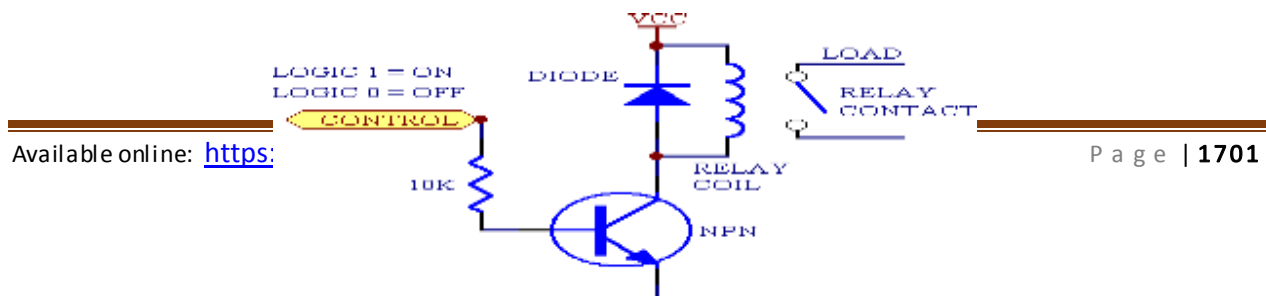


Fig 5: Relay Circuit diagram

A basic electromagnetic relay comprises of a curl of wire wrapped around a delicate iron center, an iron burden which gives a low hesitance way to attractive motion, a versatile iron armature, and at least one arrangements of contacts (there are two in the relay imagined). The armature is pivoted to the burden and mechanically connected to at least one arrangements of moving contacts. It is held set up by a spring with the goal that when the relay is de-invigorated there is an air hole in the attractive circuit.

In this condition, one of the two arrangements of contacts in the relay imagined is shut, and the other set is open. Different relays may have increasingly or less arrangements of contacts relying upon their capacity. The relay in the photo additionally has a wire associating the armature to the burden.



Fig 6: Relay Board

Mosquito Hit:

Mosquito hit is utilized to slaughter a few creepy crawlies yet it is exceptionally hot in fluids which give the combustibile when you keep fire before the splashing tip. So we utilized this to create fire when we control through mobile and



Fig 7: Hit for Producing Fire

Fire happens normally because of volcanic action, shooting stars, and lightning strikes. Numerous creatures know about flame and adjust their conduct to it. Plants, as well, have adjusted to the normal event of flame (see Fire nature). Hence, people experienced and knew about flame, and later its gainful uses, some time before they could make fire on request. The first and least demanding approach to make a fire would have been to utilize the hot fiery remains or consuming wood from a timberland or grass fire, and after that to keep the fire or coals going for whatever length of time that conceivable by including more wood and plant materials ordinarily every day.

Cycle Pump:

A bicycle pump is a sort of positive-dislodging pump particularly intended for expanding bicycle tires. It has an association or connector for use with either of the two most regular sorts of valves utilized on bicycles, Schrader or Presta.

A few fundamental composes are accessible:

- ☒ Floor models or track pumps
- ☒ Frame mounted
- ☒ Compact or mini
- ☒ Foot operated
- ☒ Double action

In its most fundamental frame, a bicycle pump capacities by means of a hand-worked cylinder. Amid the up-stroke, this cylinder draws air through a restricted valve into the pump all things considered. Amid the down-stroke, the cylinder at that point dislodges the air from the draw into the bicycle tire. Most floor pumps, likewise generally called track pumps, have a worked in pressure measure to demonstrate tire pressure. Electrically-worked draws proposed to expand auto tires (as accessible in most administration stations) can on a fundamental level be utilized to swell a bicycle tire if the correct kind of association is accessible. Some such pumps are intended to cut off before an appropriate pressure (significantly higher for a bicycle than an auto tire), and will much underinflated the tire. Others may not cut off, but rather convey a high rate of stream to fill the bigger auto tire, with a danger of overinflating and blasting a bicycle tire unless it is ceased with part second planning.

This pump is used here to store the air as appeared in Fig: since we have to open with most elevated PSI to influence the shot to drive speedier in this procedure we to require pushing forces called air. So relying on this requirement we used it for GUN.



Fig 8: AIR pump



Fig 8: Air Storage with Seal

Submersible Motor:

A submersible pump is a kind of hermetically fixed pump device that works by pushing, as opposed to pulling, water amid its pumping procedure. It can work in this way since, similar to the name proposes, the pump is completely submerged in the fluid to be pumped. Here the motivation behind using the 12v DC submersible engine is to stop the fire any place we require by means of android control.

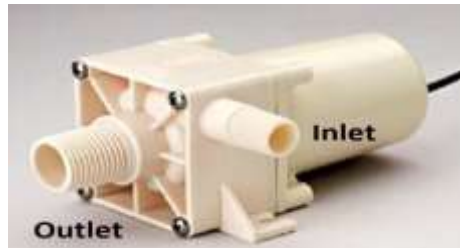


Fig 9: Submersible Pump

The coco cola bottle is used for putting away the water and the submersible engine has two ports Inlet and outlet. Channel is utilized to embed into the bottle to influence the water to course through it. At the point when engine begins turning it send the water through outlet.



Fig 10: 12V Submersible motor

The submersible pumps utilized as a part of ESP establishments are multistage outward pumps working in a vertical position. In spite of the fact that their constructional and operational highlights experienced a ceaseless advancement throughout the years, their essential operational standard continued as before. Delivered fluids, subsequent to being subjected to awesome radial forces caused by the high rotational speed of the impeller, lose their dynamic vitality in the diffuser where a transformation of active to pressure vitality happens. This is the primary operational component of outspread and blended stream pumps.

DC Motors:

A DC engine depends on the way that like magnet shafts repulses and not at all like attractive posts pulls in each other. A curl of wire with a present going through it produces an electromagnetic field lined up with the focal

point of the loop. By exchanging the current on or off in a loop its magnet field can be turned on or off or by exchanging the bearing of the current in the curl the course of the created attractive field can be exchanged 180°. A straightforward DC engine normally has a stationary arrangement of magnets in the stator and an armature with a progression of at least two windings of wire wrapped in protected stack openings around press post pieces (called stack teeth) with the finishes of the wires ending on a commutator. The armature incorporates the mounting orientation that keep it in the focal point of the engine and the power shaft of the engine and the pundit associations. The twisting in the armature keeps on circling the distance around the armature and uses either single or parallel conveyors (wires), and can circle a few times around the stack teeth. The aggregate sum of current sent to the loop, the curl's size and what it's wrapped around manage the quality of the electromagnetic field made. To stay aware of the quick pace of changing innovation an upward similarity prerequisite will guarantee that the most recent in sensors, engines, processors, and batteries will work without real adjustment.

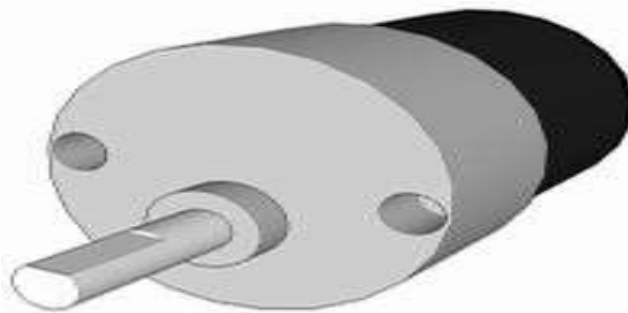


Fig 11: Side shaft DC motor.

Motor Specifications are 6kg Torque 300rpm and voltage of 12v DC, Current is 1.2ah

Overall Diagram:

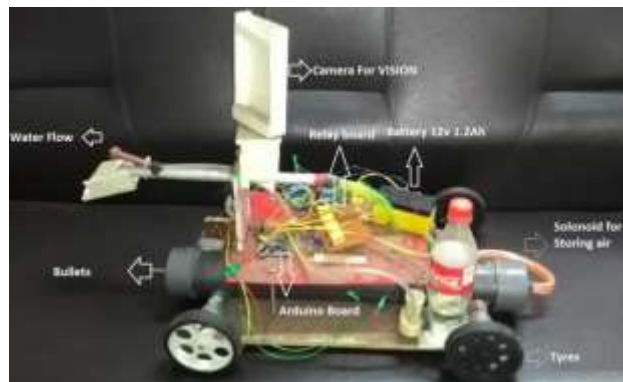


Fig 12: Components Utilised

III.

CONCLUSIONS

The primary mission for such vehicles is mine clearing operations. He believes that current robotic insertion technology has advanced sufficiently enough that modifying existing vehicles with teleportation has the least acquisition risk, puts a capability into the hands of the user today, and has the greatest potential to field future

robotic technology. These systems are greatly sought after by the Army Corps.

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