Design and Implementation of Robotic Floor Wiper

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ABSTRACT:

Today's era is marching towards the rapid growth of all sectors. This project details the development of design and implementation of robotic Floor wiper. This project is used for domestic and industrial purpose to clean the surface automatically. When it is turned ON, it wipes the water by moving all around the surface (floor or any other area) as it passes over it. The Arduino is used to drive the motors and the cleaning unit and also a Bluetooth module to control its motion. For Power Supply two separate batteries are used. One is used to turn on the cleaning unit and other is used to provide power to the motors. This machine reduces the efforts and can be useful in improving the lifestyle of mankind. It is aimed to make the device economic and feasible for the economic class society.

Keywords: Arduino, Bluetooth module, Cleaning unit

Introduction:

Cleaning is that the essential need of the present generation. Basically, in household floors the ground has got to be cleaned regularly. Different techniques are accustomed clean the various varieties of surfaces. the explanations for floor cleaning are Injuries because of slips on the floors are explanation for accidental injuries or death. Bad practice in floor cleaning could be a major reason for accidents. To improve the appearance of the ground.

- Scattered pieces of remains are to be removed.

- Substances that causes allergyand dusts are to be removed.

- to make the environment clean and sanitary (kitchens).

Traction should be maintained at optimum level, in order that no slip will occur. Floor cleaning is achieved by different technique which could be of various kinds. differing kinds of floors need different kind of treatment. the ground should be totally dry after the cleaning process. Otherwise, it should end in hazard. On some floor's sawdust is employed to soak up every kind of liquids. This ensures that there'll no need of preventing them from spill of. The sawdust must be swept and replaced daily. This process remains employed in butchers but it had been common in bars within the past. In some place's tea leaves also are wont to collect dirt from carpets and also for unpleasant smell removing purposes. differing types of floor cleaning machines are available today like floor buffers, automatic floor moppers and extractors that may clean the majority sorts of hard floors or carpeted flooring surfaces in very less time than it'd have taken using traditional cleaning methods.

BLOCK DIAGRAM:
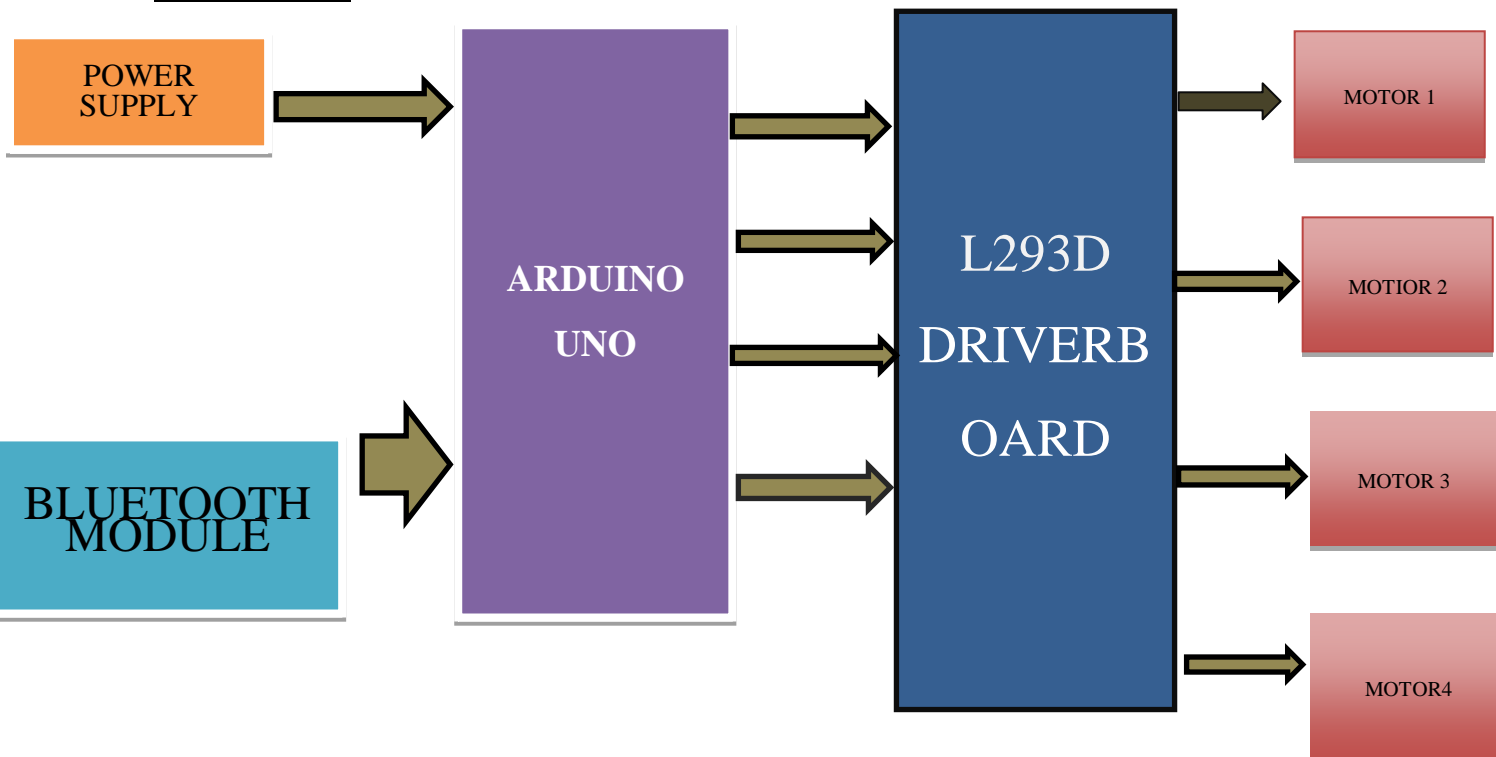
II. Explanation of the block diagram:

- **ARDUINO UNO:**

The Arduino Uno is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an in-circuit system programming (ICSP) header, and a reset button. It contains everything needed to support the microcontroller. It is simply connected to a computer with a USB cable or powered with an AC-to-DC adapter or battery to get it started.Uno means one in Italian and was chosen to mark the release of Arduino Software (IDE) 1.0. The Uno board and version 1.0 of Arduino Software (IDE) were the reference versions of Arduino, now evolved to newer releases. The Uno board is the first in a series of USB Arduino boards, and the reference model for the Arduino platform.Arduino is a prototype platform (opensource) based on an easy-to-use hardware and software. It consists of circuit board, which can be programmed (it means microcontroller) and a readymade software called Arduino IDE (integrated development environment), which is used to write and upload the computer code to physical board. By responding to sensors and inputs,the Arduino is able to interact with a large array of outputs such as LEDs, motors and displays. Because of its flexibility and low cost and has become a very popular choice for makers and makerspaces looking to create interactive hardware projects.

- **MOTOR DRIVER:**

This L293D driver module is a medium power motor driver perfectDC Motors and Stepper Motorsfor driving. It uses the popular L293D motor driver IC. It can drive 4 DC motors in one direction, or drive 2 DC motors in both the directions.

- **BLUETOOTH MODULE:**

The Bluetooth Module "HC-05" can act as a add two-way (full-duplex) wireless functionality to the projects. You can use this module to communicate between two microcontrollers like Arduino or communicate with any device with Bluetooth functionality like a Phone or Laptop. There are many android applications that are already available which makes this process a lot easier. The module communicates with the help of USART at 9600 baud rates hence it is easy to interface with any microcontroller that supports USART. We can also configure the default values of the module by using the command mode.

- **POWER SUPPLY:**

A **power supply** is an electrical device that supplies electric power to an electrical load. The main purpose of a power supply is to convert electric current from a source to the correct voltage, current, and frequency to power the load. As a result, power supplies are sometimes referred to as electric power converters.

- ### MOTORS:

A geared motor is a component whose mechanism adjusts the speed of the motor**,** leading them to operate at a certain speed. geared motor have the ability to deliver high torque at low speeds, as the gearhead functions as a torque multiplier and can allow small motors to generate higher speeds.

III. Working:

When it is turned ON, it wipes the water by moving all around the surface (floor or any other area) as it passes over it. The Arduino is used to drive the motors and the cleaning unit and also a Bluetooth module to control its motion. For Power Supply two separate batteries are used. One is used to turn on the cleaning unit and other is used to provide power to the motors. This machine reduces the efforts and can be useful in improving the lifestyle of mankind. It is aimed to make the device economic and feasible for the economic class society.
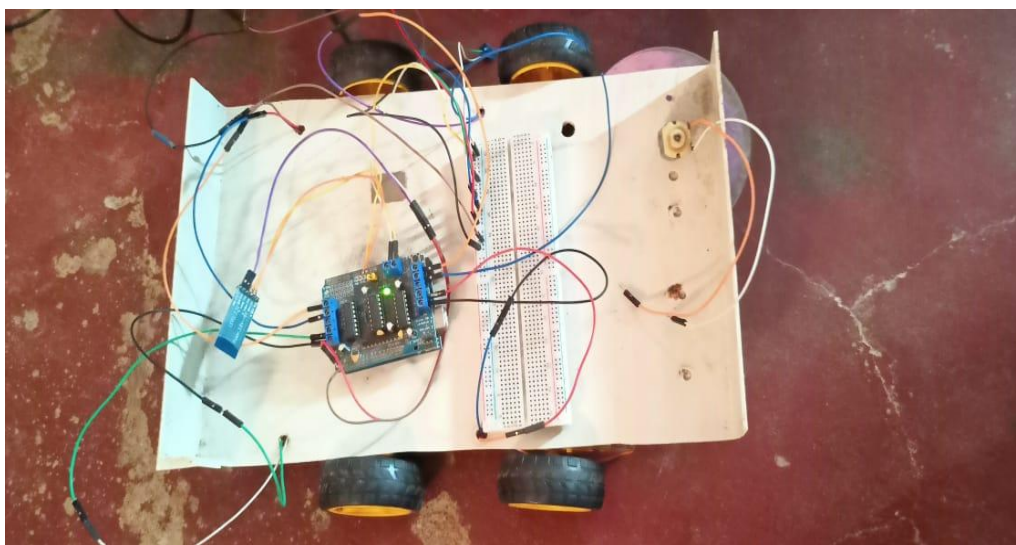
IV. Result:

FIG: Design and implementation of robotic floor wiper

It is a low running cost machine. The Purpose of this project is to build a robotic floor wiper, which is used for cleaning and sanitation purpose. A machine has high efficient design and consumes low power

V. APPLICATIONS:

Floor cleaning robot is developed to make floor cleaning process easier. This can be used in power plant like nuclear power plants because in those places the harmful radiations are placed and cause serious health problems. To avoiding these, we can send a robot to perform the whole operation. In colleges and other places where large floor area is present, we can use floor cleaning robot to clean those areas. In industries we required cleaning in large areas as well as small areas and both areas can be clean without need of personnel. By this we can save money and time.

VI. CONCLUSION:

In our paper, we reviewed some references which have worked on this project. In our paper we introduced Design and implementation of robotic floor wiper and with cost effective components. Therobot thus developed is fully operational and gives desired output. this robot has the capability tomove in the direction of dust and thus resulting in better cleaning of floors. This robot is cheap and easy to use. The low cost of the project is a primary important factor in this project. As a whole this is a successful robotic floor wiper developed that can be used in current house-hold.

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