Smart Vaccum Robot

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Abstract- *In recent years, people are becoming more career oriented and due their irregular working schedule it becomes challenging to maintain both home and office together especially for women. Most of the cases, they hire the cleaners to clean the home, office etc., but no trust on cleaners. To overcome the problem, Smart Vacuum Cleaner has come up with the more advancement in technology and is designed to automate cleaning process. The application is used to initiate the robot. The navigation of the robot is according to the S curve planning and with the help of sensors it detects and avoids obstacles. To save the time of the people the smart vacuum cleaner helps to clean the surface of the floor without any human intervention.*

Keywords- IOT, Mobile, Bluetooth, Dust particle

I. INTRODUCTION

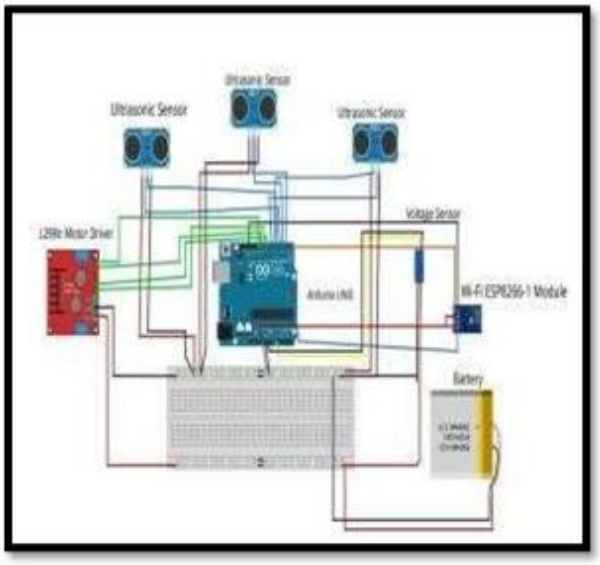
The Internet of things (IoT) is a network of physical devices that are embedded with electronics, sensors, software and network connectivity to share the data. The IOT gives access to sense and control the objects remotely in a network which gives direct integration of physical world into computer based systems. The robotics details with design, operations, construction and application of robots. It also details with computer system for the control, information processing and sensory feedback. The Internet of things and Robotics have been hand holding each other contributing to individual growth and development.

The laser mapping technique has few drawbacks such as it requires high-end hardware for data processing and purchasing of new software that uses clouds. The obstacle avoidance based cleaning robots are relatively time consuming and less energy efficient due to random cleaning but less costly. The countries that don't manufacture Cleaning robots have to be imported from other country so the cost increases. To provide a substantial solution to the problem of manufacturing robotic cleaner utilizing local resources while keeping it low costs.

To provide a substantial problem solving for manufacturing cleaning robot can be built by utilizing local resources and by keeping it low costs. The Smart vacuum cleaning is built based on obstacle avoidance with low cost. This work gives the design and development of smart vacuum floor cleaning robot. The robot can be used in domestic and industrial purpose for cleaning the floor periodically without human intervention.

CONSTRUCTION

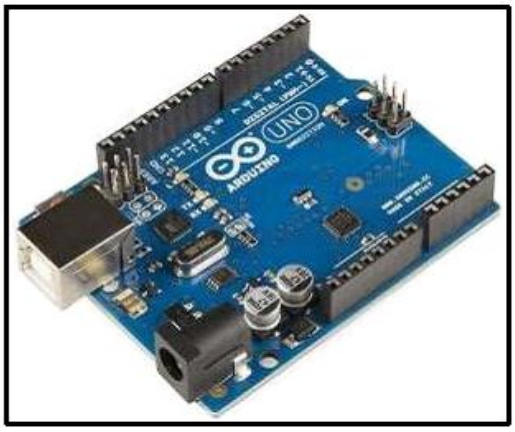
The creation of a smart vaccum robot for specially elder womes Arduino entails a number of procedures and elements, such as:



Hardware Technology:

1) **Arduino:**

The Arduino Uno is an open-source microcontroller board designed for beginners and hobbyists. It is equipped with digital and analog input/output pins that allow users to connect various sensors and actuators to the Arduino Uno is the successor of the Arduino Duemilanove and remains the most popular board in the Arduino family due to its ease of use, affordability, and vast community support.



2) **Ultrasonic Sensors:**

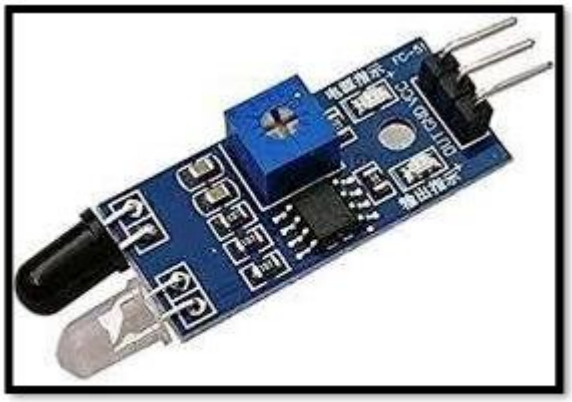
The ultrasonic sensor is a non-contact type of sensor used to measure an object's distance and velocity. This sensor operates on sound wave property to measure the velocity and distance of the object of ultrasonic sensor.

An ultrasonic sensor is an electronic device that measures the distance of a target object by emitting ultrasonic sound waves, and converts the reflected sound into an electrical signal. Ultrasonic waves travel faster than the speed of audible sound (i.e. the sound that humans can hear). Ultrasonic sensors have two main components: the transmitter (which emits the sound using piezoelectric crystals) and the receiver (which encounters thesound after it has travelled to and from the target).

3) **IR Sensor:-**

An Infrared light-emitting diode (IR LED) is a specialpurpose LED that emits infrared rays ranging from 700 nm to 1 mm wavelength. Different IR LEDs may produce infrared light of differing wavelengths, just like other LEDs produce light of different colors.

IR sensor is a device that uses infrared technology to detect objects or changes in the environment. IR sensors can detect a wide range of physical properties such as temperature,



motion, and proximity

4) **Jumper Wires:**

Jump wires, also known as DuPont wires, are electrical wires with connectors on each end that enable the creation of circuits without soldering. They are frequently used on breadboards, which have slots specifically designed to receive these connectors. Different connector types exist, including solid tips for breadboards and crocodile clips for temporary connections to various components. Additionally, jump wires come in various sizes and colors, aiding in distinguishing different signals within a circuit.

5) **Connecting Wire**

and power your projects. It's a USB cable with a standard Type-A connector for your computer and a Type-B (or C on newer boards) connector for your Arduino. While any matching USB cable technically works, consider cable length, quality, and features when choosing one. You can find them online or at electronics stores.

Here are some quick tips: handle with care, unplug safely, and try a different cable or USB port if you have connection issues.

With a reliable cable, you're all set to create amazing Arduino projects!

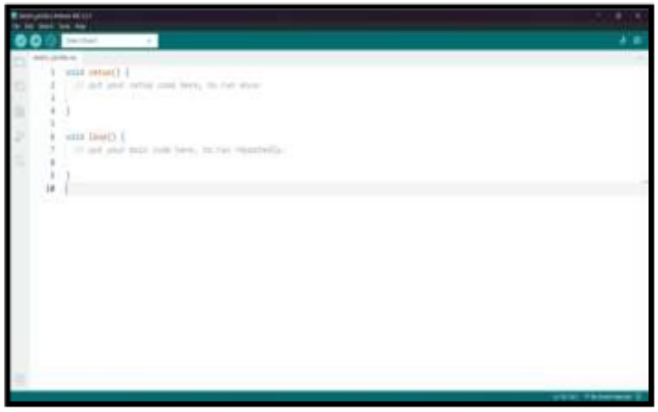
Software Technology:

1) **Arduino IDE:**

The Arduino Integrated Development Environment - or Arduino Software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino hardware to upload programs and communicate with them.

Programs written using Arduino Software (IDE) are called sketches. These sketches are written in the text editor and are saved with the file extension .ino. The editor has features for cutting/pasting and for searching/replacing text. The message area gives feedback while saving and exporting and also displays errors. The console displays text output by the Arduino Software (IDE), including complete error messages and other information. The bottom righthand corner of the window displays the configured board and serial port. The toolbar buttons allow you to verify and upload programs, create, open, and save sketches, and open the serial monitor.

The Arduino Software (IDE) uses the concept of a sketchbook: a standard place to store your programs (or sketches). The sketches in your sketchbook can be opened from the File > Sketchbook menu or from the Open button on the toolbar. The first time you run the Arduino software, it will automatically create a directory for your sketchbook. You can view or change the location of the sketchbook location from with the Preferences dialog.



II. RESULT, CONCLUSION AND FUTURE SCOPE

RESULT:

While building an smart vaccum robot system with Arduino can be an educational project for learning about electronics and programming, it is **strongly advised against** implementing the vaccum cleaner for specially elder womens.

Future Scope:

A project to build an anti-sleep alarm system using Arduino has great potential to improve driver safety. Here's a breakdown of the scope:

Main functionalities:

- **Drowsiness detection:** This will be the core function achieved by the eye sensor mounted on the driver's spectacles. The sensor will monitor eye blinks and detect extended closure (e.g., exceeding 3 seconds) as an indicator of drowsiness.

- **Alarm triggering:** When drowsiness is detected, the system will trigger an alarm to alert the driver. This could involve sounds (buzzer), vibrations (motor), or lights (LEDs).
- **Vehicle deactivation (optional):** This is a more advanced feature that involves interfacing with the vehicle's control systems. If the driver remains unresponsive to the alarm after a set time, the system could initiate actions like slowing down, activating hazard lights, or even coming to a controlled stop.

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