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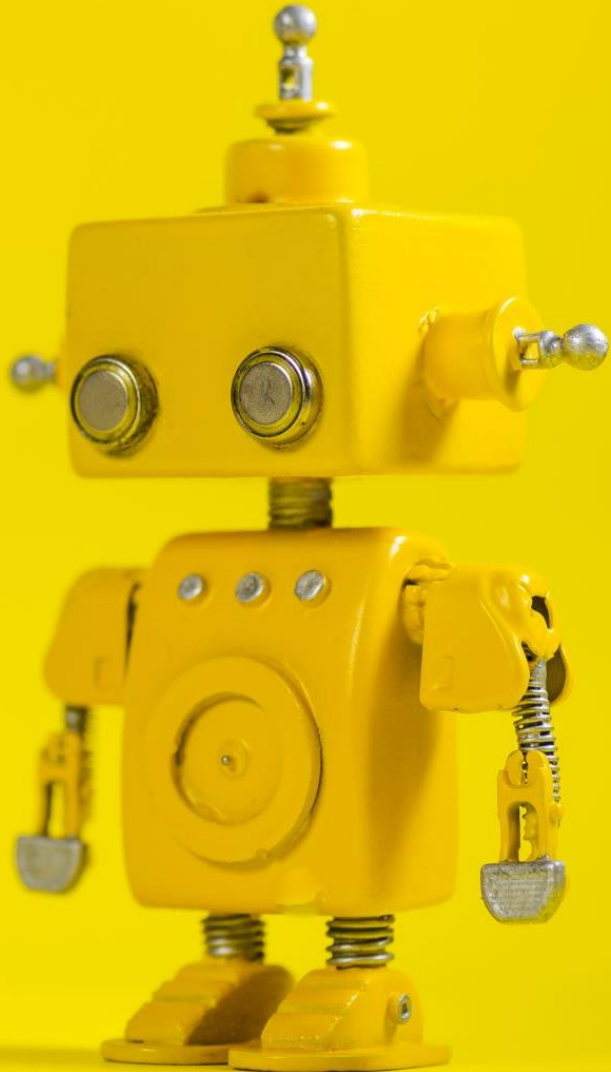
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# **Autonomous vacuum cleaner**





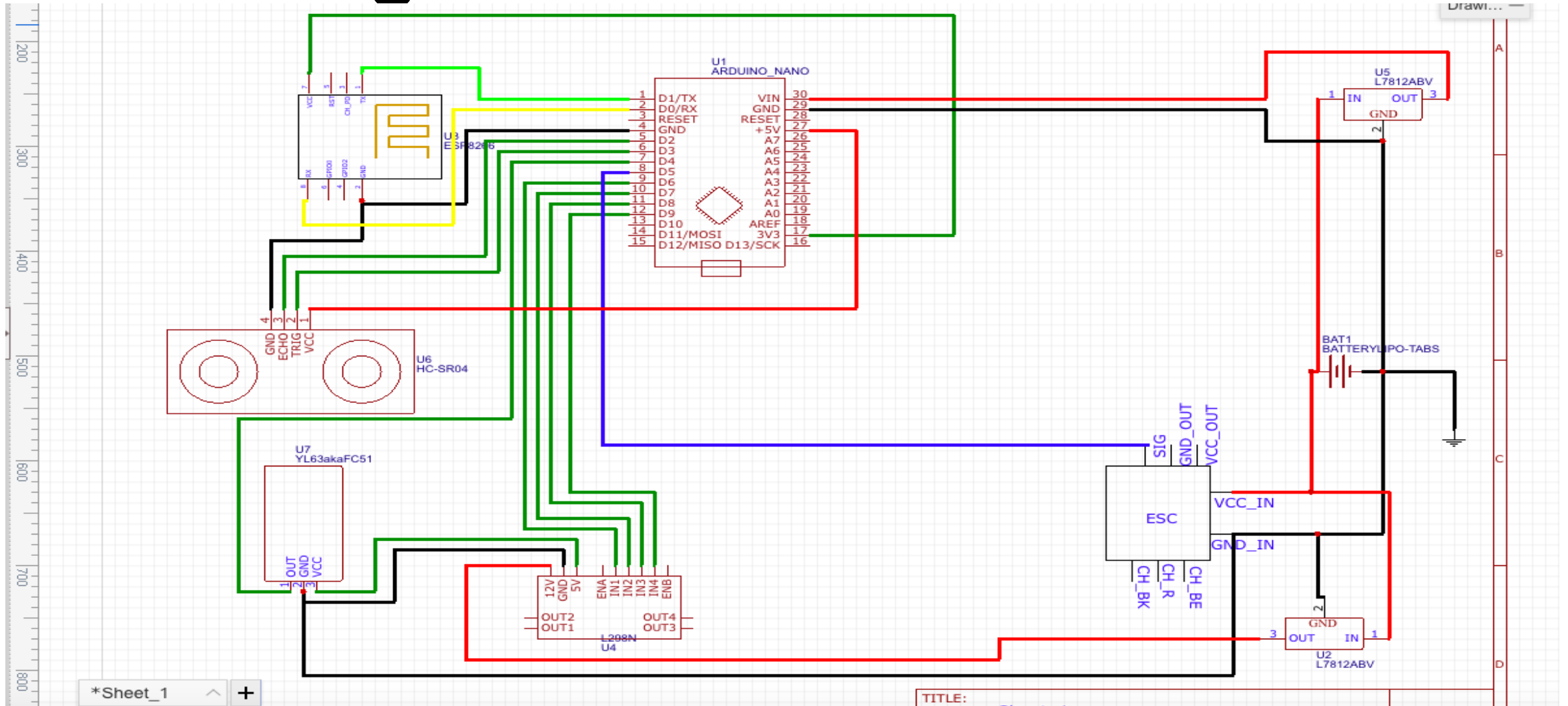
# Definition

- + A robotic vacuum cleaner, often called a roomba as a generic trademark, is an autonomous robotic vacuum cleaner which has intelligent programming and a limited vacuum floor cleaning system.

## Abstract

Modern households are becoming more automated thereby delivering convenience and reducing time spent on house chores. While vacuum cleaners have made home cleaning easier, they are largely noisy and bulky for everyday use. It is therefore *sine qua non* to improve the technology of vacuum cleaning to reduce these deficiencies. Here, we report the development of a compact and efficient vacuum cleaner robot for potential office and home use. The developed robot is disk-shaped, equipped with vacuuming and cleaning technology and controlled by atmega328p microcontroller. It sucks dirt we use BLDC motor. The robot navigates via two motor shield controlled rear wheels and a front caster wheel which also governs its turning. 1 HC-SR04 ultrasonic sensor, detect obstacles and subsequently help the robot navigate and the robot have manual control mode. We use ESP8266 wifi module in master mode connect mobile to the robot and in slave mode connect and control the robot via internet. The robot is powered by 1 Lipo batterie (11.1 V DC), rechargeable via an balance charger. It is 12 cm tall making it easy for maneuvering its environment. Because of the light weight battery, cardboard based dustbin and small blower used, its weight is about 1.5 kg. With this capability, the device will be deployed for office and home use thereby making cleaning a fully autonomous duty.

# Circuit Diagram



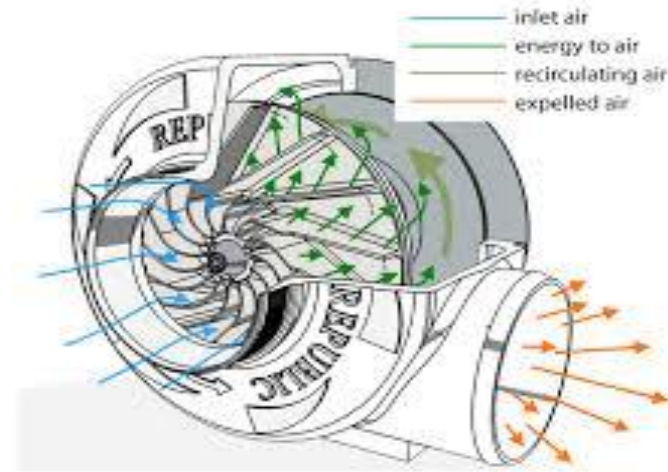
- + ESC- An **ESC** or an Electronic Speed Controller controls the brushless motor movement or speed by activating the appropriate MOSFETs to create the rotating magnetic field so that the motor rotates. The higher the frequency or the quicker the **ESC** goes through the 6 intervals, the higher the speed of the motor will be.
- + BLDC Motor- A **brushless DC motor** (also known as a **BLDC motor** or **BL motor**) is an electronically commuted DC **motor** which does not have brushes. In brushless **motors**, permanent magnets rotate around a fixed armature and overcome the problem of connecting current to the armature.

# Components

- + **Arduino-** Arduino is an open-source electronics platform based on easy-to-use hardware and software.
- + ESP8266-The **ESP8266** is a low-cost Wi-Fi microchip, with a full TCP/IP stack and microcontroller capability, produced by Espressif Systems in Shanghai, China. ... This **small** module allows microcontrollers to connect to a Wi-Fi network and make **simple** TCP/IP connections using Hayes-style commands.

- + HC-SR04- **HC-SR04** is an ultrasonic sensor mainly used to determine the distance of the target object. It measures accurate distance using a non-contact technology - A technology that involves no physical contact between sensor and object.
- + L293D Motor Driver- The **L293D** is a popular 16-Pin Motor Driver IC. As the name suggests it is mainly used to drive motors. A single **L293D** IC is capable of running two DC motors at the same time; also the direction of these two motors can be controlled independently.





Using microcontroller and ESC we can control the bldc motor so that we can easily control suction power.



ESP8266 as Slave



ESP8266 as Master