

Automatic Opening and Closing of Door with PIR sensor

The automatic door opening systems are used in commercial buildings, shopping malls, theatres, etc. These systems are used to open the door when a person comes near to the entrance of the door and closes it after he moves away from the door or after entering into the door. There are various kinds of sensors available in the market to make such types of systems such as Radar sensors, PIR sensors, **Infrared sensors**, and Laser sensors, etc. This project uses a **PIR sensor to open or close the door automatically** which senses the infrared energy produced by the human body. When someone approaches the door, the IR energy sensed by the PIR sensor changes and activates the sensor to open and close the door automatically. Further, the signal sent to the microcontroller to control the door.

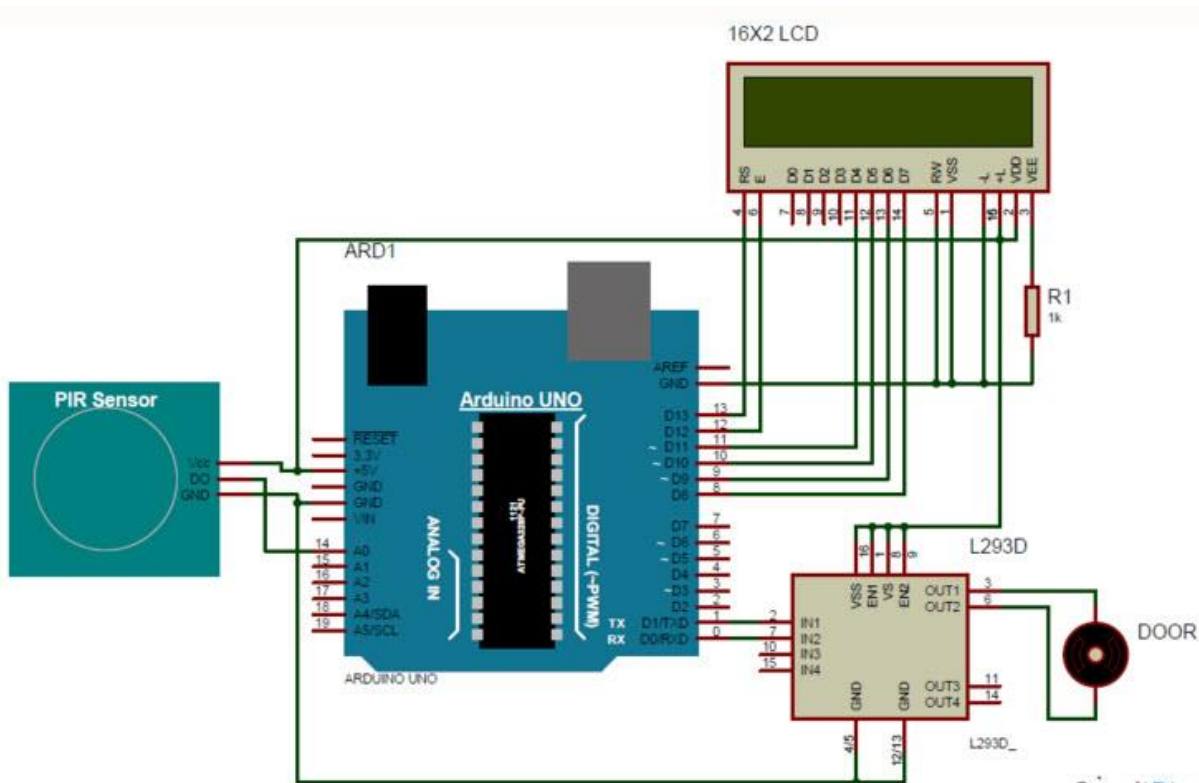
Automatic Garage Door Opening System

Opening and closing of doors have been always a boring job, especially in places where a person is always required to open the door for visitors such as hotels, shopping malls, and theaters. Here is a solution to open and close the door i.e, movement sensed automatic door opening and closing system. This project is used to sense any body movement near the door. This is achieved with the help of a **passive infrared sensor**. Generally, a human body emits infrared energy which is detected by the PIR sensor from a particular distance. This signal which is detected by the sensor is fed to a controller to function a door motor through motor driver IC. When a body reaches the operating range of the PIR sensor, it sends a signal to the micro controller to open and close the door.



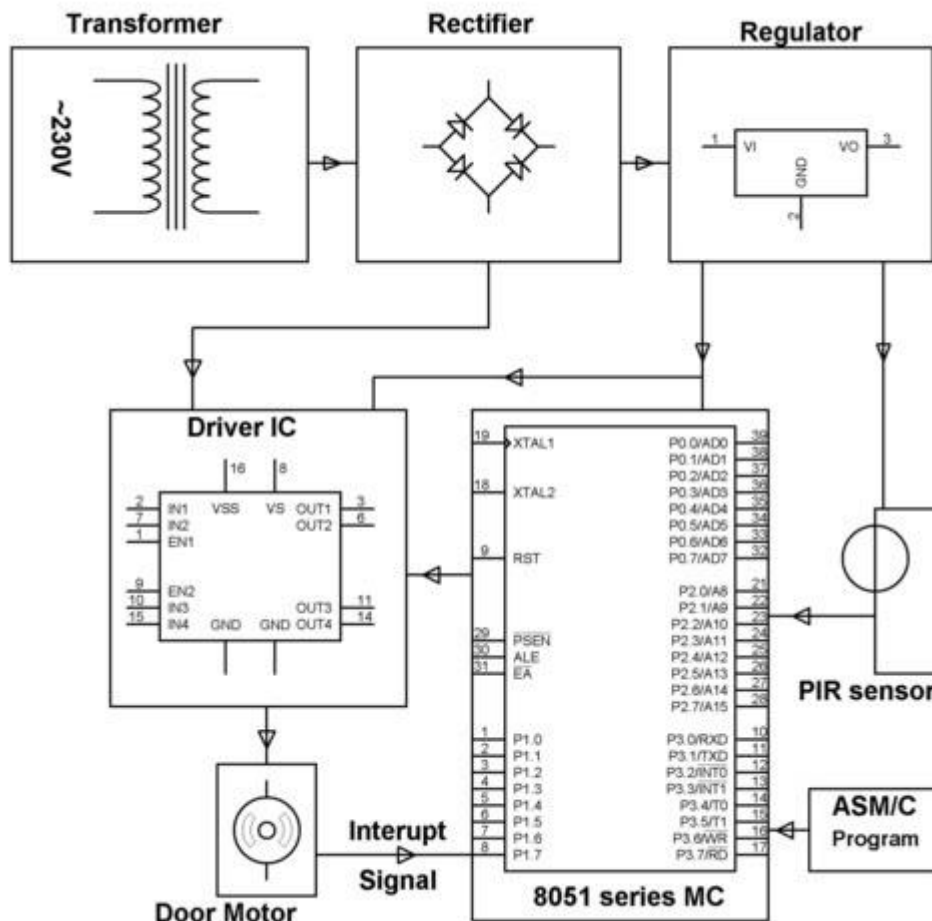
Automatic Door Opening System Circuit

The circuit diagram of an automatic door opening and closing system is shown below. The circuit is built with an [Arduino UNO](#), 16×2 LCD, PIR sensor, connecting wires, [breadboard](#), 1 k resistor, power supply, motor driver and DVD.

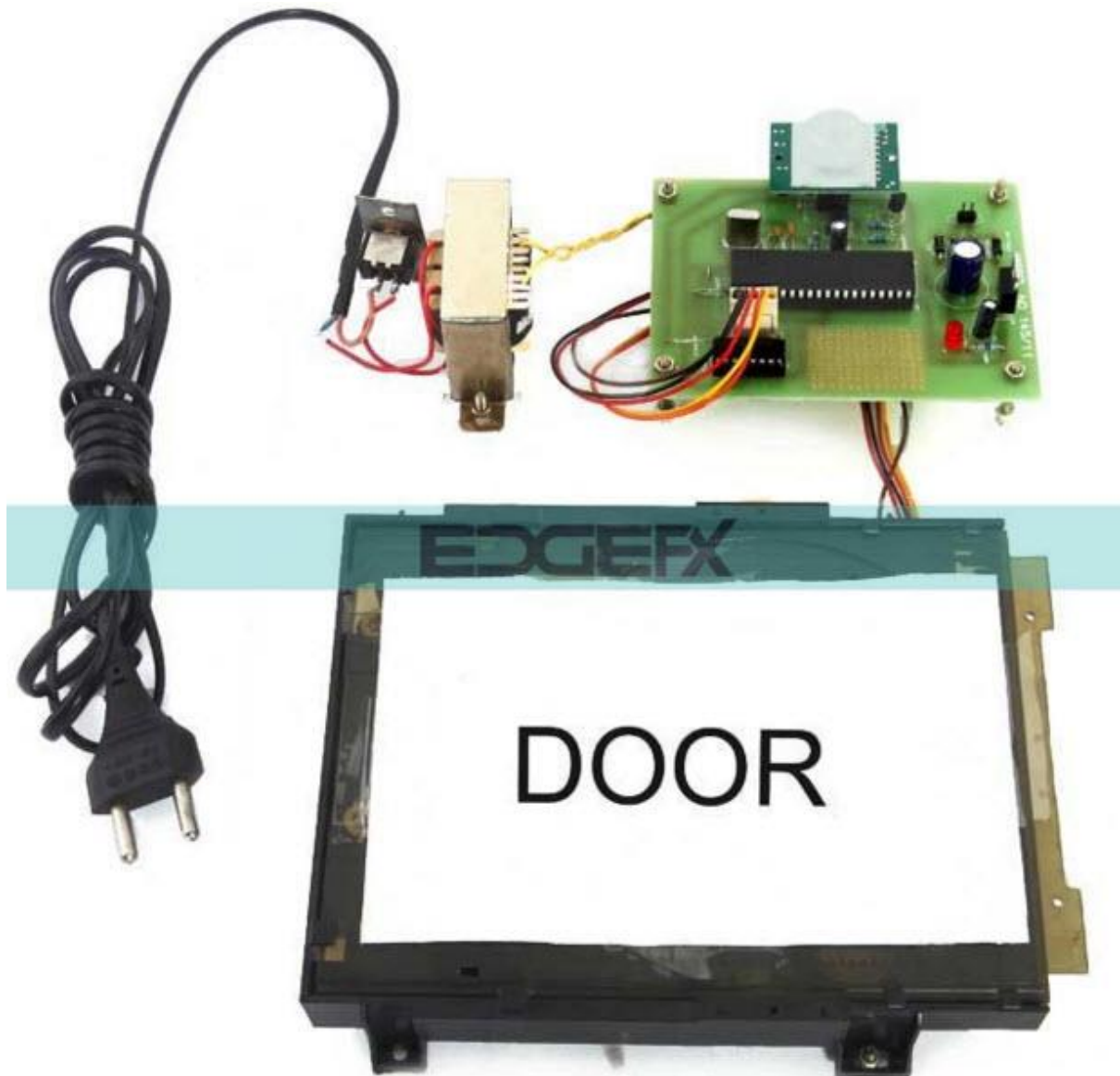


Automatic Door Opening System and It's Working

This automatic door opening system project is used to open and close the door automatically using the PIR sensor. The hardware and software requirements of this project mainly include; 8051 series microcontroller, transformer, PIR sensor, the motor with sliding door, motor driver IC, diodes, resistors, capacitors, crystal and transistor, [Keil compiler](#), language: [embedded C Or assembly](#).



This proposed system uses a PIR sensor to sense the human body movement near to the door. Generally, a human body emits infrared energy in the form of heat, which is detected by the PIR sensor from a particular distance. Then the sensing signal is fed to an **8051 microcontroller** to function a door motor via motor driver IC.



Thus, this is all about the automatic door opening system with movement sensed and it's working. We hope that you have got a better understanding of this concept.

Some pictures of our project:-

