













PIR sensors. The fan usually stops directly or nearly in front of the person, as desired. In addition, the sensing distance is quite good and can be up to 3 meters. The field of view for the sensors used, D203B PIR Since we covered half the sensor’s window to increase the sensor’s sensitivity we also halved its field of view. Thus, motion outside this field of view will most likely not be detected. Although the sensors almost always detect humans, other sources of heat, especially in the lab, will occasionally trigger the sensors as well. The main sources are electrical equipment in the lab closely situated by the PIR sensors.

**2.4.2 Smart Surveillance System Using PIR Sensor Network and GSM**

International Journal of Advanced Research in Computer Engineering & Technology (IJARCET) has been published a paper in January 2015 about Smart Surveillance System Using PIR Sensor Network and GSM. This security system is based on the embedded system along with GSM and sensor networks. The human movement is detected using the PIR sensors. In this time, the system triggers an alarm detecting the presence of person in a specific interval of time and simultaneously sends the how many persons are intruder via message to the SMS through GSM Modem. When the security system is activated, the CCTV camera is activated. This highly reactive approach has low computational requirement. Therefore it is well suited for home surveillance system. This surveillance security system implemented using PIC micro controller, camera, GSM and sensors. Surveillance is a field of security system which is used to monitoring of the behavior, activities, or other changing information, usually of people for the purpose of influencing, managing, directing, or protecting them. It is used home, office, factory or vehicle monitoring and image identification, but this system requires a high performance core, which works against some advantages of embedded systems, such as low power consumption and low cost.

**iii. Proposed system**

**Block diagram of the proposed System**

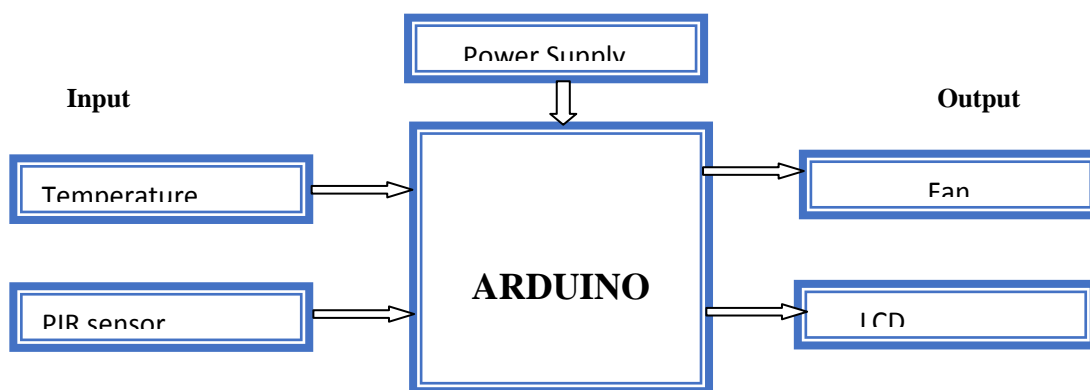


Fig. 8: Block diagram of the proposed system

**Circuit diagram of the proposed system**

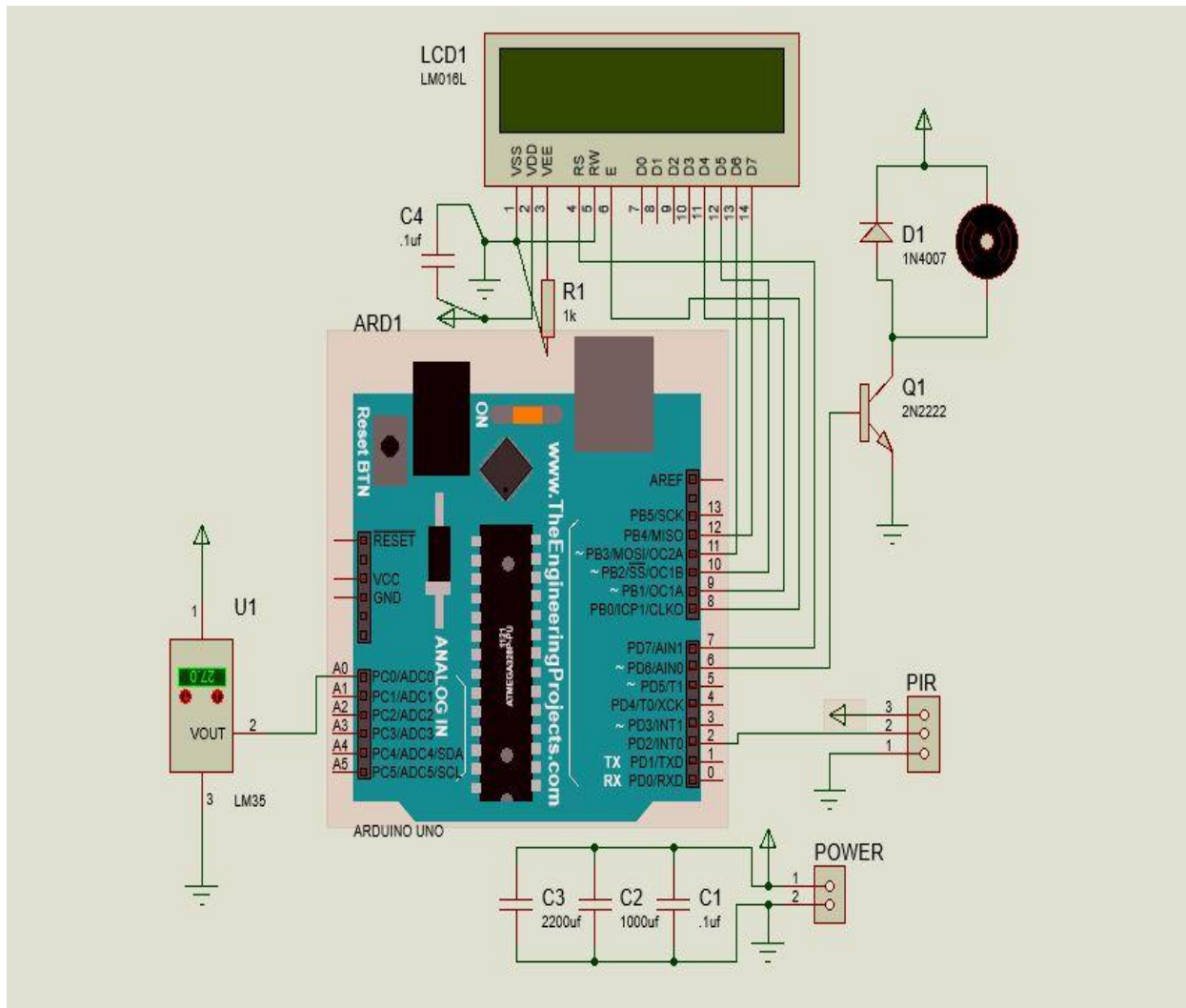
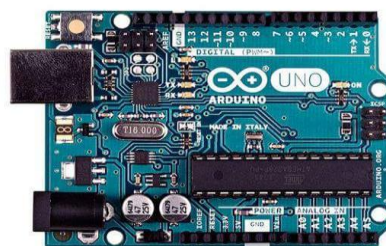


Fig.9: Circuit diagram of proposed system

**iv. Necessary Components**

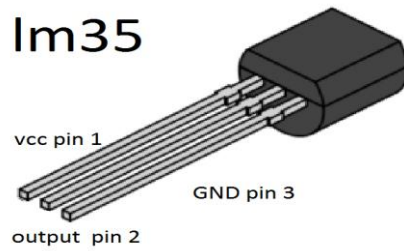
**Arduino UNO**



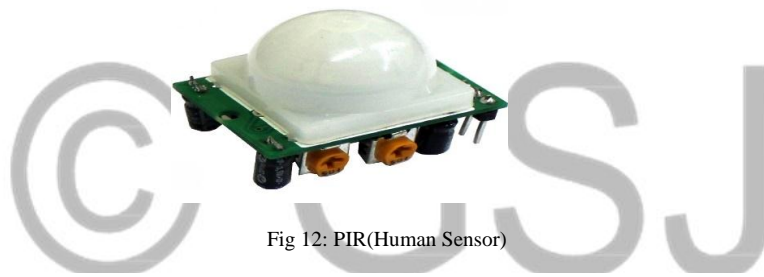
**Fig 10: Arduino UNO**

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.



**LM35 (Temperature Sensor)****Fig 11:LM35 (Temperature Sensor)**

**LM35** is a precision IC temperature sensor with its output proportional to the temperature (in °C). The sensor circuitry is sealed and therefore it is not subjected to oxidation and other processes. With **LM35**, temperature can be measured more accurately than with a thermistor. It also possess low self-heating and does not cause more than 0.1 °C temperature rise in still air. The operating temperature range is from -55°C to 150°C. The output voltage varies by 10mV in response to every °C rise/fall in ambient temperature, *i.e.*, its scale factor is 0.01V/°C.

**PIR(Human Sensor)****Fig 12: PIR(Human Sensor)**

**(Passive InfraRed sensor)** A device used to detect motion by receiving infrared radiation. When a person walks past the sensor, it detects a rapid change of infrared energy and sends a signal. PIR sensors are used for applications such as automatically turning on lights when someone enters a room or causing a video camera to begin operating. This passive method is not as reliable as active motion sensors that either bounce back a radar signal or transmit light to a photo detector in the distance. It's range up to **10 meters** at an angle of **± 15 degrees**.

**Motor 1.5 volt-6.7 volt****Fig 13: Motor 1.5 volt-6.7 volt**

It is machine, especially one powered by electricity or internal combustion that supplies motive power for a vehicle or for some other device with moving parts.

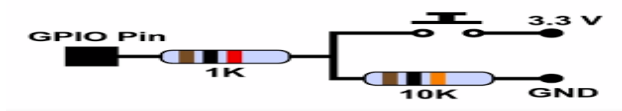
**Resistor(1K,10K)**

Fig 14: Resistor (1K,10K)

A resistor is an electrical component that limits or regulates the flow of electrical current in an electronic circuit. Resistors can also be used to provide a specific voltage for an active device such as a transistor.

**1U F,1000UF, 2200UF capacitor**

Fig 15: 1U F,1000UF, 2200UF capacitor

A capacitor is a two-terminal, electrical component. Along with resistors and inductors, they are one of the most fundamental **passive** components we use. You would have to look very hard to find a circuit which didn't have a capacitor in it. What makes capacitors special is their ability to **store energy**

**2N2222 Transistor**

Fig 16: 2N2222 Transistor

A transistor is a device that regulates current or voltage flow and acts as a switch or gate for electronic signals. Transistors consist of three layers of a semiconductor material, each capable of carrying a current.

**1N 4007 Diode**

Fig 17: 1N 4007 Diode

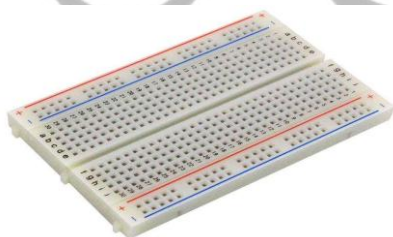
A diode is a specialized electronic component with two electrodes called the anode and the cathode. Most diodes are made with semiconductor materials such as silicon, germanium, or selenium. Some diodes are comprised of metal electrodes in a chamber evacuated or filled with a pure elemental gas at low pressure.

**LCD 16\*2****Fig 18: LCD 16\*2**

**LCD** (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A **16x2 LCD** display is very basic module and is very commonly used in various devices and circuits. ... The data is the ASCII value of the character to be displayed on the **LCD**.

**Adaptor****Fig 19: Adaptor**

It is a connector for joining parts or devices having different sizes, designs, etc., enabling them to be fitted or to work together.

**Breadboard****Fig 20: Breadboard**

A **breadboard** is a widely used tool to design and test circuit. You do not need to solder wires and components to make a circuit while using a bread board. It is easier to mount components & reuse them. Since, components are not soldered you can change your circuit design at any point without

### v. Conclusion

This paper elaborates the design and construction of fan speed control system to control the room temperature and turned on/off control automatically with the human detection. The temperature sensor was carefully chosen to gauge the room temperature, and motion sensor was chosen for detect the human Besides, the microcontroller had been used to control the fan speed using the fan speed in rpm and the Arduino was successfully programmed using C/C++ Language to compare temperature with standard temperature and set fan speed and their values displayed on LCD. Moreover, the fan speed will increase automatically if the temperature room is increased. As conclusion, the system which designed in this work was perform very well, for any temperature change and can be classified as automatic control.

### vi. Limitation

Arduino Uno is the heart of the circuit. If controller is damaged the whole system will be interrupt.

### vii. Future works

In the future, simulating this system there are several improvements can be made in order to upgrade the features such as---

1. Using a wireless technology to interface sensor and microcontroller, monitor and control the temperature via internet.
2. When temperature exceeds the limit a call will be dialed to the given number by an automatic dialed system.
3. With this circuit, an alarm circuit can be added and used effectively in large equipment's where the risk of being overheated and explosions are the serious problems, in various industries.

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