

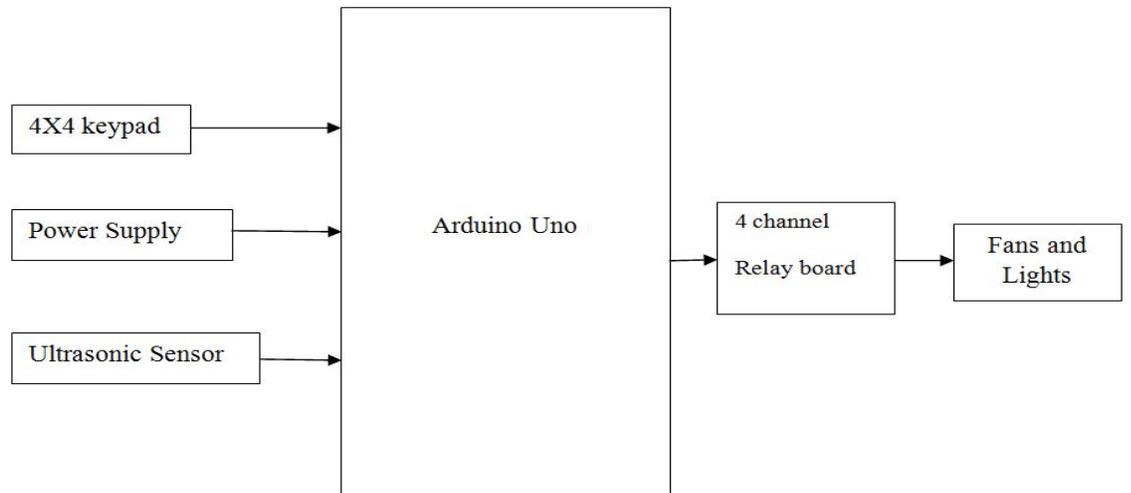


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(ISO 9001:2015 Certified Institution)

7.1.2 Sensor based energy conservation system-report

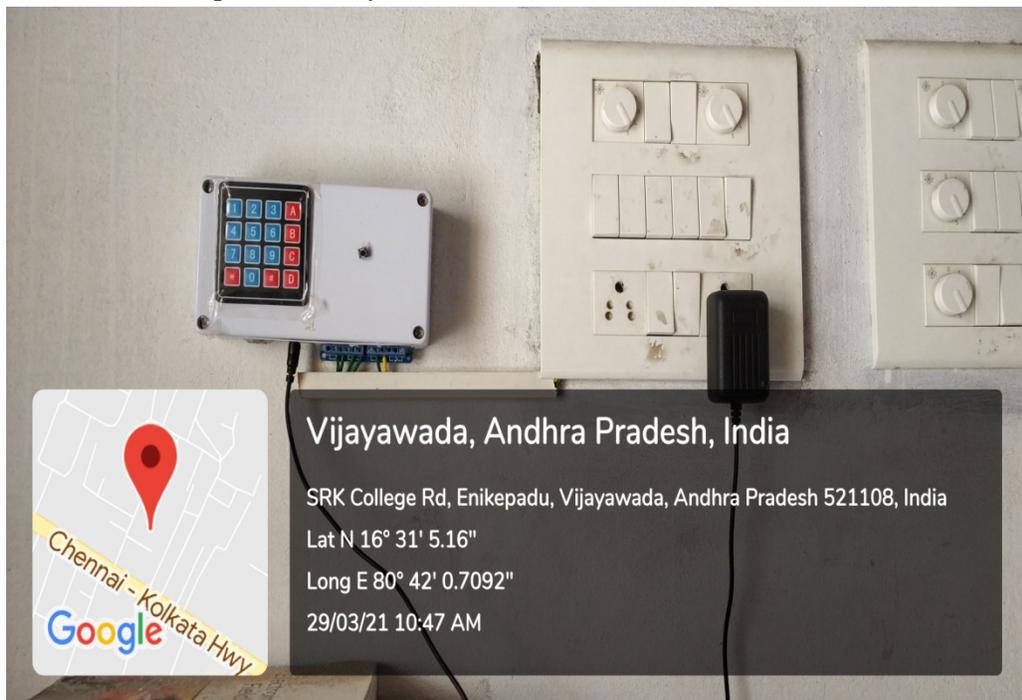
The manual systems are transforming into smart systems with the incorporation of Embedded Systems. It is a real time project which is used to automate the Lights and Fans in the classrooms without the manual operating by humans. Smart control of electric devices has become inevitable so as to make energy conservation to the possible extent. A fan or a light may be in an ON state and may be functioning without any person or a group of people actually being around the electric device. There is a lot of wastage in electricity due to lack of proper monitoring done on the devices we use. The lights and fans in the classroom environment are not turned OFF after using them so more amount of power is consumed. If we have a device which automatically switches ON and OFF the electric devices we use in the classroom environment. In order to overcome this problem a Smart system is developed. The smart system contains an Arduino Uno microcontroller, ultrasonic sensor, keypad, Relay board, electrical devices such as Lights and Fans. The beauty of the proposed work is that the wastage of unused electricity can be reduced, lifetime of the lights and fans gets enhance. The Arduino Uno microcontroller is the main element in this Automation system which corresponds to initiate necessary actions. The user to initiate the working of the system must ensure to type the password in the keypad. If the user enters a correct password then sensor will be in an active state ready for detecting the obstacles. If the user places any obstacles upon the Ultrasonic sensor the lights and fans in the room are turned ON automatically with the aid of microcontroller and relay. If the user enters a wrong password then ultrasonic sensor is inactive state. The switching ON and OFF of the electrical devices are done by the relay. By this project energy conservation using Ultrasonic sensor is done.

(i) Block diagram

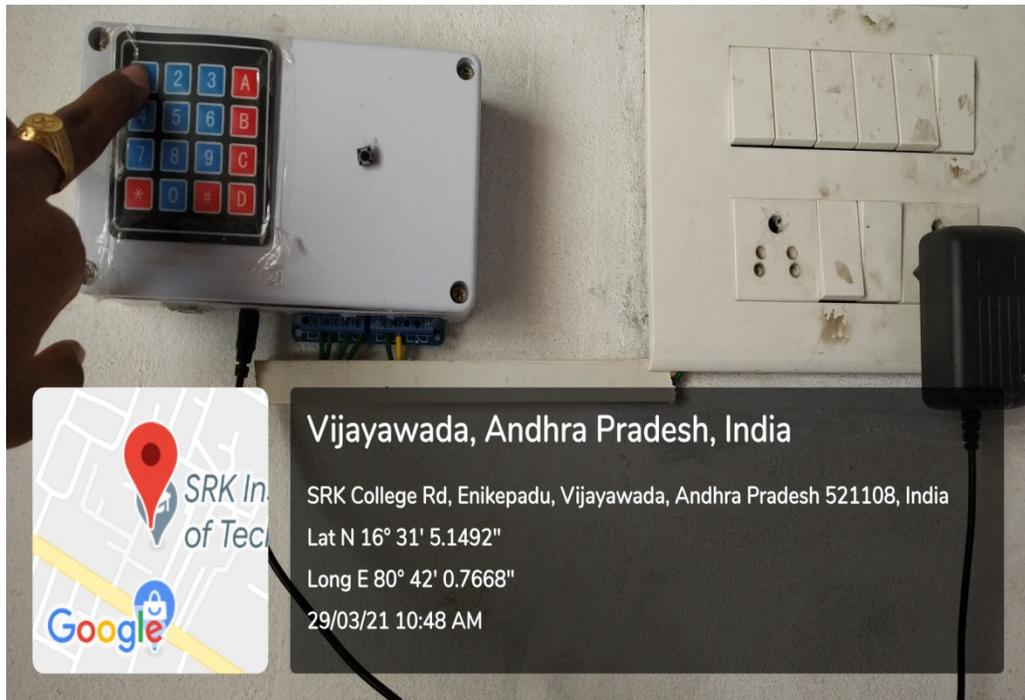


(ii) Geo-tagged Photographs

(a) Hardware of the implemented system



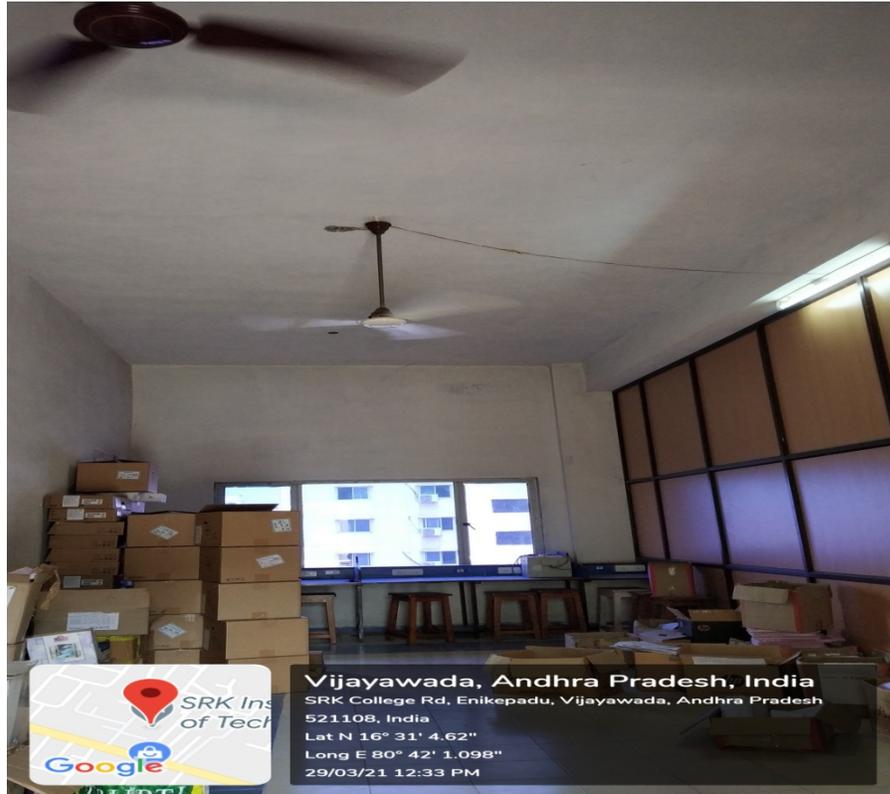
(b) User typing the password to enable the ultrasonic sensor



(c) User placing an obstacle before the ultrasonic sensor



(d) Ultrasonic sensor upon detecting the obstacle turns ON fans and Light



(e) Ultrasonic sensor does not detect the obstacle, it turns OFF fans and Light

