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SMART STREET LIGHT

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Abstract:

Light posts are tall poles found across the street that provides light in the roads. Hence from the description we can conclude that the lamp posts play a key role in transportation. But is it necessary to keep that on even when the vehicles are not present or in movement. No. Therefore we can reduce the power and energy consumption and replace it with smart street lights. Smart street lights are public lighting machine that incorporates technology, such as, cameras, light sensing photocells and other sensors, to introduce real time monitoring functionalities. We have developed Smart streetlights mainly involves a combination of sensors. When it is implemented on simple street lamps, these devices detect the movements and adjust the light power according to it. It also communicates with the neighbouring lamp posts as well. If a pedestrian or a vehicle is detected the streetlights brighten up until the movements ceases or the presence is no more in the path.

Introduction:

Light post comes up with ON/OFF switches i.e. when there is daylight, the posts will be switched off. And after the dawn the lights are switched ON. This is very efficient in its own but here we want to more precise over the wastage of power and energy.

Smart light sensors have helped a lot in this mission of saving power. Smart light sensors detect vehicles and work according to it. It switches off automatically when any transportation has not been within the radius of the sensors.

HARDWARE USED DESCRIPTION

RESISTOR :

A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses.

TRANSISTOR 2N2222:

The 2N2222 is a common NPN bipolar junction transistor (BJT) used for general purpose low-power amplifying or switching applications. It is designed for low to medium current, low power, medium voltage, and can operate at moderately high speeds. It is frequently used as a small-signal transistor, and it remains a small general purpose transistor of enduring popularity.

TRANSISTOR BC557:

BC557 is a general-purpose transistor, used like an amplifier or a switch in electronic circuits. Its hFE ratings of this transistor range from 125 to 800 to make the transistor ideal by using like an amplifier within electronic circuits like audio signal amplification. These ratings can be determined through the final letter after its digit. The highest collector dissipation is 500 milliwatt.

LDR SENSORS:

An LDR is a component that has a variable resistance that changes with the light intensity that falls upon it. This allows them to be used in light sensing circuits. Light Dependent Resistors (LDR) are also called photo resistors . They are made of high resistance semiconductor material. When light hits the device, the photons give electrons energy. This makes them jump into the conductive band and thereby conduct electricity.

LED:

A light-emitting diode (LED) is a semiconductor light source that emits light when current flows through it. Electrons in the semiconductor recombine with electron holes, releasing energy in the form of photons. The color of the light (corresponding to the energy of the photons) is determined by the energy required for electrons to cross the band gap of the semiconductor. White light is obtained by using multiple semiconductors or a layer of light-emitting phosphor on the semiconductor device.

BATTERY (9V):

The nine-volt battery, or 9-volt battery, is a common nominal battery voltage, actual voltage of a new or fully-charged battery ranges from 7.2 to 9.6 volts depending upon technology. Batteries of various sizes and capacities are manufactured. A very common size is known as PP3, introduced for early transistor radios. The PP3 has a rectangular prism shape with rounded edges and a polarized snap connector at the top. This type is commonly used for many applications including household uses such as smoke and gas detectors, clocks, and toys, and also instrumentation and medical purposes.

HARDWARE MODEL OF THE PROJECT

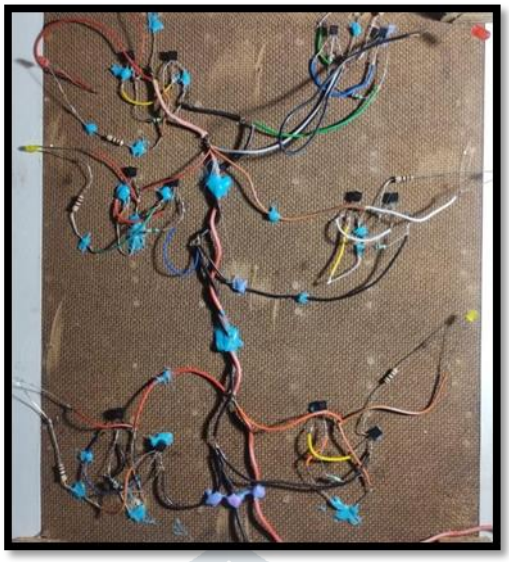

Fig 1

CONCLUSION

The paper studies the smart streetlights implementation. It has many advantages like it is predictable and long lifetime, it can be quickly turned on or off. It is less attractive to nocturnal insects and Lower energy consumption. It also have some disadvantages like rechargeable batteries of the automatic street light system are required to be replaced a few times. It has risk of theft of the automatic street light system is relatively higher since they are non-wired & are much expensive. Snow, dust or moisture can accumulate of PV panels which can hinder energy production and it requires higher initial investment. In 21st century, the technology is growing every day. And along with it we have to match our steps as well. Smart street lights might be one of the step. The emerging power and energy loss along revenue it has been proven a better option than ordinary street lights.

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