

ABSTRACT

Smart street light system is a combination of solar tracking system with object detection. the solar energy absorption system through the solar cell intermediary media uses the help of a driving device (servo motor) to produce electrical energy. The movement of the servo motor can move the position of the solar cell towards the maximum intensity of sunlight. Meanwhile, to find out the position of the maximum sunlight intensity, use the LDR sensor. The LDR sensor will detect the intensity of sunlight using the azimuth axis method. The sunlight intensity data will be sent to the Arduino microcontroller and will drive the servo motor on the solar cell. Then the PIR sensor is used to detect objects that pass around the lamp to save energy expenditure, if no one passes the lamp will dim when the sensor detects an object the lamp will light up brightly. The implementation of the system formed produces a prototype design with an Arduino microcontroller circuit coupled with a PIR sensor and an LDR sensor and a servo motor to drive the solar cell, the PIR sensor is used to control the lamp so that it usually saves on electrical energy expenditure, the energy released by the lamp when the voltage is dim 0.48 V, the intensity emitted by the lamp is 3.1 LUX. When the condition is bright, the lamp voltage is 4.35 V and the light intensity is 13.6 LUX. With such a design and implementation, the process of energy absorption and solar energy saving on solar cells will be maximized.

Keywords: Smart street light system, Solar tracking system, Arduino microcontroller.