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Smart Electric Pole

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***Abstract*: This study is associated with study in internet of things and its various modules like Nodemcu, Arduino Uno, GPS and many more, carried out in the final year of engineering. As there are increasing in number of unconditional Deaths due current in Electric Pole and various other factors like Tilting pole due to storms or Breakdown of Electric Wire causes harm to people. This portable IoT device is Capable to solve all these problems. The data collection of different operating devices was the main experimental research with the devices Primary working in the experiment. After obtaining the data, we do our consolidation process. Arduino Uno device was used to drive and supply voltages to the entire modules and need to add new devices for communication via Wi-Fi, this way Nodemcu is been used, Nodemcu, it is module which has its own inbuilt wifi and can be used to connect to the server.**

***Keywords*: Arduino, GPS module, Nodemcu, Smart automation, IoT.**

1. Introduction

As there are increasing in number of unconditional Deaths due current in Electric Pole and various other factors like Tilting pole due to storms or Breakdown of Electric Wire causes harm to people. This portable IoT device is Capable to solve all these problems. This IoT device is capable to Reduce these Deaths by breakdown of the Circuit when there is any current in pole body. The device immediately notifies the nearest electric department. The information is available via web. This system can also be used as street lights automation. The information of the device is loaded on a web server using Nodemcu which is connected with network. This information regarding the status of electric pole can be fetched easily by electric department of the same city. Also they can control the automation of the street lights by using this web page.

2. Usefulness

This application is very useful for determining the extent of current on pole. It generates alert messages which is received by the mail id of the electricity board at the present office. It saves the life of people. It can be used to save the unwanted deaths which are caused due to shock in metal pole body.

The web server is used to give the realtime values of the Voltage measurement in wires, the latitude and longitude of that specific pole can be viewed on web server.

The status can be seen as Red or Green. Also there is a button on the web server which can be used to control the street lights.

3. Related Work

There are many devices related to this which is only associated with the automation of street lights but our system is associated with ACS 712 module to measure real-time voltage. There are systems which are made only for the automation of street lights but our system is based on the control and breakdown of circuit when there is any shock detected on metal pole.

4. Objective

- The main objective of this device is to prevent unconditional deaths.
- Making the electric poles smart with the automation of street lights.
- One can directly locate the exact position of the pole via GPS.
- The status of the measurement of each electric pole can be viewed through a real-time database.
- A buzzer which helps other people to stay away from the affected pole.
- It will provide ease to electricity department

5. Problem Statement

The problem is associated with, that when there is storm in the city the pole may fallen or the electric wires may broke down spreading current in the city, and additional there is no automation of lights. The solution is made to overcome these problems.

6. Proposed System

- Using ACS 712 module for detecting the effect of current.
- Nodemcu (ESP8266) – This IoT board is used to connect the device with the Internet.
- Relay Module is used to break the circuit whenever the current is detected in the pole body.
- GPS module to trace the location of the pole via Latitude and longitude.
- Arduino for analog pins and for providing the sufficient voltage to the Relay Module.
- A Chargeable battery for continuous working of the Device.

A. Hardware and Software

- NodeMCU
- ACS712
- Relay Module
- Arduino
- GPS module
- Battery
- Arduino IDE software
- Google Firebase

B. Circuits and Diagram

Fig. 1. NodeMcu for Wi-Fi and connectivity

Fig. 2. ACS 712 module

Fig. 3. GPS module

Fig. 4. Arduino UNO

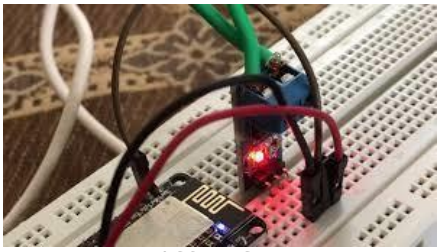

Fig. 5. ACS 712 Connections

Fig. 6. Street light Automation

7. Conclusion and Future Work

The conclusion of this system is that one can prevent unwanted death from sudden electric current in poles and this system also proposed the automation of street lights which will make ease for electric department.

References

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