A State-of-the-Art Proposition of House Wiring Electrical Fault Detection Method Using Internet of Things for Smart Cities

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Abstract

Background: Each smart city is furnished with different kinds of electronic devices & innovations like Smart Metering Infrastructure and the Internet of Things (IoT), etc. to empower us and enable various facilities of smart cities more accessible and usable. This work gives an illustration of the faults in house wiring that can be detected by using IoT and sensors. The proposed idea also helps the personnel to analyze the whole system by knowing the required parameters and its standard values.

Objectives: This paper aims to explain the faulty conditions and safety procedures to encounter the problem, so as to produce a system of fault detection, and to encounter it with the help of the IoT that can ease the person to get the valuable information regarding the faults and also the critical analysis of the fault occurring time.

Methodology: The proposed idea includes ACS712, a current sensor that will sense the value of current in the housing wires. Using the devices such as Arduino, ESP8266, which has a Wi-Fi inbuilt in it, helps in transmitting the values from the cloud to the BLYNK application, a tool to gather information about the condition of house wiring and help the personnel to analyze it. The current sensor is set to 4 Amps. The restrictions on relay and capability to withstand high current are taken into consideration to prevent any unexpected hazard. In case of fault the current exceeds the limit, the system senses the fault and the relay will protect the system by opening the circuit. Notification will then be automatically sent to the application software.

Results and discussion: This technical part of the abstract discusses the result from the work. In case of fault, the BLYNK app will notify the consumer in the form of an alarm & also will send an SMS of the type of fault to the consumer.

Conclusions and future work: The work is an idea that can be implemented on a real system and can be upgraded to an efficient system that will be able to locate the exact fault location and trip the circuit in no time.

