

IOT Based Voltage Monitoring and Control for Electronic Auto by Using Arduino and GPRS

Martin Joel Rathnam¹, K.Nanda Kumar², M.Praveen Kumar³, R.Sivakumar⁴, C.Srinivasulu⁵

Professor, Department of ECE, Adhiyamaan College of Engineering, Hosur, Tamilnadu, India¹

U.G. Student, Department of ECE, Adhiyamaan College of Engineering, Hosur, Tamilnadu, India^{2,3,4,5}

ABSTRACT: Travelling through auto is major in metropolitan cities like Bangalore, Mumbai, Chennai, etc. Now a day vehicle can be shifted from fuel to electronic. An Electronic auto which can be run on Lithium-ion battery based on monthly payment. After payment, only the electronic auto can be capable to recharge the battery. The voltage present on the battery can be visible only on the electronic auto itself. The company don't know the voltage present on the battery and the payment due date. Our project gives a solution for voltage monitoring of battery and position of an electronic auto. Hence the company can capable to view the status of the battery and alert customer to pay before the battery gets drained. The Arduino UNO is used to find voltage present on Lithium-ion battery and by using GPRS to find the location of an electronic auto. These data can be upload to the cloud by using GPRS (SIM900) module. By using an Android application to view the battery status and exact location of electronic auto. Then it gives an alert message to the customer to pay the bill and recharge the battery before it gets drained.

KEYWORDS: Electronic Auto, Voltage Monitoring, Web Server, Alert, Payment.

I. INTRODUCTION

In India, auto rickshaw is majorly used for travelling in major cities. The auto rickshaw runs on fuel like petrol and diesel. It emits carbon-di-oxide and causes pollution. Nowadays the auto is switched to emission-free and eco-friendly electronic auto rickshaw. Currently, most electronic rickshaw in India uses lead-acid batteries, which have a shorter life, duration, excess in weight and long charging time of 10 hours. In a lithium-ion battery, high energy density leads to low weight which translates into more kilometre between charges. Li-Ion battery weighs 35kg and 48V-80Ah but Lead battery weights up-to 120kg.

The electronic rickshaw can be recharge based on a monthly payment. The voltage present on a battery can't be motorized by the company. The voltage drains on a battery should be visible on the rickshaw itself. Then the company did not know about the voltage present on a battery and drains of a battery. The company can send a due date message based on the date only. If the voltage of a battery drains before the due date the customer can not run the electric rickshaw. After that the customer visit the company and pay for recharge the battery.

The voltage monitoring can be done only on the auto itself. The company did not know anything about the voltage on the battery and location of an auto. The customer only knows about the voltage of a battery. For this disadvantage the payment and recharge of battery getting late. Hence our project gives a solution for voltage monitoring of an electronic auto and its location by using IOT.

In this paper, the proposed method detects the voltage of a battery and the location of an electronic auto rickshaw by using Arduino micro-controller which can be fixed on a rickshaw. When the voltage detects on the battery, it transmits signals to the micro-controller. The location of a rickshaw can be found by using a SIM900 module. From the micro-controller, the voltage value and location is sent to the cloud network by using SIM900. The HTML page is used to display the voltage of a battery and location of an electronic rickshaw. The level of a voltage get drained below the particular level then the server sends an alert message to the customer. The message will be displayed to pay the amount to recharge the battery before it drained.

II. PROPOSED WORK

In this paper, the Arduino microcontroller is fixed on an electric rickshaw to monitor the voltage of a battery. The GPRS module is used to find the location of an electronic auto rickshaw and also upload the values of voltage and location to the cloud network. The HTML page is used to display the values on the cloud network on the website or mobile application. The location of an auto rickshaw can also give the auto travelled distance and exact location of the rickshaw. In HTML page there are two logins present one for the company and another for the customer. The location and voltage value only displayed on a customer login. In the company login, it displays the voltage of battery, location of rickshaw and how much distance it travelled. The voltage level can be determined in percentage. If the voltage level of a battery gets drains below 15%. It automatically sends an alert message to the customer to pay the amount to recharge the battery. It also sends the alert message to the company as the id of particular auto rickshaw voltage get drains.

In advance the location travelled by rickshaw can be stored and give a trace layer on a map to give where the rickshaw travelled. How much distance travelled time and parking time also displayed. It is also capable to find the voltage required for travel the distance and its mileage.

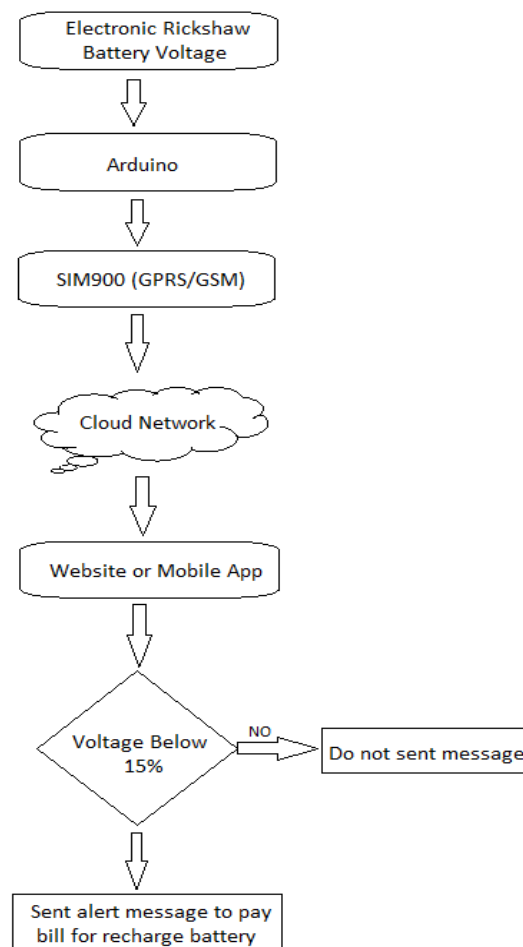


Fig2.1Flowchart

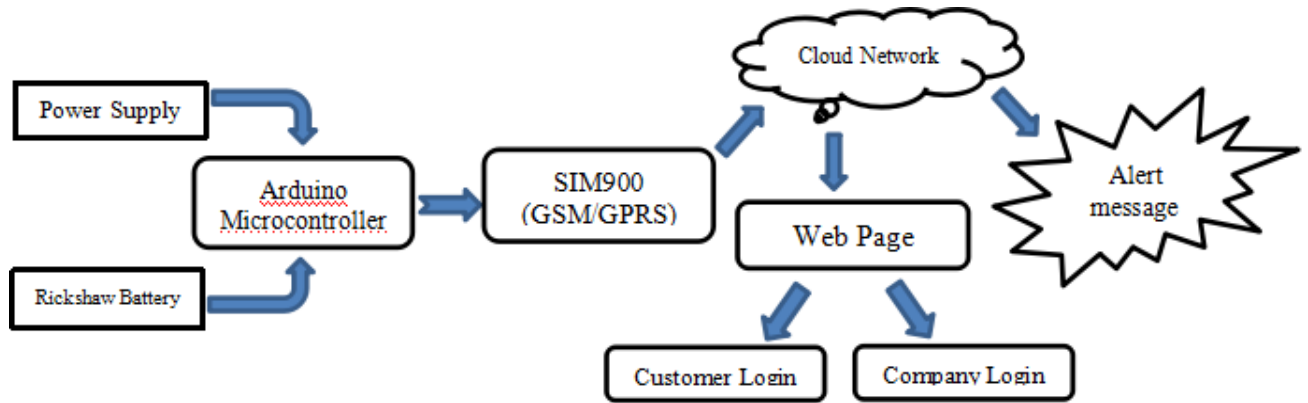


Fig 2.2 System Block Diagram

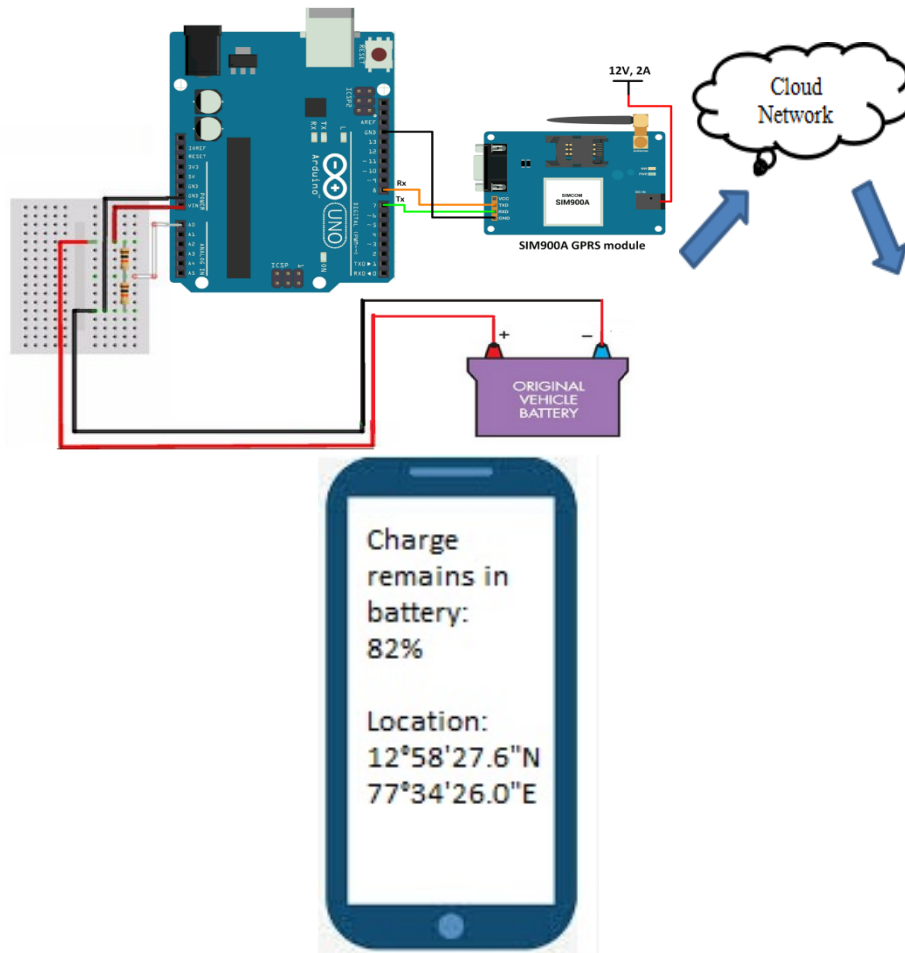


Fig2.2Circuit Diagram

III. EXPERIMENTAL RESULTS

By using Arduino to find the voltage present on a battery and also the location of a battery. The location of auto can be found through using a GPRS module. The values of voltage and location can be upload to the cloud server. Through the website, we can access the data of voltage and location of an electronic rickshaw. If the voltage of the battery gets below 15% then the server sent an alert message to the customer and the company.

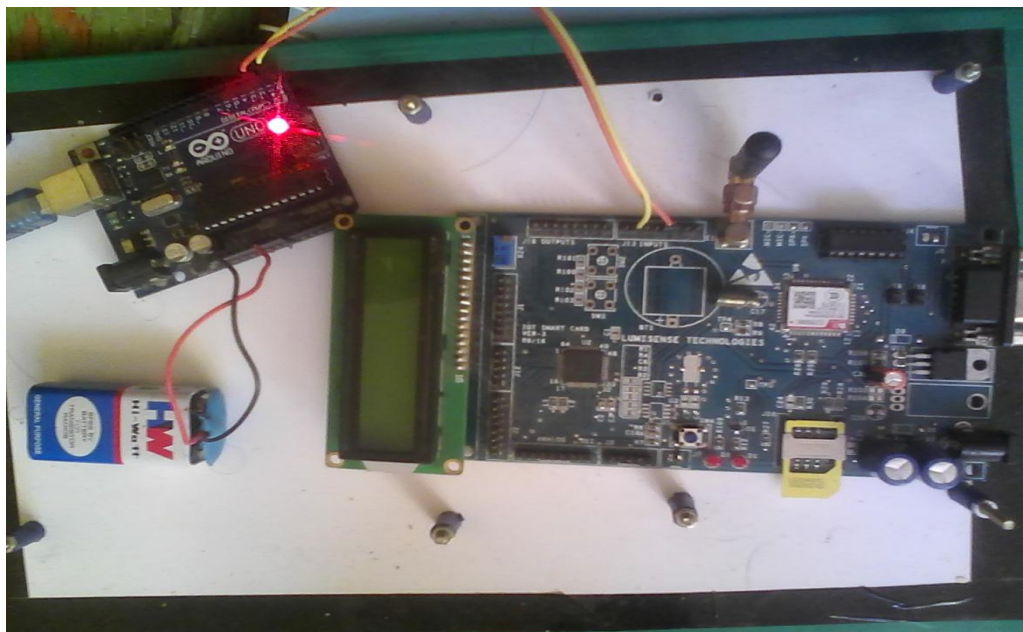


Fig3.1 Hardware Setup

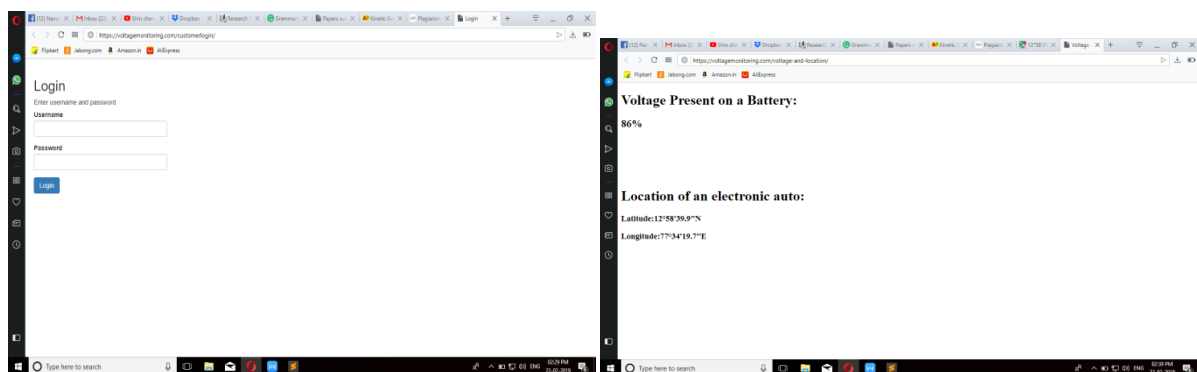


Fig 3.2 Login page

Fig 3.3 Voltage displayed on Website

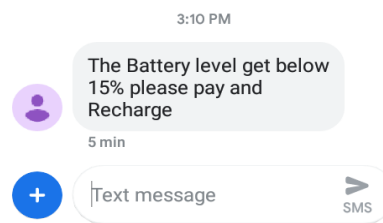
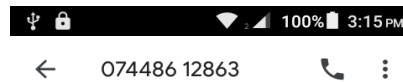


Fig 3.4 Alert message to customer

Thus, by implementing this project discussed in this paper, it is helpful for the company and also a customer to find the voltage present on a battery and also the location of an electronic auto rickshaw. The customer beware to find the voltage level. If the level of the battery gets very low then the customer should aware to recharge the battery before it gets fully drained. The company also get an identification of auto rickshaw to be recharged. With the help of GPRS location and voltage can be live-monitored by a customer and also a company. It is also possible to find the places and distance travelled by rickshaw should be integrated on maps. Thus, our project is helpful for both the customer and also the company.

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