

Mobile Charging System Using Coin And Rfid With Solar Tracking – A Survey

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Abstract- The survey describes coin based cell phone charger using solar tracking system. Mobile phones have become a major source of business/personal communication. The need to provide a public charging service is essential. Many critics argued that a public mobile phone charging service is not a lucrative business because most users can charge their phones at home, in their office or in their cars. Coin based cell phone charger is essential because many people attending business conventions tend to forget their charger at home or in hotel rooms. People who use the public transportation tend to have a low battery are prospective customers for coin based cell phone charger service. Recommended locations. include: hotels, conference centre, leisure centre, shopping malls, internet cafes, colleges, airports, train terminals, etc., so that the mobile phone users can reactivate a low or dead battery by simply plugging in and charging for nominal amount.

Keywords- Coin Acceptor, LCD Display, Solar Panel, Motor Driver

I. INTRODUCTION

Economic growth has improved the life styles of people in rural areas. In developing countries mobile phone has become an essential equipment but interruption in power supply is also a major concern in rural areas. This gives rise to a thought of mobile charging by some other means. Solar energy also an alternate source of energy. This paper gives detailed survey of different mobile charging system.

II. LITERATURE SURVEY

Rishabh Srivastava, SatyamGuptha, Shyam Chaudary[1], have proposed the work on coin and RFID(Radio frequency identification detection) mobile charging. The system is designed uses both coin and RFID for charging the mobile phone. For detection of coin they have used IR(infrared)sensor transmitter and receiver and for detection of RFID card the RFID module is used. In this system they have used PIC 16F 877A microcontroller and IC 16F877x is used. The power supply is provided to microcontroller and other device by AC and DC adapter.

S.B. Sridevi, A.Sai Suneel, K.Nalini [2] have proposed the work on coin based mobile charging using solar tracking system. This system uses coin for charging the mobile phone. This system also have solar tracking depending on the intensity of the LDR(Light dependent resistor) the solar will track the sunlight. This work mainly designed to control the solar panel automatically, maintains face of the solar panel towards the sun. This is done by controlling the mechanical movement of the solar panel. Usually sun rises at east and sets at west. In ordinary system, if it faces towards east then it cannot change the direction towards sun during sunset. Because of this reasons solar panel may not get sufficient sun rays to work. This is designed based on ATMEL 89c51 a 40-pin micro controller that does the countdown timings for a period of 3 minutes with LCD displays showing the actual time left. During the timing period a relay output is latched and finishing timing in progress.

AparanaD.Pawar [3], have proposed the work on coin based solar mobile charger. Once we insert the coin in to slot, it will check or compare the coin with already stored image. For comparing the coin the image processing is used. Using MATLAB software coin detection is done. Once coin detection part is complete means the coin is exactly detected then it shows message on display is “plug the mobile phone”. If we inserted 1Rs then It will charge approximately 10 %. Likewise 2Rs, 5Rs, 10 Rs coins charge the phone according to software. And if the incorrect coin is inserted then it will go to refund box. In this proposed system the ARM 7 TDMI uC is used which having large storage capacity. Battery gives the power to the microcontroller and uC work on that solar energy. Controlling the mechanical movement of solar panel by stepper motor. On architecture of this system LDR’s are placed. Intensity of LDR will be varied according to the sun movement. If sun light intensity is more, LDR intensity will be less. When LDR intensity is less stepper motor rotates according to that so that found maximum energy of sun.

G.Priyanka, S.Anisha, P.Padma Shri [4] have proposed the work on Coin Based Mobile Charger this system. Once the coin is inserted, the coin acceptor detects whether the coin is valid. For each unit of price, the power is available only for a limited period. The arduino can calculate the time

based on the number of coins inserted. A fixed solar panel of size 635x550x38mm, 37WP is used to charge the mobile phones up to maximum 2.0 amp. The system is based on the ATmega 328.

Prashanth.K, Sangamesh, Praveen Kumar, Ruchitha.C , Rashmi.K[5] have proposed the work unsecured Coin Based Cell Phone Charger with RFID. For charging the phone, the user needs to insert the coin and connect the phone to one of the charger pins for charging battery for a specific period of time

The microcontroller used here is PIC18F4520. When the coin is identified, the microcontroller excites the signal and pass the signal to the circuit. For the purpose of security of cell phone, RFID card and RFID reader is used. The tray provided for placing cell phone resembles like locker system. The locker system used is CD/DVD drives, when the coin is detected the signal is passed to the microcontroller to open the tray. The user has to place mobile for charging and collect the RFID card that is present in the tray. When the charging time completes, then the RFID card is inserted into the slot by the user , the card that is authenticated collected by the user when the tray is opened. After a fixed period of time the charging completes and tray can be only opened by the user with an RFID card.

Gaurav.Chamate,VishwanathKommulwar, Jayant.V.Wankhade[6],have proposed the work on Coin Based Mobile Charger using Solar tracking system. Whenever a coin is inserted the system IR sensor will detect the coin and ensure correct coin insertion. If the correct coin is inserted LCD display the information to the customer for next processes and if coin is faulty it will be returned to refund box. The microcontroller used here is ATmega16 Whenever a coin is inserted the system IR sensor will detect the coin and ensure correct coin insertion. If the correct coin is inserted LCD display the information to the customer for next processes and if coin is faulty it will be returned to refund box.

Navjeet Kumar, Dorathy.R, Shruthi.M, Dr.Anusuya.S [7], have proposed the work on IOT Based Smart Charger A device that could monitor the power consumption and control it, will help vastly in reducing the wastage of energy. This system would be capable of turning on and off only when the device is connected and charge only when needed, and can be further improved to monitor other appliances. There are various modules available, which when paired up with the charging circuit will turn the charger into an IoT based device.ESP8266 Wi-Fi module is a low power, highly efficient Wi-Fi module that can run on just 3.3v. Its open source and can be programmed with Arduino Uno. The

ESP8266 module contains stack for HTML, JAVASCRIPT, XML, CSS, etc. and supports implementation of various API's. ESP8266 can also be used to store cookies and for authentication process. With ESP8266 local Web servers can readily be created and remote implementation can be done by port forwarding using router's static IP. There are two methods of execution, automatic and assisted mode. The first method is completely automated and doesn't need user intervention, it's essentially plug and play. The second method is based on timers and takes the timer value in minutes, which will automatically start once time limit is set and stop once the time limit is reached.

Kajal.S.Bandade,Kirti.G.Parate,Prathmesh.D.Patle, Shubham.S.Verma [8], have proposed the work on RFID Based Mobile Charger By using Solar Panel. The microcontroller used is ATMEGA16 which is type of reprogrammable microcontroller programmed. Driver circuit consists of relay, which acts as a switch to turn ON and turn OFF .The relay output is directly given to the mobile charger pin The different mobile charger requires different size pins.

The solar power application to battery charging has been studied properly. Solar chargers convert light energy into DC current for a range of voltage that can be used for charging the battery. They are generally portable but can also be mounted as per required place .In this design of coin based mobile charger is a fixed solar panel of size 18 cell, 37WP is used to charge the battery up to maximum 2 .0 amp in bright sun light. Development of a coin based universal mobile battery charger based on main power and solar power is discussed and this is primarily for rural areas where the mobiles are basic needs for communication and the main power is no available at the time.

R.J.Sapkal,Snehal.N.Shinde,Madhuri.B.Sathe, Rashani.M.Waghmare [9], have proposed the work on Automatic Gadget Charger using Coin Detection and Solar Panel. when a coin is inserted at the coin insertion slot at the input stage. The type of coin and the size will be displayed on LCD display for the user so as to ensure correct coin insertion. Any other coin, if inserted in the slot will be returned to refund box. A webcam camera attached to the coin insertion slot accepts the coin into the battery charging unit and start charging the mobile battery for a specific period controlled by the software of the microcontroller. The Arduino328 is a microcontroller board based on the ATmega328.

Aditya Kamat, Aniket Kulkarni, Kumar Akshay, Raju Kasturi, NazahatBalus [10], have proposed the work on the system involves a digital locker based system consisting of charging slots The users have to select the time for which they

want to charge the phone and pay the charges using coin insertion system accordingly. Then the user needs to create a password for the locker which will provide security to the slot. The user can keep his mobile in charging slot to charge and the slot will get locked so that no one other than the user can open it. An Arduino UNO a microcontroller board based on the ATmega328P. is programmed for all the controlling applications including the password protection and locking system.

III. SUMMERY OF SURVEY:

Authors (year)	Contributions and observation
Rishabh Srivastava, Satyam Gupta, Shyam Chaudary, (March – 2018)	Use coin and RFID for charging phone, the controller used is PIC 16F877A, IR sensor (rx & tx) for coin detection.
S.B Sridevi, A. Sai Suneet, K. Nalini (September-2013)	Solar tracking is used, the controller used is ATME1 89C51 Microcontroller, Refund box is used, LCD display displays the type of coin and size of coin.
Aparna D.Pawar (May – 2015)	Used MATLAB Software for coin detection, used Embedded c.
Prashanth, K. Sangamesh, Praveen Kumar, Ruchitha, C. Rashmi K., (November – 2017)	Voltage regulator 7805 IC is used, coin detection :- the two leads sense the 5rs coin, it checks the diameter of coin and then the signal is give to microcontroller. Locker System (RFID), used in CD/DVD drive.
Gaurav V.Chamate, Vishwanath Kommulwar, Jayant V. Wankhade, (January – 2017)	Two different sources are used for charging the mobile.
Navjeet Kumar, Dorathy R. Shruthi M. Dr. Anusuya S. (Aug 2017)	have proposed the work on IOT Based Smart Charger A device that could monitor the power consumption and control it.
Kajal S.Bondade, Kirti G.Parate, Prathamesh D.Patle, Shubham S.Verma	The microcontroller used is ATMEGA16. Driver circuit consists of relay, which acts as a switch to turn ON and turn OFF.
R. J.Sapkal, Snehal N.Shinde, Madhuri B.Sathe, Roshani M.Waghmare (May -2017)	The Arduino328 is a microcontroller board based on the ATmega328. The type of coin and the size will be displayed on LCD display.
Aditya Kamat, Aniket Kulkarni, Kumar Akshay, Raju Kasturi, Nazahat Balur (Feb 2017)	ESP8266 Wi-Fi module is used, MB102 voltage regulator is used, IRF540 MOSFET as a switch, HTML5 API for battery to send alerts to the web server, The Wi Fi module supports HTML, JAVA Script, PHP, AJAX etc. It has two methods (1)Automatic mode (2) Assit mode.

IV. CONCLUSION

In this work, we have surveyed some papers and we conclude that the coin based mobile charger is useful in rural/urban areas where electricity is not available all time. Considering all the valuable points in the above papers we would like to propose a system where few additional features also is addressed. The proposed system is Mobile charging using Coin and RFID with Solar Tracking and IOT.

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