

A Review on Implementation of Solar Based Auto Cut-off Multiple Device Charging with Internet of Things

Mayuri .S. Meshram, Prof. K. V. Warkar

Department of Computer Science and Engineering, Bapurao Deshmukh College of Engineering, Sevagram, Wardha, India

ABSTRACT

The Solar light is most favoured because of the accompanying reasons: Without effect on the worldwide atmosphere, sun oriented vitality can be utilized to produce power. The Sun vitality is boundless while other vitality sources like raw petroleum, characteristic gas and coal are demonstrating their end. By having a framework for exchange power generation, the utility expense can be decreased. At present situation, the sunlight based vitality creation is finished by altered board framework. To enhance the proficiency of the sun based vitality framework, following component can be executed. Subsequently, a thought is made in the proposed framework, single following instrument, which is from East to West bearing, is utilized. At present, cell telephone is a key thing for each individual and in this manner, there ought to be a charging office of mobiles out in the open spots is needed. As there is no constant power supply (24 hours) from the power board, the consistent charging office can't be given. Consequently, a thought, sun based force based multi versatile charger framework is executed in the proposed framework which can be utilized as a part of open spots like railroad stations, transport stands, doctor's facilities and parks and so on. Also the monitoring of Solar Energy and charging as well as coining is monitored through IoT based open source mobile Apps.

Keywords: Solar Tracking, IoT, Auto cut-off charging.

I. INTRODUCTION

The Solar light is most preferred due to the following reasons: Without impact on the global climate, solar energy can be used to generate power. The Sun energy is limitless while other energy sources like crude oil, natural gas and coal are showing their end. By having a system for alternate power production, the utility cost can be reduced. At present scenario, the solar energy production is done by fixed panel system. To improve the efficiency of the solar energy system, tracking mechanism can be implemented. Hence, an idea is made in the proposed system, single tracking mechanism, which is from East to West direction, is used. At present, mobile phone is an essential thing for every person and therefore, there should be a charging facility of mobiles in public places is required. As there is no continuous power supply (24 hours) from the electricity board, the continuous charging facility cannot be provided. Hence, an idea, solar power based multi mobile charger system is implemented in the proposed

system which can be used in public places like railway stations, bus stands, hospitals and parks etc.

To wards sun amid nightfall . In light of this reasons sunlight based board may not get adequate sun beams to work. These issues are overcome by utilizing this work. In this work we likewise manufacture a decent miniaturized scale controller based sun oriented charger. The coin-based versatile battery charger created in this work giving a novel support of the country open where framework force is not accessible for halfway/full daytime and a wellspring of income for site suppliers.

The coin-based versatile battery charger can be rapidly and effectively introduced outside any business premises. The cell telephone [1] business sector is a limitless industry, and has spread into rustic regions as a crucial method for correspondence. While the urban population utilize more advanced mobiles with great force batteries going on for a few days, the provincial populace purchase the pre claimed cell telephones that require charging as often as possible [2]. Ordinarily

battery [3] turns out to be level amidst discussion especially at badly designed times when access to a standard charger isn't conceivable.

The coin-based versatile battery chargers are intended to take care of this issue. The client needs to connect the cell telephone to one of the connectors and addition a coin; the telephone will then be given a smaller scale beat for charging. It doesn't bring a portable from "dead" to completely charged state. The charging limit of the versatile is outlined with the assistance of pre characterized values.

It is, obviously, conceivable to keep charging the versatile by embeddings more coins. This minimal and lightweight item is intended to cook for the developing number of rustic versatile clients around the world. An appropriate microcontroller is modified for all the controlling applications. The hotspot for charging is gotten from direct power network and sun based vitality [4] if there should be an occurrence of non-accessibility of lattice force.

II. LITERATURE REVIEW

Aparna D. Pawar, "Coin Based Solar Mobile Charger" Proceedings of IEEE international Journal of Engineering and Technical Research (IJETR) Vol. 3, pp. 80-83, May 2015. This paper introduces system is useful to save energy from sun and intelligent tracking solar energy. Also having Low power consumption MATLAB is used for avoiding coin duplication. So this system is useful from all ways.

D. Asha Devi & M. Suresh Babu, "Design and Implementation of Efficient Solar Power System for Multi Mobile Charger" International Journal of Emerging Trends & Technology in Computer Science (IJETTCS) Vol.3, pp.88-92, Sep-Oct 2014. This paper is searching of maximum output by tracking the Sun and resetting itself for next day. Here, with reference to the result analysis, 41.8% of more efficiency is achieved than fixed panel system through this proposed system. Therefore, the proposed system is said to be an efficient tracking system.

Wallies Thounaojam, V.Ebenezer & Avinash Balekundri," Design and Development of Microcontroller Based Solar Charge Controller" International Journal of Emerging Technology and Advanced Engineering, Vol. 4, pp. 510-513 May

2014. In this paper a low cost high performance microcontroller based solar charge controller has been proposed. The proposed system used solar PV module as the input and DC load as the output. The proposed system has an upgrade option to control normal UPS, when connected with the solar charger will convert to SOLAR INVERTER/UPS with solar charge as priority. T. Chandrashekhar , G. Swaminaidu , Ch. Babu Rao," Experience Replay for Mobile Charger based on Coin by using Solar tracking System" International Journal of Innovative Research in Science, Engineering and Technology, Vol.3, pp.9605-08 February 2014. This paper is very useful in today's life. Because now days the necessity of communication is very important, so every person having cell phone but every time we cannot carry charger with us. When we are going for long travel we may forget to carry cell phone charger.

F. Sani, H.N Yahya, M. Momoh, I.G. Saidu and D.O. Akpootu, "Design and Construction of Microcontroller Based Charge Controller for Photovoltaic Application" IOSR Journal of Electrical and Electronics Engineering , Vol. 9, pp. 92-97, Jan. 2014. In this paper the absence of solar radiation, the microcontroller activates the load by switching on the MOSFET via a transistor. When the battery voltage drops to 9.5V, the microcontroller turns off the load to avoid over- discharge. The system displays the battery status on a liquid crystal display (LCD).

Vikas Kulkarni & Rajesh Nehete , "Simulation and Analysis of Photo-Voltaic (PV) based Solar Inverter System" International Journal of Soft Computing and Engineering (IJSCE), Vol. 3, pp. 114-120, January 2014. This paper focuses on ; the more detailed model may take into account the effect of shading or partial shadows on the operation of the module. Also the effects of scaling up the photovoltaic sources may be investigated to determine the suitability for large scale deployment.

III. PROPOSED WORK

The proposed work is planned to be carried out in the following manner:

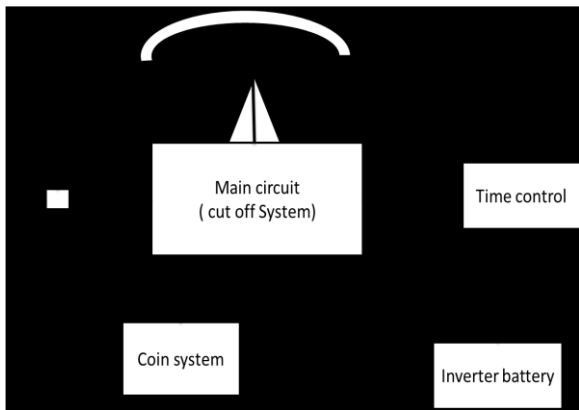


Figure 1. Block Diagram

Coin sensor and dual timer: It consists of constant IR Transmitter and IR receiver Sensor whenever a coin is dropped light intensity falling on IR receiver changes, resistance changes it alters the pulse width of the timer.

Micro controller: It is the heart of circuit. It accepts the input from timer this is processed and control signal is generated so as to trigger the relay, manage coin count

LCD: It is the output device which show text message and also count.

Relay: It is used to connect and disconnect the load from the circuit depending on received control signals.

Circuit Design:

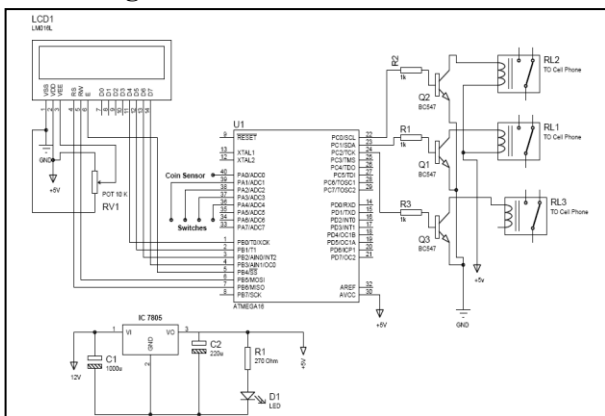


Figure 2. Project Circuit Diagram

This project portrays coin based versatile charger utilizing sun oriented following framework. Cellular telephone's turned into noteworthy wellspring of business/individual correspondence; the cellular telephone business is at present worth billions of dollars, and backings a great many telephones. The need to give an open charging administration is vital. Numerous pundits contended that an open cell telephone charging administration is not a lucrative business on the grounds

that most clients can charge their telephones at home, in their office or in their autos.

Coin worked cell telephone charger is new business development in light of the fact that numerous are going to business traditions and overlooking their charger at home or in lodging rooms. Understudies and numerous individuals utilize people in general transportation that don't have the foggiest idea about that their level of their battery is low are forthcoming clients for coin worked cellular telephone charger administration.

Suggested areas include: Hotels, Conference focuses, Exhibition lobbies, Serviced workplaces, Exchange corridors, Motels, Leisure focuses, Health clubs, Training focuses, Golf clubs, Retail outlets, shopping centers, Internet bistros, Universities, Colleges, Hall of living arrangement, Airports, Train terminals, and so forth., so that the cell telephone clients can reactivate a low or dead battery by just connecting to and charging for one rupee.

IV. OBJECTIVES

The primary objectives of this study can be summarized as follows:

1. To interface Solar Panel with PCB and Raspberry pi.
2. To implement Timer and Solar Control Logic using Python.
3. To design PCB circuit.
4. To interface kit with IoT using Blynk app.

V. CONCLUSION

Since mobile is the only means in this epoch by virtue of which humans interact with each other; this topic is chosen. Due to amplified usage of mobiles; at times we just forget to charge them and then ascertain the means of charging. But haplessly we do not get the means because government has dispensed very few sockets in public transport like railways. Denizens of India do not bother about the losses the government suffer through and moreover; they do not use the resources wisely which are at disposal to them. So we have proposed this work which furnishes solar based charging to multiple devices by charging users with money. Here Raspberry pi is used to minimize the hardware cost. The proposed work has the ability to charge dead mobile. Also the proposed work uses IoT because none of the existing systems work on it. An open source app will be used to

interface IoT with kit. App will be used to monitor solar panel and keep count of money. The amount of charging the solar panel has and the time for which the charging is to be provided is overseen through app as well.

VI. REFERENCES

- [1]. M.S.Varadarajan,"Coin based Universal Mobile Battery Charger" in ISSN: 2250-3021, June 2012, Volume 2, Issue 6.
- [2]. Pulvirenti, F. Milazzo, P. Ursino, R, "Charger power switch for mobile phones, Analog and Mixed IC Design" in Proceedings 1997 2nd IEEE-CAS Region 8 Workshop, 12-13 Sep 1997, Pg 97-100.
- [3]. Aparna D. Pawar, "Coin Based Solar Mobile Charger" in Proceedings of IEEE international Journal of Engineering and Technical Research (IJETR),May 2015, Vol. 3, pp. 80-83.
- [4]. D. Asha Devi & M. Suresh Babu, "Design and Implementation of Efficient Solar Power System for Multi Mobile Charger" in International Journal of Emerging Trends & Technology in Computer Science (IJETTCS), Sep-Oct 2014, Vol.3, pp.88-92.
- [5]. T. Chandrashekhar , G. Swaminaidu , Ch. Babu Rao, "Experience Replay for Mobile Charger based on Coin by using Solar tracking System" in International Journal of Innovative Research in Science, Engineering and Technology, February 2014,Vol.3, pp.9605-08.
- [6]. F. Sani, H.N Yahya, M. Momoh, I.G. Saidu and D.O. Akpootu, "Design and Construction of Microcontroller Based Charge Controller for Photovoltaic Application" in IOSR Journal of Electrical and Electronics Engineering , Jan. 2014 Vol. 9, pp. 92-97.
- [7]. Weidong Xiao, William G. Dunford, Patrick r. Palmer and Antoine Capel, "Regulation of Photovoltaic voltage" in IEEE Trans Industrial Electronics, June 2007,vol. 54 no.3, pp. 1365-1373.
- [8]. Vikas Kulkarni & Rajesh Nehete , "Simulation and Analysis of Photo-Voltaic (PV) based Solar Inverter System" in International Journal of Soft Computing and Engineering (IJSCE), January 2014,Vol. 3, pp. 114-120.
- [9]. Wallies Thounaojam1, V Ebenezer, Avinash Balekundri, "Design and Development of Microcontroller Based Solar Charge Controller" in International Journal of Emerging Technology and Advanced Engineering, May 2014, Volume 4, pp.510-513.
- [10]. Barth, H. Schaeper, C. Schmidla, T. Nordmann, H. Kiel, M. van der Broeck, H. Yurdagel, Y. Wieczorek, C. Hecht, F. Sauer, D.U., "Development of a universal adaptive battery charger as an educational project" in Power Electronics Specialists Conference (IEEE) , June 2010,PESC 2008.