iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** IV **Month of publication:** April 2023

DOI: https://doi.org/10.22214/ijraset.2023.50632

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue IV Apr 2023- Available at www.ijraset.com

Phone Charger Using Sun Tracking Solar Panel

Suraj Labade[1], Rohit Mane[2], Aditya Modak[3], Anil Sadgire[4], Tanaya Harde[5], Prof. Dr. Pankaj Gaigole[6]
Department of Production And industrial Engineering, Savitribai Phule Pune University

***Abstract:** This design uses solar energy from the light, also stores it and eventually converts it into electric energy. Electric energy is used to power a wide variety of devices, from small appliances like toasters and blenders to large industrial machines. It is also used to charge batteries, power lights, and provide heat and cooling. Electric energy is also used to generate electricity for homes and businesses. In our design solar panels absorb the energy and temperature detectors descry the temperature and change the direction of the solar panel to follow the direction of the light. therefore, temperature detector plays an important part in our design. The electricity stored in the capacitor is released into the electronics through the circuit. The capacitor acts as a buffer, allowing the current to flow at a steady rate. This helps to protect the electronics from sudden surges in current that could damage them. In the preface, the main way of the design are handed, also, the purpose and significance of design are shown. In the discussion section, the details of rendering, solid work delineation and factual work are examined. The experimental setup lists the accoutrements that are used in the design and show how the process is carried out to achieve the pretensions.*

***Keywords:** Solar energy, Breadboard, the solar panel, jumper wires, environmental concerns.*

I. INTRODUCTION

In moment life each & every person is using a mobile. The dishes of mobile phones can carry far and wide but we ca n't say that, far and wide there's vacuity of electricity. During summer days this problem occurs generally further times, to overcome this problem of charging of mobile phones in public places & especially for pastoral people this system designed. Also now a day's there's no any similar type of installation is available at the public places & at pastoral area. The mobile phone business is presently worth billions of bones, and supports millions of phones. The need to give a public charging service is essential. numerous critics argued that a public mobile phone charging service isn't a economic business because utmost druggies can charge their phones at home, in their office or in their buses. Coin operated mobile phone bowl is new business corner because numerous are attending business conventions and forgetting their bowl at home or in hostel apartments. scholars and numerous people use the public transportation that don't know that their position of their battery is low are prospective guests for coin operated mobile phone bowl service. Recommended locales include hospices, Conference Centre's, Exhibition halls, serviced services, Exchange halls, Motels, Leisure Centre's, Health clubs, Training Centre's, Golf clubs, Retail outlets, Shopping promenades, Internet cafes, Universities, Colleges, airfields, Train outstations, etc., so that the mobile phone druggies can extinguish a low or dead battery by simply plugging in and charging for one rupee, two rupee, & five rupee.

II. METHODOLOGY

So, first effects first, you need some solar panels. We used two, although you can use still numerous you want, just suppose about how much a 9gram servo is going to be suitable to lift lower (do not make it too heavy). The panels We set up were rated at1.5 V,0.75 W affair which is on the lower end available these days. But they were light and cheap and given this is an evidence of conception design for me, the affair is not super important. We joined my two panels along the edge with epoxy resin. You can then connect the positive and negative lines to the charge controller, which will regulate the power from the solar panels and ensure that the batteries are charged correctly.

Attach your two LDR's to each side of the solar panel (East and West), and solder one end of a muumuu line to each of their leads. It's easier to solder a muumuu line if you cut the end of one side, and strip the lead about 5 mm to expose the cables. For the Arduino to read the LDR's, we need a voltage separator circuit for each.

See then for voltage separations. In this circuit, the LDR is R1, and we use a 10kohm resistor for R2, and join muumuu cables to the Arduino where the two resistors meet. However, one LDR lead will go to the voltage separator, the other goes to the positive power rail, If your structure this design on a breadboard.

©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue IV Apr 2023- Available at www.ijraset.com

III. HARDWARE IMPLEMENTATION & DESIGN

A. Arduino Uno

The board features 14 Digital legs, 6 Analog legs, and programmable with the Arduino IDE(Integrated Development Environment) which is across-platform operation written in Java. It can be used to write and upload programs to the board. The board can be powered by USB string or by an external 9V battery. It also has a power jack for connecting an AC- to- DC appendage or battery. The board also has a reset button, a power LED, and a status LED. It also has a built-in voltage regulator, allowing it to be powered from a variety of sources. The board is compatible with most Arduino shields, allowing for easy expansion. The Uno board is the first in a series of USB-based Arduino boards; it and version 1.0 of the Arduino IDE were the reference versions of Arduino, The ATmega328 the bootloader is a small program that is stored in the microcontroller's memory. It allows the user to upload new code to the board without the need for an external hardware programmer. The bootloader is typically activated when the board is powered on, and it will wait for a specific signal from the user before it begins the process of uploading the new code. Once the new code is uploaded, the bootloader will then execute it.

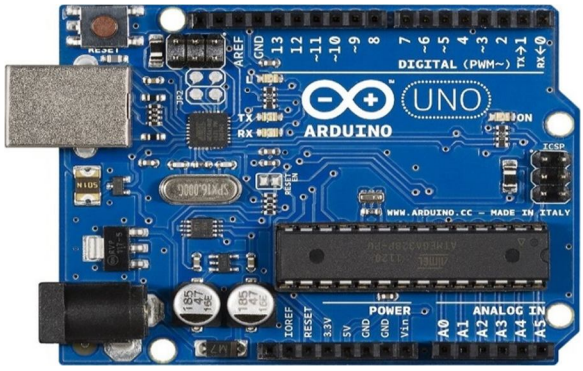


Fig 1: Arduino UNO

B. Solar Panel

They are made up of photovoltaic cells, which absorb sunlight and convert it into direct current (DC) electricity. This DC electricity is then converted into alternating current (AC) electricity, which is what is used to power homes and businesses. Solar panels are becoming increasingly popular as a renewable energy source, as they are a clean and efficient way to generate electricity. They're made up of photovoltaic (PV) cells, which are made of semiconductor accoutrements similar as silicon. When sun hits the PV cells, the energy is converted into direct current (DC) electricity. This DC electricity is also converted into interspersing current (AC) electricity, which is the type of electricity used in homes and businesses. Solar panels can be used to power anything from small appliances to entire homes. most installations contain multiple modules. An average home installation could involve anywhere from a few dozen to a few hundred modules. The total power output of an installation is measured in kilowatts (kW). The modules are typically mounted on a roof or a ground-mounted rack and connected in series and/or parallel to create the desired system voltage and current. The inverter converts the DC power from the modules into AC power that can be used by the home or business. The battery pack stores energy for use when the sun is not shining.



Fig 2: SOLAR PANEL

©IJRASET: All Rights are Reserved

C. Jumper Wires

A jump line is an electrical line or group of them in a string with a connector or leg at each end. Cables are used to connect factors to each other on the breadboard or other prototype, internally or with other outfit or factors, without soldering. line connectors could be manly or womanish. A manly connector is generally appertained to as a draw and has a solid leg for a center captain. A womanish connector is generally appertained to as a jack and has a center captain with a hole in it to accept the manly leg.



Fig 3: JUMPER WIRES

D. Breadboard

Terminal strips are typically made of plastic and have metal contacts that are connected to the power and ground rails of the breadboard. The contacts are usually spaced in a 0.1 inch (2.54 mm) grid, which is the same spacing used for most integrated circuits (ICs). The contacts are also connected to the power and ground rails of the breadboard, which provide power and ground to the components. The power and ground rails are typically marked with red and blue lines, respectively.

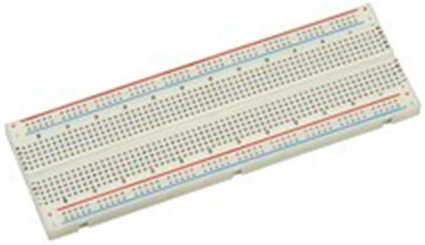


Fig 4: BREADBOARD

IV. RESULT AND DISCUSSION



Fig 5: PHONE CHARGER SYSTEM

V. CONCLUSION

This system is also beneficial for the environment as it does not require any electricity to charge the mobile phones. It is also cost effective as it does not require any additional cost for installation or maintenance. This system can be used to charge any type of mobile phone.

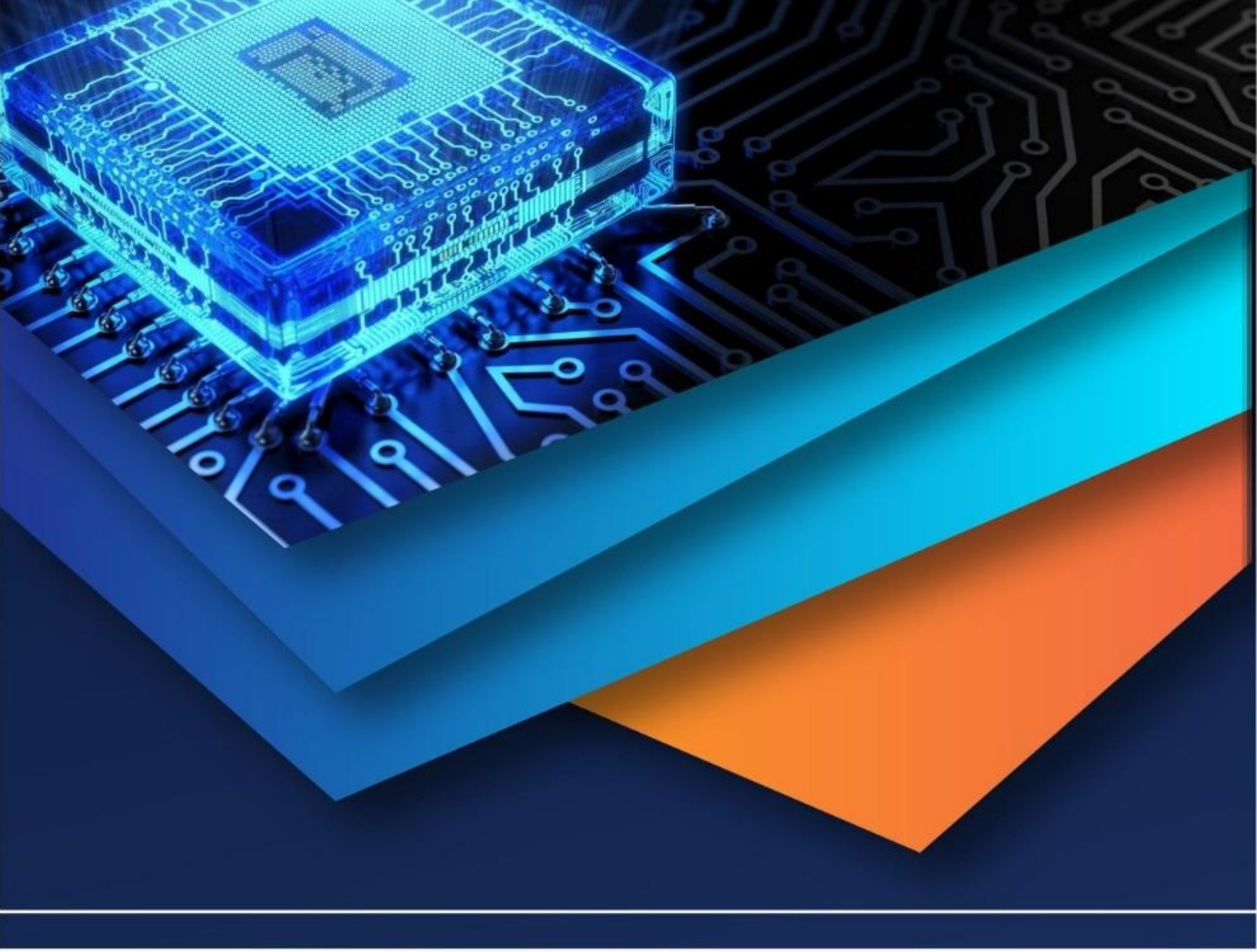
VI. FUTURE SCOPE

The solar mobile charger works by converting the energy from the sun into electrical energy. This electrical energy is then used to charge the battery of the mobile device. The solar mobile charger is usually made up of a solar panel, a battery, a charge controller, and a power inverter. The solar panel collects the energy from the sun and converts it into electrical energy. The battery stores the energy and the charge controller regulates the flow of energy from the solar panel to the battery. The power inverter then converts the stored energy into the type of energy required by the device.

REFERENCES

[1] Amar Kumar Verma, Prerna Saurabh "Mobile Charger Based on Solar Energy with Solar Tracking System", June 2021.
[2] Ammu Anna Mathew, Anoop J R, S. Vivekanandan "A Coin Acceptor - Mobile Battery Charging using Solar Panel", April 2020.
[3] Haoyu Liu, Esther Xu, Josiah Soegiharto, Mohammed Bamhraz and Daisy Zhao "Solar-Tracking Phone Charger", June 2020.
[4] Gaurav V. Chamate, Vishwanath Kommulwar, Jayant V. Wankhade "coin based mobile charger using solar tracking system", Jan 2017.
[5] Divya Mahatauliya, Gaurav Singh Bhadauria, Mohammad Rameez "Automated Sun Tracking Based Mobile Charging System", May 2017.
[6] A. H. Tirmare, V. V. Khandare, P. S. Mali "solar energy based mobile charger", June 2015.
[7] Rohit kamble, Sameer Yerolkar, Dinesh Shirsath, Bharat Kulkarni "Solar Mobile Charger", July 2014.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)