2581-4575
International Journal For Recent Developments in Science & Technology
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A Peer Reviewed Research Journal

MOBILE CHARGING USING RFID

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ABSTRACT

This document describes coin and RFID-based mobile chargers that use solar system for maintenance in public areas. In rural areas, grid power is partially available in one day. Solar charging is a good way to overcome this. This technique can be used at train stations, bus stops, and markets. The basic design of this system is to provide users with uninterrupted communication if the user forgets to charge the battery or if the battery runs out. You can insert coins, Rs 1 coins, Rs 2 coins, Rs 5 coins and use the RFID reader to charge your mobile phone. Arduino NANO is used to detect the inserted coin and RFID with a laser and control the charging time for a certain period of time that the user can continue by inserting more coins. With the Arduino software installed on your computer, you can edit and upload programs to suit your application.

I.INTRODUCTION

This work aims to design a mobile charging system using coins and RFID. Today, the mobile industry is growing rapidly and technology is changing every year. There is a growing need for mobile phones for communication and bill payments. This system is used to charge in an emergency or when the batteries and are emptied without being connected to the mains. Urban people have enough grid power and alternatives to charge their cell phones, while rural people experience power outages and the cell phone's battery drains easily. This system works with both solar and grid power. This system works in two ways: insert a coin or register with an RFID tag. First, open the RFID tag to be registered. Users want to connect their phones and scan RFID tags. After registration, the door will close and the phone will start charging. Another possibility for an unregistered user to insert a coin and charge the mobile phone depends on the coin to be inserted, and the charging time of the mobile phone will be different.

II.LITERATURE SURVEY

P. Goyal and P. S. Sharma, "Coin Detection based Mobile Charging System", 2019 6th International Conference on Computing for Sustainable Global Development (INDIA Com), pp. 60-63, 2019

There is a growing need for convenient and efficient charging solutions with the increasing use of mobile devices. In this project, we propose an approach to automating the charging times of a mobile device based on the value of coins inserted into the charging station. Our system uses Image processing and machine learning techniques implemented in Python to detect the value of coins placed in the charging station and sends this information to an Arduino microcontroller. The Arduino then calculates the appropriate charging time based on the value of the coins and initiates the charging process. This allows users to pay for and charge their mobile devices. The system consists of a webcam, a computer, an Arduino board, and a mobile charger. The image processing algorithm uses OpenCV library to preprocess and extract features from the images of the coins, and then uses a support vector machine (SVM) classifier to recognize the coins. The SVM classifier is trained on a dataset of Indian coin images. The Arduino board receives the coin value information from the computer and calculates the charging time based on the predefined charging rate. This makes it particularly useful in public places such as airports, train stations, and shopping malls, where users may not have access to their usual charging cables. The widespread use of mobile devices such as smart phones and tablets has led to an increasing demand for convenient charging solutions. Traditional charging methods often require users to carry around their own charging cables and find available power outlets, which can be inconvenient and time-consuming, especially when on the go. To address this issue, we propose an approach to automating the charging process based on the value of coins inserted into a charging station. Our system uses Image processing and machine learning techniques implemented in Python to detect the value of coins placed in the charging station and sends this information to an Arduino microcontroller. The Arduino then calculates the appropriate charging time based on the value of the coins and initiates the charging process.The

proposed coin-based mobile charger offers several advantages over traditional charging methods. Firstly, it eliminates the need for users to carry around their own charging cables, as the charging station provides the necessary charging cable for a wide range of mobile devices. Secondly, it allows users to charge their mobile devices in a convenient and automated way. This makes it particularly useful in public places such as airports, train stations, and shopping malls, where users may not have access to their usual charging cables. In addition, our system can be easily adapted to accept different types of coins making it a versatile and scalable solution for charging mobile devices. This system is based on Image processing and machine learning techniques implemented in Python to detect the value of coins placed in the charging station. We used OpenCV library to preprocess and extract features from the images of the coins, and then uses a support vector machine (SVM) classifier to recognize the coins. The SVM classifier is trained on a dataset of Indian coin images. SVM recognizes the value of the coins from the images taken by a camera mounted above the charging station. The detected coin value information is then sent to an Arduino microcontroller, which calculates the appropriate charging time based on the value of the coins and initiates the charging process. In this paper, we present the design and implementation of the coin-based mobile charger system and evaluate its performance through a series of experiments. We begin by discussing related work in the field of automated charging systems and computer vision-based coin detection. We then describe the hardware and software components of our system in detail, including the camera, the coin detection algorithm, and the Arduino microcontroller. We also present the results of our experiments, which demonstrate the accuracy and effectiveness of our system in detecting coin values and initiating the charging process.

Khushbo Sharma, Kavita Gade, Chitrakala Manimar, Harsha Gadhave and Naresh Pund, "Universal Coin based Mobile Charger", International Jour nal on Recent and Innovation Trends in Computing and Communication, vol. 4, no. 1, pp. 66-68, Jan 2016.

The increasing need for energy and hence its demand requires developing approaches compatible with both environmental needs and the possible future of the economy. Access to electricity that is affordable is still

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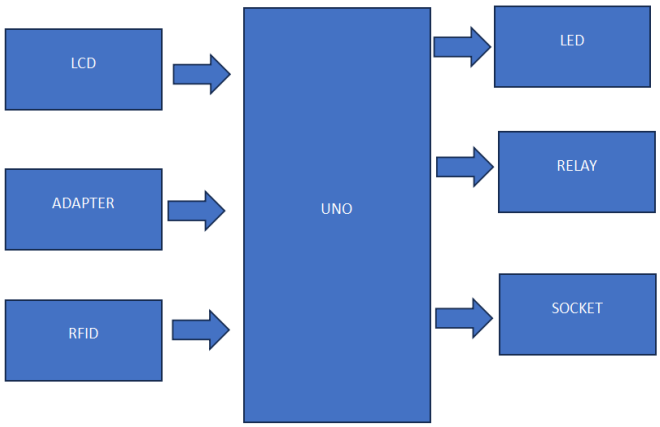
a dire challenge in most developing regions, especially in rural and resource-poor centers. Indeed, even in mundane day-to-day life, insufficient energy services limit economic opportunities, educational advancements, and social development. Although the charging station is an innovation in itself, it is actually a system that requires periodic maintenance to operate properly. At the same time, the village location is remote and technicians are not at hand. When this system breaks down, it may take days or sometimes even weeks for the maintenance to be repaired, which means that there would be no reliable charging source for people during these periods. Based on the study of Krishna et al., (2021) that there is a growing need for convenient and efficient charging solutions with the increasing use of mobile devices all around the world. This allows users to charge their phone with the cost of a convenient amount of money. The Coin-Based Charging System should therefore be adopted with great immediacy and wide reach to ensure underserved communities equal access to sustainable energy. As mobile devices increasingly become lifelines to communication, education, and economic opportunity, a lack of reliable options for charging them risks deepening existing inequalities. Insecure, inaccessible, and unmaintainable systems—these are just part of the problems. The challenge in meeting these is much more than a matter of convenience; this will empower vulnerable populations and foster resilience toward sustainable development. Further procrastination can mean leaving millions behind, disconnected, and able to be left behind in the digital age. Further research is required to investigate how the availability of coin-based charging systems has a bearing on the adoption of mobile technology and digital services in rural areas. Investigate in particular whether such systems facilitate wider integration and economic development or not.

Block diagram



III.PROPOSED SYSTEM

The proposed system of mobile charging using RFID (Radio Frequency Identification) technology introduces a smart and secure way to access mobile charging stations in public or restricted areas. This system is designed to provide users with controlled access to charging facilities by employing RFID cards or tags, which act as identification tools for users to authenticate and authorize charging sessions.

Each charging station will be equipped with an RFID reader, a microcontroller, and a mobile charging port. Users who wish to charge their devices will scan their RFID card or tag at the reader. The system will validate the RFID information stored in a database, ensuring that only authorized users can utilize the charging station. Once the card is authenticated, the microcontroller will activate the charging port, allowing the user to plug in their mobile device and initiate the charging process.

In addition to ensuring secure access, the system can track charging time and usage. This data can be logged into the system's database for monitoring purposes, enabling service providers to manage charging sessions effectively, bill users accordingly, or even limit charging time based on predefined criteria. The system can also be integrated with user accounts, allowing prepaid, postpaid, or subscription-based services.

The benefits of this system include enhanced security, as only authorized users can access the charging station, and the potential for smart management of charging services, including energy efficiency and usage tracking. This solution is ideal for deployment in places like universities, offices, libraries, public transportation hubs, and other shared spaces.

IV.CONCLUSION

A solar-powered charging system for mobile batteries from various manufactures is proposed, specifically designed for rural and remote areas where electricity supply is incosistent or insufficient.This project addresses the challenges faced by communities experiencing power shorttages.Given the critical need for communication today, the ability to chenge cell phones is essential for users in these regions.The proposed system will offer a reliable charging solution for mobile phones during emergencies, even in the absence of electrical power.

V.REFERENCES

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