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COIN BASED MOBILE CHARGING USING SOLAR PANEL

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ABSTRACT

Introducing a remarkable Mobile Charging System that uses coins and solar panels to creatively solve the problem of irregular power supply in cities and countryside. By utilizing the power of the sun, this system not only provides a sustainable and environmentally-friendly way to charge your devices but also offers a convenient and affordable payment method using coins. The user interface includes an LCD screen that displays important information about the charging process. This system is designed to work with various mobile devices, supporting different types of charging ports and standards. The integration of a remote monitoring system allows operators to easily keep track of the charging station's status, monitor energy generation, and swiftly address any potential issues that may arise. This proposed Coin-Based Mobile Charging System does not just decrease reliance on conventional energy sources but also actively supports environmental sustainability. The coin-based payment model ensures a self-sustaining operation, covering maintenance costs and potentially generating revenue for system expansion. By fostering community awareness and engagement in sustainable practices, this system aims to promote a sense of responsibility for the environment, making it a holistic solution for the evolving needs of mobile device users.

Keywords: Microcontroller, solar and Mobile charger, Relay module, Coil accepter module.

INTRODUCTION

The world embraces renewable energy solutions and the demand for mobile device charging continues to rise, the integration of solar panels with coin-operated mobile charging stations presents an innovative and sustainable solution. This coin-based mobile charging system harnesses the power of the sun to provide convenient and eco-friendly charging options for users on the go. With the increasing prevalence of mobile devices and the need for accessible charging infrastructure, this system not only addresses the energy needs of the digital era but also introduces a cost-effective and self-sustaining model.

In urban area there are many resources available for charging but in rural areas most of the time charging facilities are unavailable, electricity is absent. Sometimes battery becomes low in middle conversation and we need urgent requirement of charging. That time this coin operated mobile charger is used.

The heart of the system, the solar panel converts sunlight into electrical energy, ensuring a clean and renewable power source for mobile charging. the charge controller regulates the flow of electricity from the solar panel to the battery bank, preventing overcharging and optimizing

energy storage. Storing solar-generated energy, the battery bank ensures a continuous power supply, allowing users to charge their mobile devices even during periods of low sunlight. Providing a user-friendly and secure payment method, the coin mechanism controls access to the charging station, allowing users to pay for the charging service conveniently. Equipped with USB charging ports, these outlets enable users to connect their devices and replenish their batteries efficiently. A user interface with a display communicates important information such as charging status, cost per use, and instructions, enhancing the user experience and transparency.

By utilizing solar power, the system reduces dependence on traditional energy sources, contributing to environmental sustainability. The coin-based payment system allows for a self-sustaining model, covering maintenance costs and potentially generating revenue for further system expansion. laced in strategic locations, these charging stations provide convenient access to mobile charging, catering to the needs of individuals in public spaces, parks, and other high-traffic areas. The modular design of the system allows for scalability, enabling the deployment of multiple charging stations to meet the growing demand for mobile device charging. Implementing solar-powered, coin-operated charging stations fosters community awareness and engagement in sustainable practices, promoting a sense of responsibility for the environment.

This proposed system is solar activated coin based mobile charger, which charges the mobile phone according to the coin. for charging of mobile phone we need to insert the coin in to the coin insertion slot. 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. 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 Rs.5 then It will charge approximately 50 %. Likewise, Rs.10, coins charge the phone according to software. And if the incorrect coin is inserted then it will go to refund box.

Problem Formulation

In today's dynamic world, mobile phones play an integral role in people's lives, offering a plethora of features. However, the constant use of these features often leads to the need for frequent charging. This becomes particularly challenging for individuals embarking on long journeys or residing in areas with unreliable grid power. To address these challenges, the proposed solution is a Mobile Charging System based on Coin Insertion. This innovative system aims to provide a reliable and cost-effective charging service, ensuring that individuals can power their mobile devices conveniently. The system is especially beneficial for those in developing areas where access to grid power is limited or intermittent.

Literature Survey

In this proposed system, LCD interfacing with microcontroller for displays what action is to be done like the selection of mobile, ‘How much battery will charge’ etc. In this proposed system image processing is used for the correct coin detection. solar based charger converts sun(light) energy into DC current for a range of voltage that can be used for charging the battery. [1] Mobile will get charge, only when a coin is inserted at the coin insertion slot. One mechanical slot is attached with electrical triggering in coin insertion slot. If inserting the correct coin then it will send a pulse to the control unit authorizing the start of charging the mobile battery connected to the device. [2]

A proposed system, a smart phone having much more facilities, due to that facilities mobile phone required more charging. Sometimes our call may cut in mid-way due to lack of charging. [3] This system gives charging to that mobile phone which need immediate charging. Once we connect the mobile to charging slot we required to put the coins in this system. After inserting coin, it will compare with database, and if the coin insertion is exact then mobile will charge. This charging system is depending on the solar. Using solar panel, the sun energy(photons) is converted into electrons(current). [4] We know much of sun energy is wasted on earth and we need to use that energy. That's why in this system use the solar energy. This is a coin based flexible charging structure that charges the convenient for a particular proportion of time on expansion of coin. The structure can be used by retailers and open spots like railroad stations, etc., to give compact charging office. By then the controller starts the convenient charging framework giving deftly through sun arranged board to a hand-off contact the to the PDA. [5] The objective of this errand is embedding's the coin and charging the mobile phone. This endeavor is extraordinarily significant to the people who are generally using PDA without charging office out in the open spots. A sensor system is used to perceive the closeness of coin that is arranged using IR sensor. The coin is implanted between the IR transmitter and recipient. Exactly when the IR signal is thwarted by the coin, the IR sensor offers a basis hint to the controller by which the controller orders the charging unit by giving deftly (i.e. from sun-based load up) for a predefined time (60sec). [6]

As communication with world is becoming one of the essential parts of our life, handy electronics devices like mobile phones are one of the crucial devices everyone carries across the world. Use of such devices requires electricity supply for charging the device, which is not abundantly available in rural India. Hence, a wending machine-like system for charging the cell phone has been proposed which works on solar power system. The solar panel tracking system that charges the battery will drive the microcontroller. The microcontroller will control the amount of charging available to user. The proposed system shall provide electronic charging for the cell phones in the areas that are facing power crisis. [7]

OBJECTIVES

- Develop a solar panel-based energy system capable of generating sufficient power to charge mobile devices.
- Implement a coin-based mechanism that allows users to pay for charging services. This ensures sustainability and covers maintenance costs.
- Design an intuitive and user-friendly interface for the charging station, providing clear instructions for users to operate the system.
- Ensure compatibility with a variety of mobile devices, accommodating different charging ports and standards.
- Implement security features to protect both the charging station and users' devices from potential threats or unauthorized access.
- Integrate a remote monitoring system to allow operators to track the status of the charging station, monitor energy generation, and address issues promptly.

PROPOSED SYSTEM FLOW

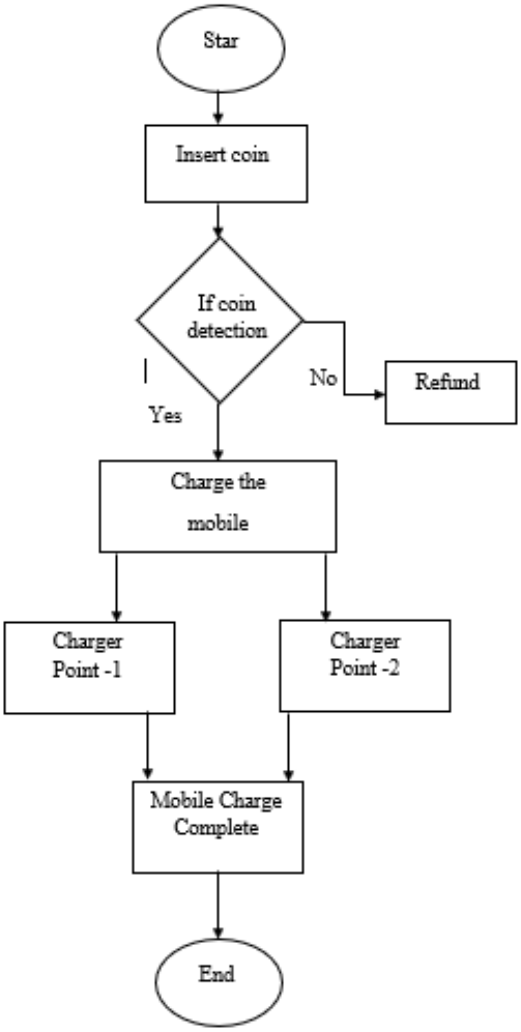
- The starting point where a user inserts a coin into the coin slot.
- Checks if the coin detection successfully identifies the presence of a coin.

1. If Yes, it proceeds to the "Process Coin" step.

2. If No, it may loop back to the "Insert Coin" step, indicating that the system is waiting for a coin.

- This step involves further processing of the coin, such as validation and initiating the charging process. Indicates that the charging process has started and is in progress.
- The flow can continue to other steps related to charging, user interaction, or system status.

This step represents further actions taken upon successful coin detection, such as validation and initiating the desired process (e.g., starting a charging session).



CONCLUSION

The proposed Coin-Based Mobile Charging System with Solar Panel Integration addresses the growing need for reliable and sustainable charging solutions. By combining solar power and coin-operated mechanisms, this system offers accessibility, affordability, and environmental sustainability. The modular design allows for scalability, making it suitable for deployment in various locations, especially in off-grid and rural areas. This system contributes to the broader goal of promoting responsible and eco-friendly practices while meeting the evolving demands of mobile device users.

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