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Coin Based Mobile Charging System

[1]Radhika Ravikrindi, [2]Aithagoni Priyanka, [3]Nagelly Sathwika, [4]Panthangi Sathyavathi
Assistant Professor, ECE Department, BRECW.
[2,3,4] B.Tech Students, Department of Electronics and Communication Engineering, BRECW

ABSTRACT

This project describes coin based mobile charger, which provides service in public areas. In rural areas partial grid power is available in a day, to overcome this solar charging is a suitable method. This technique can be used in railway stations, in bus stands, in market. The basic design of this system is to provide uninterrupted communication to the user if he forgets to charge his battery or if the battery becomes flat. Charging of mobile can be accomplished by single coin insertion of 1re or 5re coin. Arduino nano is used for detection of inserted coin using ir sensor and controlling charging period for specific time user can continue the charging inserting more coin. Arduino software is installed in the computer and so that we can edit and upload the program according to the application. This Arduino software supports C & C++ programming language.

Introduction

The mobile phone business is a massive industry that has expanded into rural regions as a method of communication that is crucial to the people living there. While people living in metropolitan areas make use of more advanced mobile devices that have batteries that are capable of providing sufficient power for many days, those living in rural areas purchase pre-owned mobile phones that need to be charged regularly. Commercial districts, train stations, bus stops, and markets are all potential locations for the use of this method. The fundamental purpose of this system is to ensure that the user is able to maintain continuous connection in the event that he failed to remember to charge his battery or if the battery ran out of power.

After the mobile device has been connected to the charging slot, we are required to input the coins into the system. Once the coins have been inserted, the system will compare them with the database, and if the coin insertion is accurate, the mobile device will begin charging. Using solar panels, the energy from the sun is transformed into electrons, which forms current, and thus charging mechanism is dependent on renewable energy. On earth, we are aware that a significant amount of solar energy is lost, and we must make use of that energy. It is for this reason that the system makes use of solar energy.

In the project that we are working on called "Coin Based Mobile Charger Using Solar System," there is not only solar energy but also coin insertion, and the laser will be used to identify the coin. To charge a coin for fifteen minutes, we spend ten rupees. The Arduino IDE, which is open-source software, is used to do programming on the Arduino platform. These days, around 70 percent of individuals have a cell phone in their possession. Mobile phones need charging in order to function properly.

In a number of developing nations, the power grid is unavailable for a few hours to several hours on a daily basis. This is particularly true in urban and rural regions, where mobile phones are a crucial communication equipment. Additionally, while traveling on interstate streets, it is very uncommon for a battery to run out of power in the midst of a

conversation or when access to a regular charger is unavailable.

Review of the Literature

The vast majority of these mobile charging systems, -on the other hand, are highly reliant on grid power, which limits their use in regions where the supply of electricity is not continuous. Earlier research on mobile charging systems has been conducted in a number of different locations. Solar energy has become an increasingly popular choice for sites that are physically isolated, and research into systems that are fueled by renewable energy sources has also picked up speed.

1. Charging Systems That Are Operated With Coins: These systems are already in operation in a number of industrialized nations, despite the fact that they are primarily reliant on conventional sources of electricity. The concept of mobile charging kiosks that operate on a pay-per-use basis has been shown to be a viable method for extending access, especially in urban environments. In spite of this, there is a restricted capacity for the inclusion of renewable energy sources into such systems.

2. Solar-Powered Charging Systems: According to the research that is currently accessible, solar-powered charging stations are becoming an increasingly practical choice, particularly in rural and remote areas where the power supply is unreliable. Numerous academic studies have shown that solar power has the ability to provide consistent charging services while having a little impact on the environment. This promise has been demonstrated by solar energy.

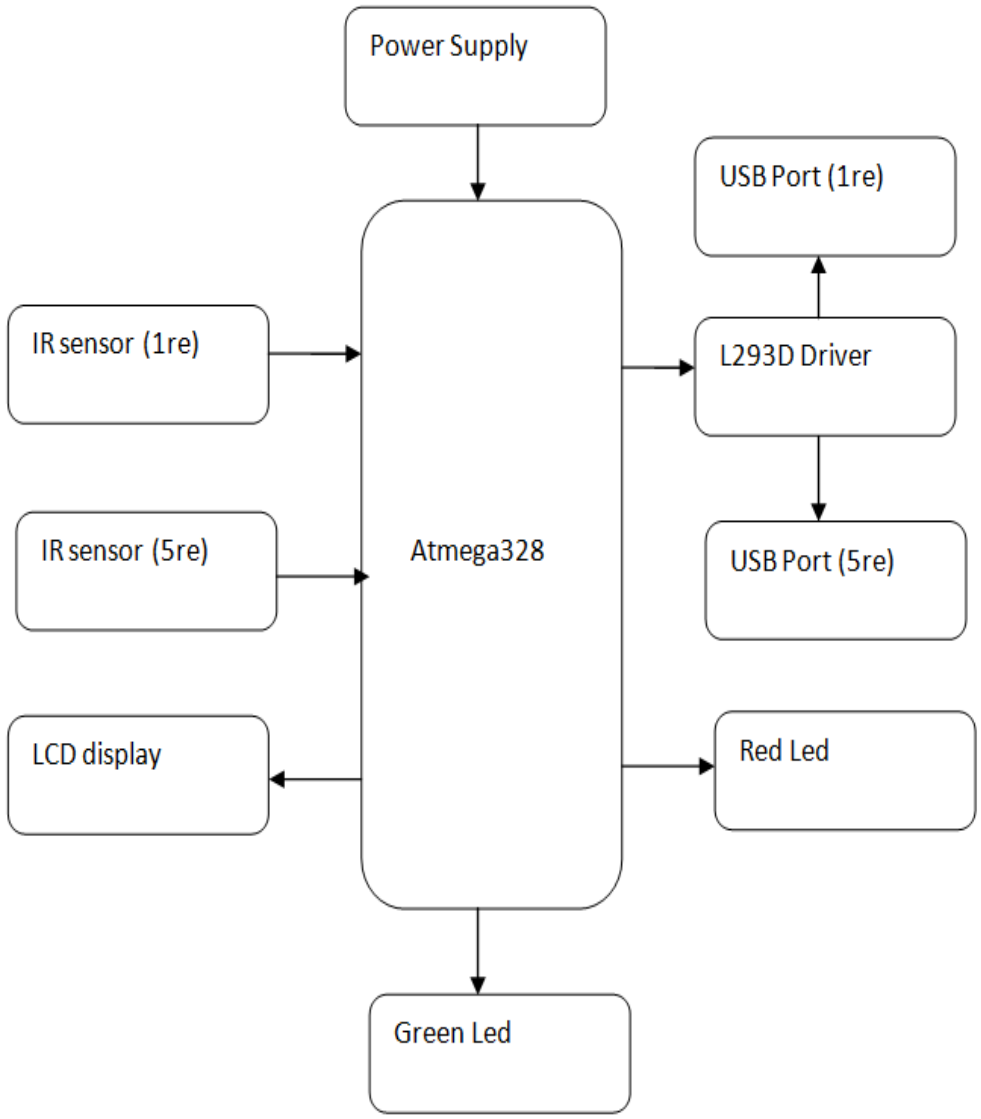
3. Microcontroller-Based Systems: Microcontroller systems that are based on Arduino have been widely employed for a number of automation activities, including power management, sensor control, and timing operations. These systems have been used for a long time. Based on the findings of several investigations, it has been shown that the combination of an Arduino Nano and coin-detection sensors is capable of effectively regulating the operation of time-based charging systems with a high degree of accuracy.

In order to address the problems that were found in prior research, the coin-based mobile charging system that has been shown incorporates the concepts of both of the systems that have been described. It does this by offering a solution that is not only cost-effective but also based on environmentally friendly energy.

The framework for understanding the objective, motivation, and goals of the coin-based mobile charging system has been supplied in the first chapter. Additionally, the format of the report and the literature research that applies to it have also been presented in this chapter. The chapter lays an emphasis on the project's purpose to provide a mobile charging solution that is both accessible and pay-as-you-go, particularly in public and rural areas where stable energy may not be readily available. This is especially important in areas where there is a lack of access to steady electricity.

Driving causes behind this endeavor include the increased reliance on mobile phones as a method of communication, as well as the lack of charging infrastructure that is readily accessible in critical locations such as transportation hubs, marketplaces, and rural areas. Both of these factors are contributing factors. The project not only provides a solution that is good to the environment, but it also ensures that service will be uninterrupted. This is because solar energy is used in the project.

Block Diagram



Working

The cell phone battery charger starts charging a mobile connected to it, when a coin is inserted at the insertion slot at the input stage, if the coin is inserted, the IR proximity sensor detects the coin and coin detection system sends a pulse to the control unit authorizing to start cell phone battery charging by enabling relay where it acts as switch, regulator is used to supply the required voltage and current for charging mobile. This electrical supply is generated using solar energy which is fed to the 12v rechargeable battery. And the micro controller will define a particular time for every insertion of coin and allots the time for charging the particular mobile.

Schematic & Reference Design

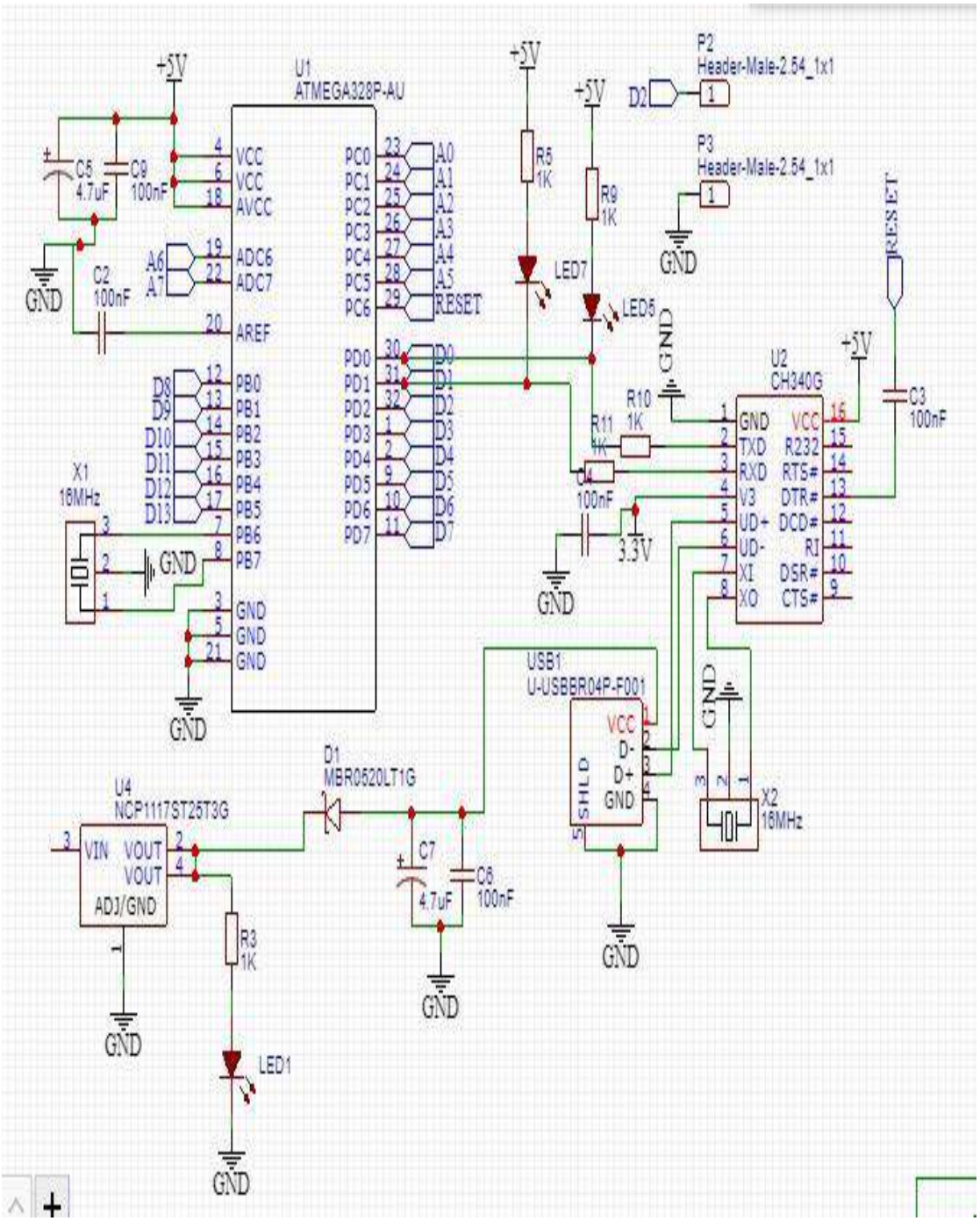
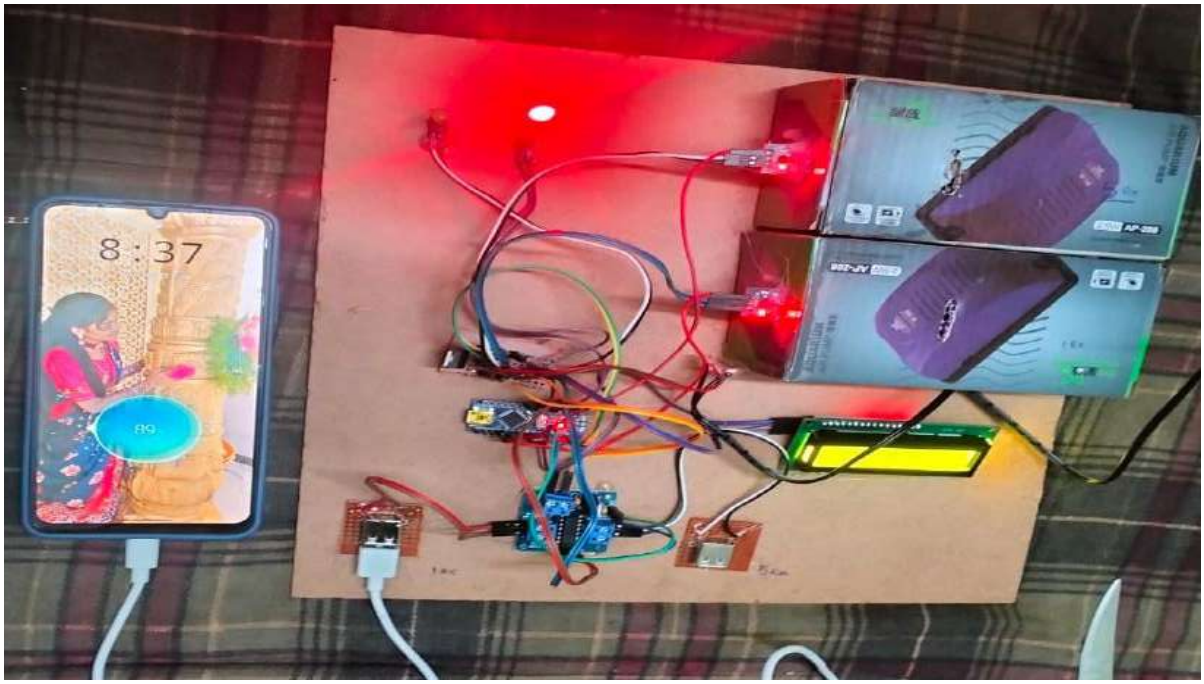
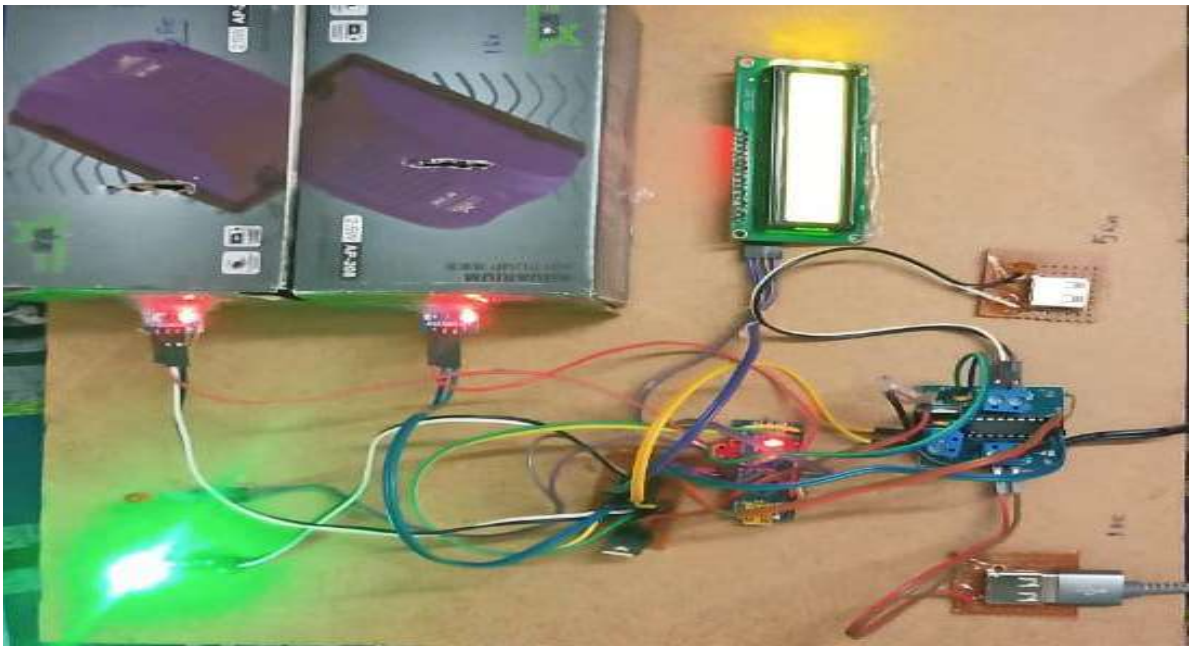


Fig 2 Schematic & Referen

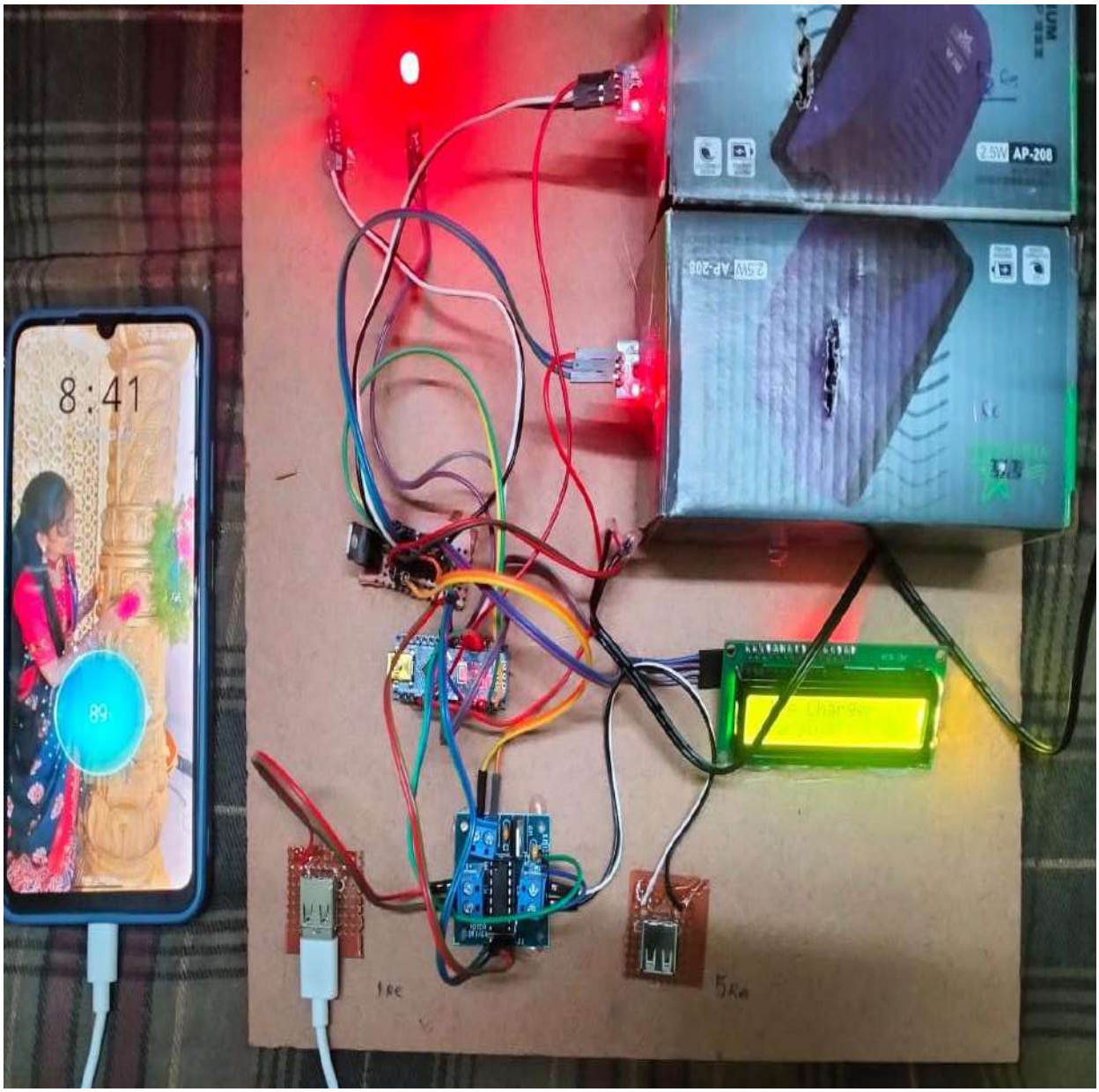
Results

In this system, we have implemented the simple and hand efficient mobile charger which helps the user, charge their phones during urgent needs. This system is very helpful to the users who are all using mobile phone without charging conditions in public places. This system simple to use and is less expensive.






Coin Based
Mobile Charger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Conclusion

A system for charging mobile batteries of different manufacturer using solar power is proposed. The system is proposed for rural and remote areas where the current supply is not available all the time or for sufficient time. This project is very useful at such locations where people are facing power crisis. Since, necessity of communication is very important now days, cell phone charging is one of the problems faced by users. The proposed system shall provide a source of charging the cell phone in emergency conditions without the electric supply. The expected result of this is to charge a mobile battery with the help of IR coin detector. If a user enters a 1 rupee or 5re coin at that time the mobile battery will be charged up to 30 to 40 percent.

Future Scope

The Coin-Based Mobile Charging System holds significant potential for expansion and innovation, particularly in regions where mobile phone usage is high, but access to consistent electrical power is limited. With advancements in technology, this project can be enhanced in several ways, catering to a wider user base and addressing emerging needs in public infrastructure, renewable energy, and mobile device support. Below are some future prospects for this project

The Coin-Based Mobile Charging System has a promising future, particularly as mobile phone usage continues to grow globally. By integrating digital payments, IoT capabilities, and renewable energy sources, this system can evolve into a critical part of urban and rural infrastructure. With advancements in wireless technology, fast charging, and security features, the system can cater to modern user demands while providing a sustainable and efficient charging solution.

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