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# RFID Based Wireless Charging System for Electric Car

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**ABSTRACT:** As the new era of the automobile, the industry is rapidly transforming from an IC engine vehicle to an electric vehicle. The demand for an electric vehicle is increasing, these lead to an increase in charging station as well. In this project, a wireless charging system is used to charge the vehicle wirelessly via inductive coupling. we just simply need to park the car on the charging spot. The transmission of electrical energy from source to load from a distance without any conducting wire or cables is called Wireless Power Transmission. The concept of wireless power transfer was the greatest invention by Nikola Tesla. Also, an Internet of things based collection system is designed in which a person can use the RFID to pay the charging charges of that vehicle. The system checks if the person has sufficient balance and then deduct the charging charges and update the balance. The Internet of Things describes the network of physical objects that uses sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems. This system doesn't require any human interaction. The result of this project is we can charge our vehicles wirelessly via inductive coupling and pay our charging charges through RFID tags. Wireless power transmission might be one of the technologies that are one step towards the future. This project can open up new possibilities of wireless charging that can use in our daily lives.

## I. INTRODUCTION

An RFID-based wireless charging system for electric cars is a cutting-edge technology that combines radio frequency identification (RFID) and wireless charging to provide efficient and convenient charging solutions for electric vehicles (EVs). Here's an overview of how such a system typically works. Overall, RFID-based wireless charging systems have the potential to revolutionize the way electric vehicles are charged, offering greater convenience, efficiency, and scalability compared to traditional charging methods. However, further research and development are needed to overcome existing challenges and fully realize the benefits of this innovative technology.

## OBJECTIVES

The objectives of an RFID-based wireless charging system for electric cars typically revolve around addressing specific needs and challenges within the context of electric vehicle charging infrastructure.

## II. LITERATURE SURVEY

**TITLE** - Electric Vehicle Wireless Charging Using Rfid

**AUTHOR**-J.zoyce Jacob<sup>1</sup>,Abinaya.S<sup>1</sup>Divya Priya.R<sup>1</sup>Ms.Poonam Khatarkar<sup>2</sup>Abdullaeva Barno<sup>3</sup> G. Sathish kumar<sup>4</sup>

**YEAR** - 2023

**ABSTRACT** - Electric vehicle (EV) wireless charging using radio-frequency identification (RFID) is a novel technology that enables the charging of electric vehicles without the need for wires or cables. The technology utilizes RFID tags that are installed on the EV, which communicate with the charging pad through electromagnetic fields. The charging process is initiated when the RFID reader detects the presence of the EV with the installed RFID tag, and the charging pad is activated. The power transfer is then enabled between the charging pad and the EV, allowing for the charging process to begin. RFID-based wireless charging technology offers numerous benefits over traditional wired charging systems. For instance, it eliminates the need for physical connectors, thereby reducing the wear and tear of components and increasing the convenience of charging. Moreover, the technology is more efficient, with minimal energy losses, and reduces the risk of electrical hazards.

## SOFTWARE IMPLEMENTATION

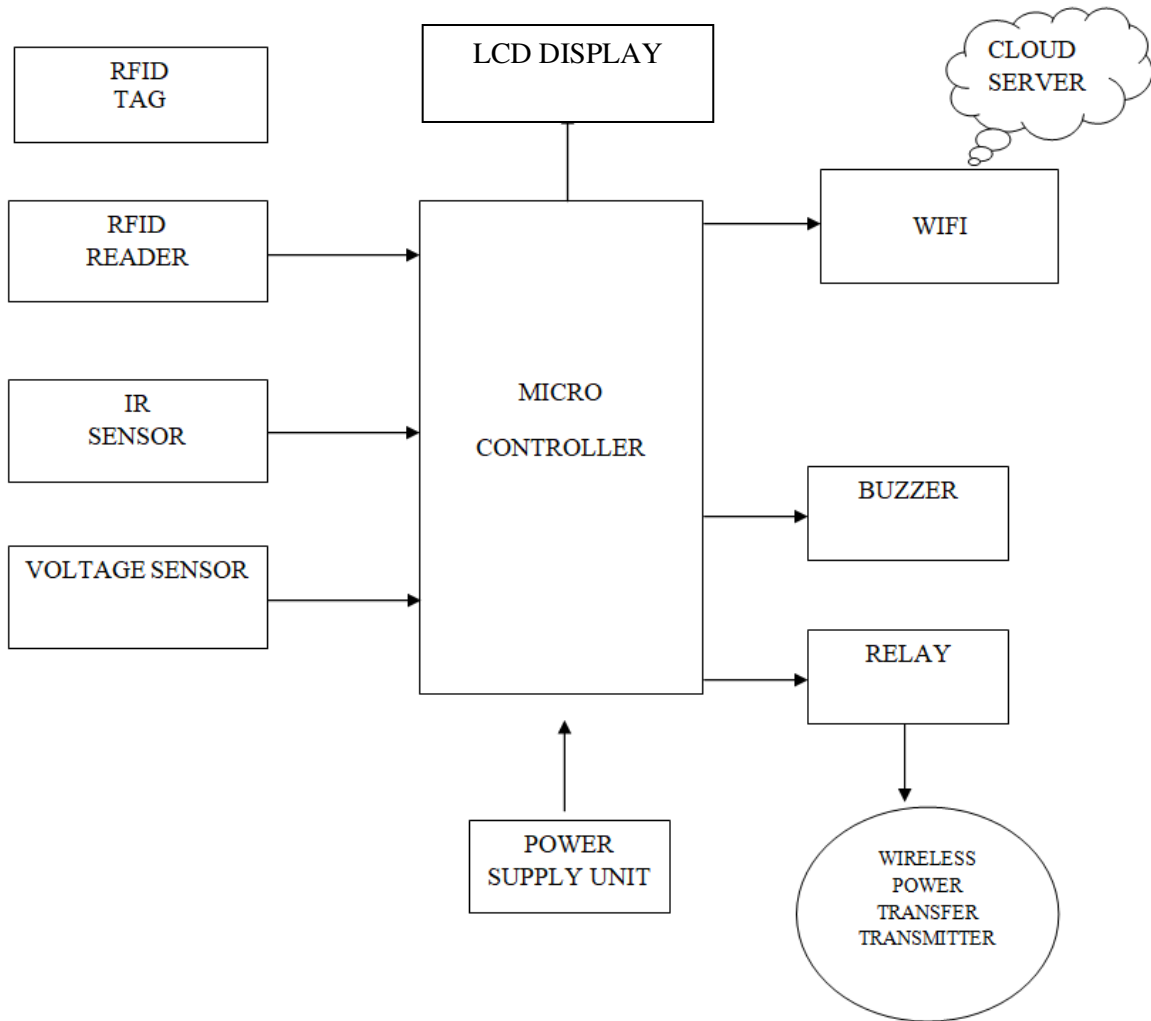
1. ARDUINO IDE
2. PROGRAMMING LANGUAGE
3. INTERNET OF THINGS (IoT)



**HARDWARE IMPLEMENTATION**

1. IR SENSOR
2. VOLTAGE SENSOR
3. RFID TAG
4. BUZZER
5. SINGLE CHANNEL RELAY
6. RFID READER

**Block Diagram**





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### III. IMPLEMENTING

Implementing RFID (Radio-Frequency Identification) based charging for electric cars involves integrating RFID technology into the charging infrastructure to enable secure and convenient access to charging stations. Here's a step-by-step guide on how to implement RFID-based charging for electric cars. Understand the requirements of your charging infrastructure. Determine the type of RFID system suitable for your needs (e.g., HF, UHF). Consider compatibility with existing systems and standards like ISO 14443, ISO 15693, or EPC Gen2.

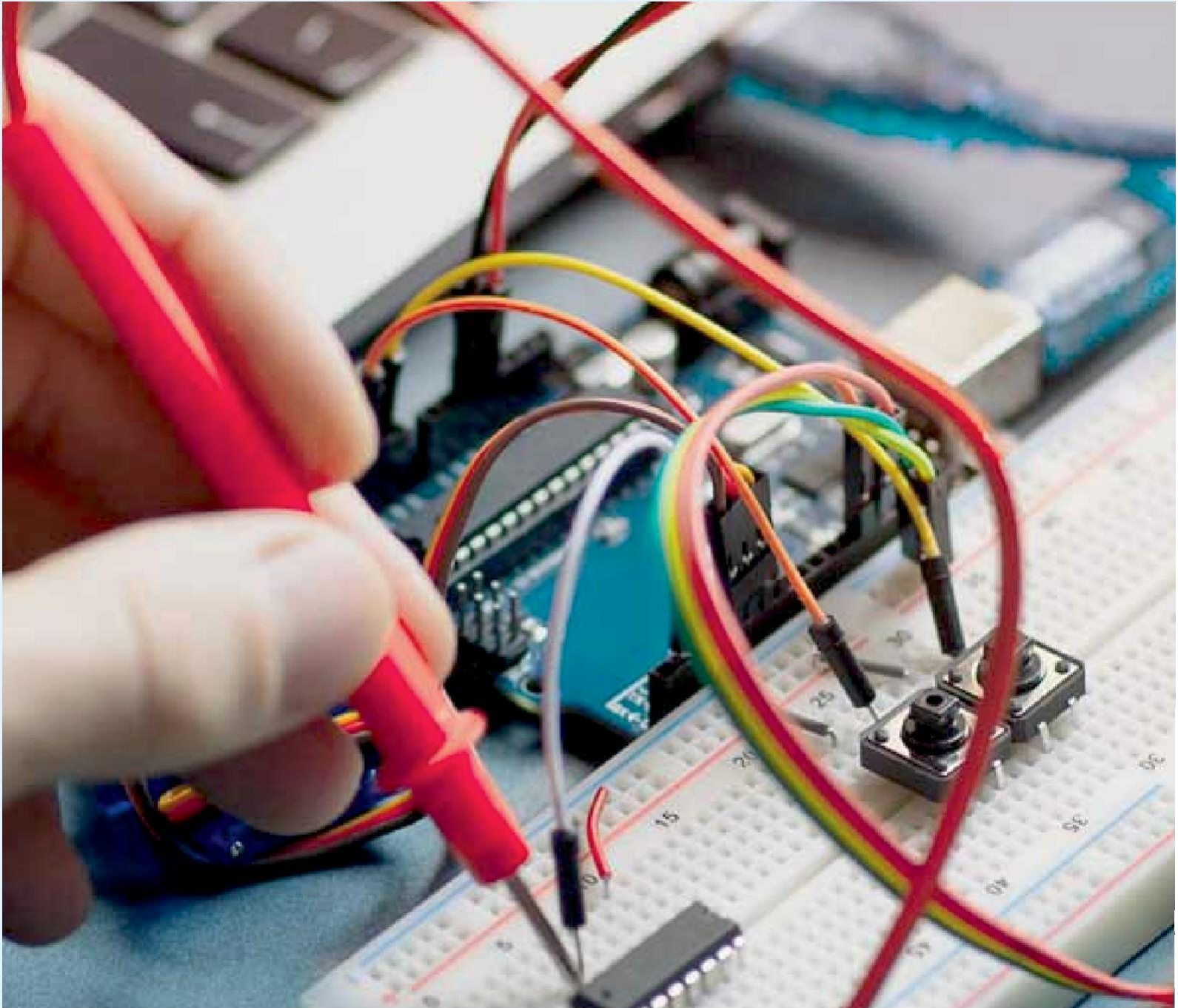
### IV. CONCLUSION

In conclusion, the RFID based wireless power transfer system for electric vehicle applications represents a significant advancement in the field of electric vehicle charging technology. By utilizing RFID tags and inductive coupling, this system enables convenient and efficient wireless charging, eliminating the need for physical connectors and reducing energy losses. The integration of the Internet of Things further enhances the system's functionality by enabling automated payment processes and seamless connectivity. With the potential to revolutionize the electric vehicle charging industry, this technology offers increased convenience, efficiency, and safety while reducing the environmental impact of transportation. As we move towards a more sustainable future, innovations like RFID-based wireless power transfer systems play a crucial role in shaping the way we power and interact with electric vehicles.

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