Wireless Electric Vehicle Charging using IoT for Smart Cities

Mrs. B. Meenakshi[1], Miyapuram Likhitha[2], Sarimalla Manaswi[3]
[1]Assistant Professor, Mahatma Gandhi Institute of Technology, Hyderabad, India
[2,3]UG Student, Mahatma Gandhi Institute of Technology, Hyderabad, India

Abstract: *Electric vehicles are a new and future technology in the transportation and power sector that has numerous benefits in terms of profitable and environmental. This system presents an IoT-based wireless charging system for electric vehicles, designed to enhance the user experience by enabling autonomous, efficient, and real-time management of charging processes. The car will receive the charge wirelessly through inductive coupling, which transfers power to a receiver coil mounted underneath the vehicle to connect to the battery. Devices like the Arduino UNO, relays, and ultrasonic distance sensors are used for IoT-based charging to portray the future of how an EV can be charged independently. For multiple EVs charging simultaneously, it gets burdensome to manage with the traditional wiring. This system integrates IoT into wireless charging stations to provide real-time monitoring, enabling operators to remotely manage and optimize charging sessions. The setup also automates vehicle alignment for charging, enhances the overall user experience, and supports the development of a smarter, more sustainable charging infrastructure.*

Keywords: Electric Vehicles (EVs), Wireless Charging, Internet of Things (IoT), Inductive Coupling, Autonomous Charging, Real-time Monitoring, Smart Charging Infrastructure, Arduino UNO, Ultrasonic Sensors, Relay Modules, Battery Management, Sustainable Energy, Charging Optimization, Automated Vehicle Alignment