

Proposal for graduation project (2023-2024)

Project Title Wireless Charger design for Smart Shopping Carts

Students

Supervisor(s)

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Abstract:

Development of contactless battery charging is an opportunity for electric vehicles including the smart shopping carts. Compared to regular plugin cables, this solution is easy to use, robust and weather resistant. The power is transferred thanks to the magnetic coupling of inductive coils and a reduced magnetic circuit.

This project aims to design a Wireless charger for smart shopping carts. It works in the same way as wireless charging for electric vehicles, using electromagnetic induction to transfer energy from a transmitter coil on the ground to a receiver coil on the underside of the shopping cart.

When the two coils are aligned, an alternating magnetic field is created between them. This field induces an electric current in the receiver coil, which is then used to charge the shopping cart's battery.

Wireless charging of smart shopping carts offers a number of advantages over traditional wired charging, including:

- Convenience: There is no need to plug in the shopping cart, which can save time and hassle for both customers and store employees.
- Safety: Wireless charging eliminates the risk of tripping over or getting tangled in charging cables.
- Weather resistance: Wireless charging is not affected by bad weather conditions, such as rain or snow.
- Flexibility: Wireless charging can be deployed in a variety of locations, including store aisles, checkout areas, and even customer parking lots.

Wireless charging of smart shopping carts is still in its early stages of development, but a number of companies are developing wireless charging systems for this application.



Some potential applications for wireless charging of smart shopping carts include:

- **Stores:** Wireless charging could be used to provide convenient charging for smart shopping carts in stores. This could help to reduce the downtime of shopping carts and make them more available to customers.
- **Warehouses:** Wireless charging could be used to charge smart shopping carts in warehouses. This could help to reduce the need for wired charging stations and make the warehouse more efficient.
- **Delivery vehicles:** Wireless charging could be used to charge smart shopping carts that are used to deliver groceries and other items to customers. This could help to extend the range of these vehicles and make them more efficient.