Smart Vertical Rotary Parking System

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Abstract: *The shortage of parking spaces has become a problem in densely populated cities due to urbanization and the growing number of vehicles. To address this issue, a Smart Vertical Rotary Parking System is proposed, offering an innovative and space-efficient solution by utilizing vertical space instead of conventional horizontal parking. This system aims to maximize parking capacity in limited areas, reducing land usage while ensuring quick and automated vehicle retrieval.*

The proposed system operates on a rotary mechanism, where vehicles are moved vertically and horizontally using a motor-driven platform. The model uses a combination of mechanical, electrical, and IoT-based systems to automate parking and retrieval. The prototype is managed by a website that facilitates the booking, parking, and retrieval of vehicles, making it more convenient for users. Solar panels are incorporated into the model to ensure sustainable energy usage and contribute to environmental conservation.

Key features of the system include efficient space utilization, low operational costs, and reduced carbon footprint due to solar energy incorporation. The design includes safety measures such as obstacle detection, emergency stop mechanisms, and secure locking systems, but they are conceptually included without practical testing. The system's design and functionality are demonstrated through a scaled-down working prototype, showcasing the feasibility of implementing this technology in real-world scenarios.

This project holds potential for future advancements by integrating AI-based parking algorithms and enhancing real-time data analytics, making urban parking systems smarter, safer, and more efficient..

Keywords: Vertical Rotary Parking System (VRPS),Urban Areas, Space Utilization, Vehicle retrieval time

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