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A Survey of IoT-based Smart Parking Systems in Smart Cities

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Abstract: Parking problems have become much more acute in urban areas with an increasingly vehicular population. These include congestion, inefficient usage of space, and time spent looking for parking places. A smart parking system based on Internet of Things will, therefore, be able to provide an efficient alternative: it can automatically search and manage places for parking. It uses sensors to detect the parking spot's availability and transfer such information in real time to a central platform. Drivers would then be able to use mobile applications to be led directly to vacant spots within minutes. This system reduces consumption of fuel, minimizes traffic congestion, saves time, and promotes generally more satisfactory parking experiences. The integration of IoT devices, like sensors, gateways, and cloud-based analytics, provides seamless operation and efficient management of space. It also supports extra features like online payment and reservation and, thus, serves as a comfortable and environmentally friendly solution for modern cities. This study discusses the design, functionality, and benefits of an IoT-enabled smart parking system, paving the way to smarter urban infrastructure.

Keywords: Smart Parking System, IoT (Internet ofThings),Real-Time Parking Management, Urban Traffic Congestion, Automated Parking Solutions, Cloud-Based Systems, Mobile Application Integration



