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SMART PARKING SYSTEM

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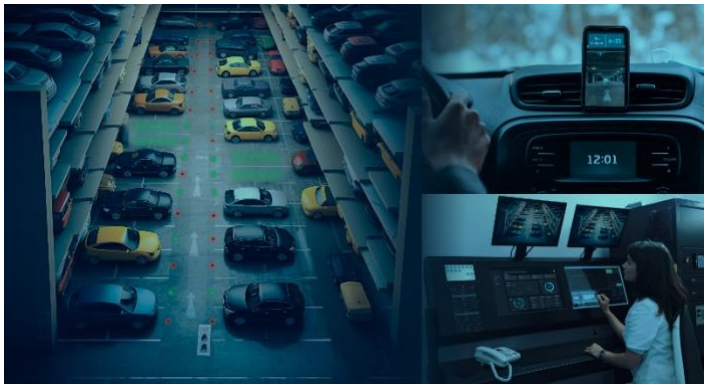
INTRODUCTION

Do you not agree how difficult parking has become these days? The number of cars on the road has increased. The parking facilities are limited because, well, the land size will not grow. In this article, we will study how IoT can help in smart parking management, the benefits and challenges that come with it, and what the future holds.



The COVID-19 pandemic has negatively influenced the market growth in 2020 owing to strict lockdowns by various governments to curb the virus transmission. However, from early 2021, the market witnessed high growth due to significant investment by several governments in infrastructure development activities and the transport sector to improve the economy of the country, creating robust market opportunities.

EARLIER MANAGEMENT

The old way of Parking are Poorly managed parking resources have a substantial negative impact on cities. one that has been well-documented. According to industry studies,

poorly managed parking:

- ✓Increases Traffic Congestion
- ✓Increases Pollution
- ✓Frustrates Drivers

The causes are large in number. But is there any solution for it? Definitely, yes. IoT offers a unique method of Smart parking which we have successfully implemented and that is what we are going to do today.

Urbanization is on the rise, and the complexity of city traffic is growing on a daily basis, especially post-COVID when everyone seems to be out on the road. Public transport is not easily accessible for all while parking a personal vehicle is even tougher (and costlier).

The requirement for an Internet of Things (IoT)-powered parking system has, therefore, gained prominence to minimize the ongoing traffic congestion and to reduce the unpredictability of parking availability. With numerous connected devices on the horizon, devising an IoT-based smart parking system is relatively easy now.

In fact, such infrastructure empowers drivers and parking facility managers with advanced information such as available slots and current parking fee.

DEVELOPMENT AND IMPROVEMENT

An IoT-based parking system is a centralized management that enables drivers to search for and reserve a parking spot remotely through their smartphones. It offers a convenient arrangement for drivers to park their cars when they are looking to avoid potential traffic congestion.

The system's hardware sensors detect available slots and communicate the information to the drivers in that area in real-time. IoT technology ensures that they do not have to worry about finding an available space again – allowing them to travel conveniently.

Besides, the connected device sends alerts about peak times and surcharges. No one wants to struggle to find a parking slot or pay more at any given point.

Using smart parking technology will help maximize the consumption of existing parking space, increase the effectiveness of parking operations, and facilitate easier traffic flow with just a few taps on a mobile app.

Smart parking solutions are intended to give drivers complete control of their journey – from start to finish – without having to hunt for parking. The IoT technology helps save costs and minimize travel time. IoT forms the foundation for real-time data collection and analysis.

PROBLEM WITH THE CURRENT PARKING MANAGEMENT

1.Overpaying

Sometimes, drivers still determine how long they will stay in a particular location. As a result, they may pay too much for parking while the duration may be much lesser.

2. Environmental impact

Besides time, a lot of fuel is consumed looking for an appropriate parking space. When it rains, numerous pollutants accumulated in the parking lots get a wash, creating dirty, wet mud and foul smells.

3. Parking inappropriately

The parking lot at the mall or the customer's intended destination is usually insufficient and they end up parking outside the designated spot. It results in greater traffic congestion.

4. Overcrowded parking spaces

The biggest issue right now is that there are more cars on the road compared to the parking spots. Talk about bumper-to-bumper traffic!

5. Insufficient parking space utilization

People frequently lack patience or are unaware of parking slot availability. They tend to park improperly due to the rush. Occasionally, they may not leave enough room for other vehicles to park. These lead to traffic blockages.[0]

THE BENEFITS OF SMART PARKING MANAGEMENT

Some IoT solutions may comprise a complete suite of services, including car searching functionalities, online payments, and parking time notifications. An IoT-connected parking solution can significantly benefit the driver and the parking facility owner. The key benefits of using an IoT-powered smart parking management are

1.Reduced costs

Using IoT in parking management, you can reduce the overall costs associated with running a parking facility. For example, you can use sensors to detect when a space is vacated and open up that space to other vehicles, reducing the need for manual labor.

2. Enhanced security

IoT enhances security as the sensors detect the vehicle and raise an alarm in case of unauthorized access. Security cameras and license plate scanners can be integrated into an IoT platform to detect and track suspicious activity automatically. The vehicle is constantly monitored so the driver can be stress-free.

3. Increased efficiency

The driver will be redirected to the nearest available parking spot saving time and fuel. In contrast, the parking company can easily manage more vehicles with an IoT system than with a human-based workflow

4. Improved customer experience

IoT in parking management makes it possible to provide a better customer experience with functionalities such as real-time information on parking availability,

guidance on the nearest available parking spot, and automated payment options. Easy parking improves the customer experience and allows businesses to realize greater benefits through repeated customer visits.

SYSTEM ANALYSIS OF SMART PARKING

CONCLUSION

The parking industry is in the midst of a transformation. Rapid technological advances are enabling a new breed of parking solutions that are more efficient, convenient, and sustainable.