

Worried to find a parking lot in a metropolitan city?

IoT based Smart Parking: An Era of Park it Easy

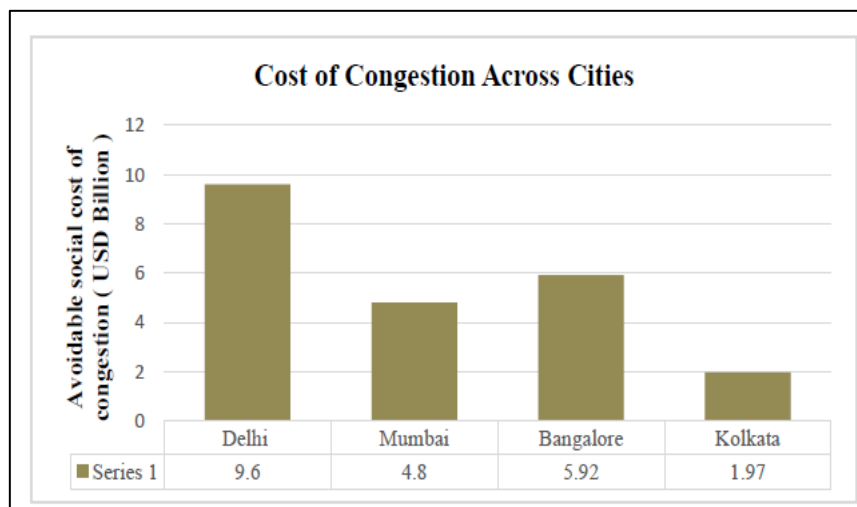
(By Prof. Punit Ratnani, Puru Jain, Umang Shah, Yash Agarwal, Sejal Mehta, Department of Electronics and Telecommunication Engineering)

With the increase in population, the number of vehicles is also increasing which results in unmanaged parking. In the current scenario, it takes less than a minute to find a person from 3 billion people on Facebook but takes 15-30 minutes to find a vacant parking space in the city.

In this era where time is of utmost importance, where one can find anything or anyone in the world within seconds using just a smartphone and a few clicks, still, it takes minutes and a lot of effort to find an available parking space. This is especially a big issue for people who are short on time going out for some important meeting or leisure. Standing in queues for entry, searching for a parking slot, and then standing in queues again for payment is a big challenge. Not just time, searching for parking space wastes fuel and contributes to Co2 emissions as well harming the environment.

How big is the issue?

Parking problems are not uncommon, especially for big cities. By 2023, market spending for smart parking products and services is expected to grow at a CAGR of 14% and surpass \$3.8B according to a report. The growth of market spending is good news because it will force people to try to find a solution to these traffic problems instead of taking no action.



Cost of Congestion Across Cities

Source: Centre for Urban Economic Studies, Department of Economics, University of Calcutta, Kolkata, India

According to a recent study (2019) by the Boston Consulting Group (BCG) titled 'Unlocking Cities drivers in Kuala Lumpur spend an average of 25 minutes daily in search of parking spots. This adds to 6.3 days a year.

The problem is obvious. But a bigger question is what can technology do to solve it? Is there any way to solve the problem????

Automated parking systems:

Automatic parking systems help reduce the land use for parking and maximize the efficiency of space usage. An automated system is used to move cars up and down to the upper levels of the facility.

Since APS facilities are fully automated and have restricted access, parking a vehicle there is more secure. Automatic parking systems help reduce the parking search time, along with engine emissions that accumulate due to the increase in driving time.

IoT based parking systems

The Internet of Things, or IoT, refers to the billions of physical devices around the world that are now connected to the internet, all collecting and sharing data. Thanks to the arrival of super-cheap computer chips and the ubiquity of wireless networks, it's possible to turn anything, from something as small as a pill to something as big as an airplane, into a part of the IoT.

Smart parking development implies an IoT-based system that sends data about free and occupied parking places via web/mobile applications. The IoT-device, including sensors and microcontrollers, is located in each parking place. The user receives a live update about the availability of all parking places and chooses the best one. The payment method will be carried out by an effective E-wallet system. As soon as, the server notifies the user of the amount to be paid, the mobile application will automatically deduct the respective amount from the user wallet, given, the wallet has sufficient balance.

To conclude, IoT based Smart Parking system provides an optimal solution for parking problem in metropolitan cities. Also, Facility managers can use counter systems to increase the efficiency of the parking facility, determine trends and patterns regarding the customer flow, and be able to predict future vehicle surges.