MAHENDRA INSTITUTE OF ENGINEERING AND TECHNOLOGY

PHASE : 3

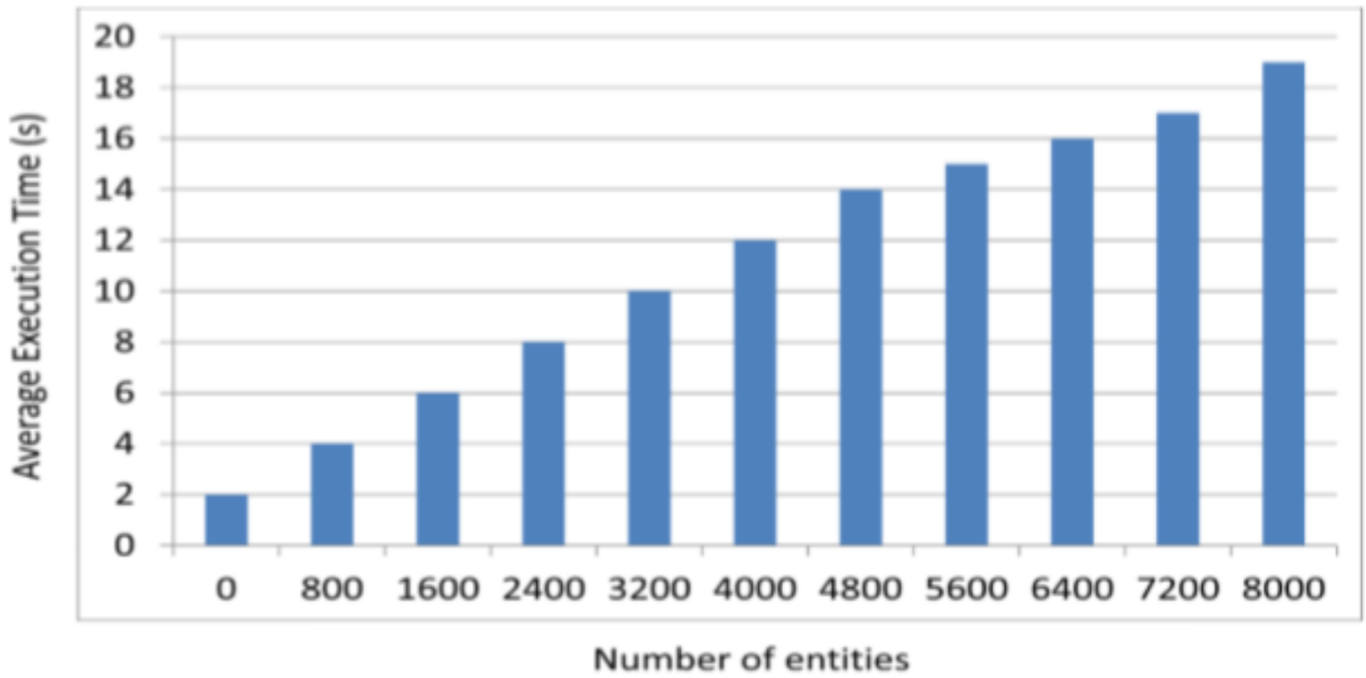
SMART PARKING

INITIALIZATION :

>In this work, a fair and smart parking system is proposed such that it provides a secure means of parking and ia also reliable. There are four major phases involved in this system Initialization, parking spot identification, request and allotment.

> In this step, the shared keys are initially generated along with security parameters. Every parking lot owner is

allowed keys sent by the TA using public-key cryptosysem using digital sign. This way the TA can also keep track of malicious and misbehaving users in case of disputes and mishaps.



Initialization

PLANNING :

* *The planning stage is the initial stage of the research . The stage initiates with with formulation of the*

questions, which pinpoint the main objective of the research . To formulate the objective-based question sets, a set of keywords needs to be selected to articulate search strings to find specific literature stored in scientific databases.

- *What are the approaches methods for building a smart parking system ?*

- *What sort of sensors were used in developing a smart parking solution ?*

- *What type of networking tools were implemented in developing a smart parking system ?*

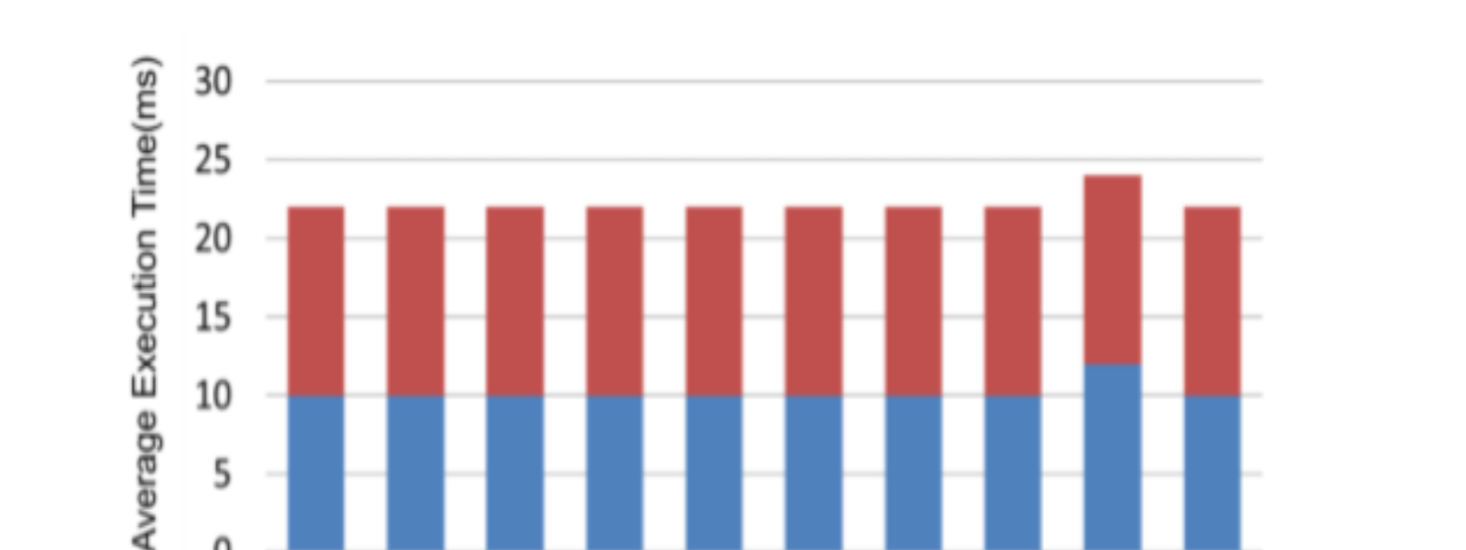
> *The questions are connected to the*

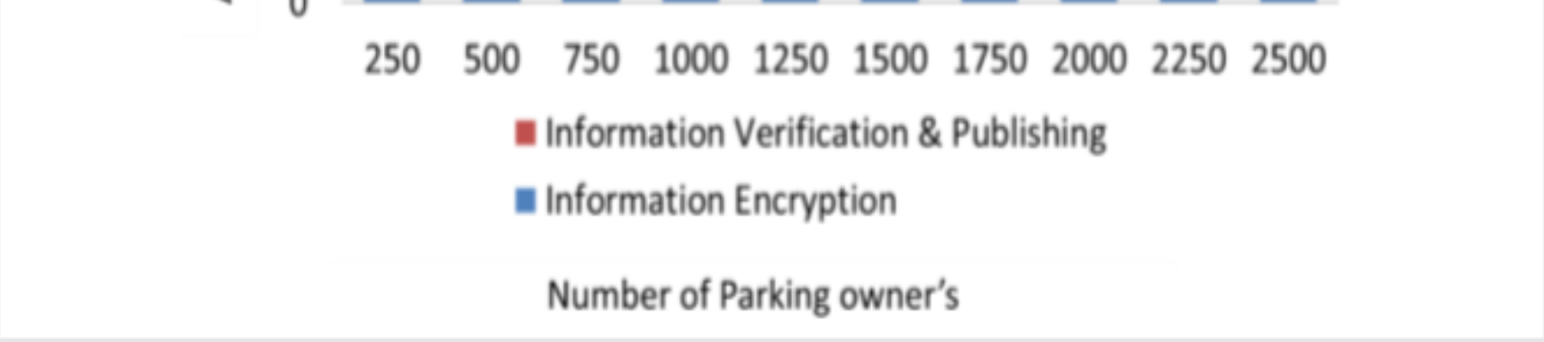
main objective of this paper, which is to review the existing smart parking solutions to find the adopted approaches, sensors and network technologies used to develop the SPSs . The questions were also used to identify keywords such as ; " smart," " parking", " system", " solution" , " sensors", " networks ", "methods" .

> *The smart parking system processes each parking query immediately when it arrives, the problem to be solved is an on-line problem easily through greedy method .*

EXECUTION :

The four processes of the proposed FRP scheme is analysed and it has been found that in the initialization process, as the number of entities increases, the time taken for execution also increases subsequently as shown in similarly, represents the average execution time cost to publish and verify as well as the time taken for execution process.



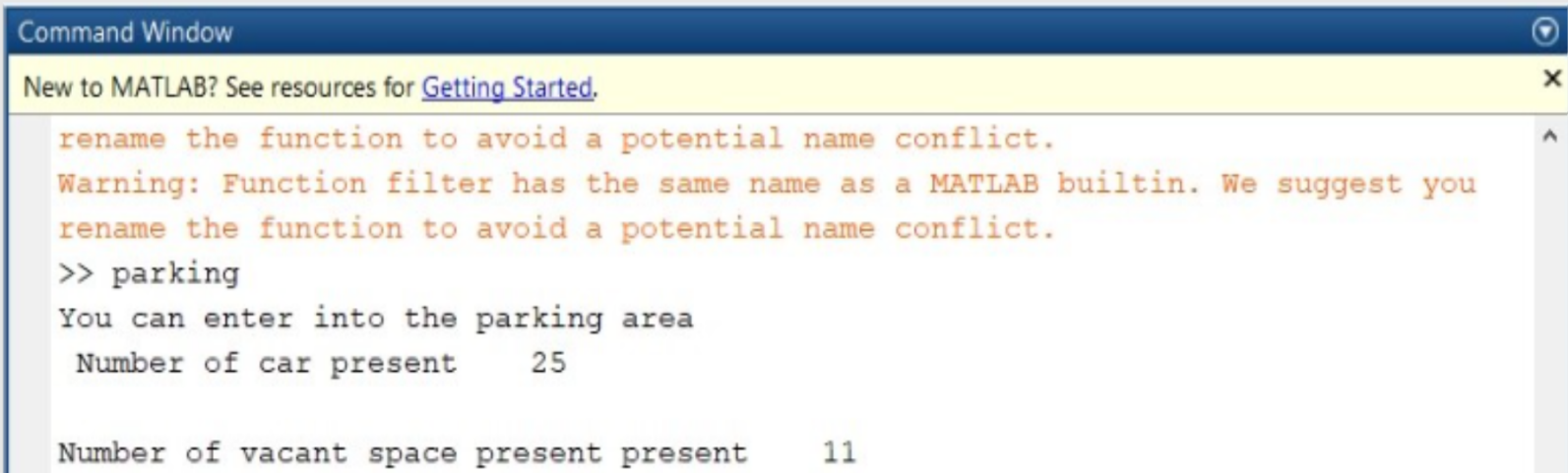


Publishing the parking spot

When a parking spot needs to be identified by the driver, a parking request is initially generated which consists of an encrypted time vector and location search token.

EXECUTING CODE :

Command prompt after the execution code in shown,



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PARKING AREA STRUCTURE with LANE:-
 LANE 1       LANE 2
 LANE 3       LANE4
 LANE 5       LANE 6

Go to Lane 3
 Number of car present     2

Number of vacant space present present     4

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CONTROLS :

* RFID Controller system

* Microcontroller system

RFID CONTROL :

The Radio Frequency Identification(RFID) reader provides authorization to enter the smart parking system. On the other hand, a mobile application is added to allows users to know about the empty spaces based via WiFi applications.

- [ ] Parking Control allows you to determine which vehicle may enter your parking area. Vehicle drivers

who are regular (ot monthly) parkers may utilize parking control system with a credential to access the parking area. Additionally,transient parkers may be or taking a parking ticket.

☐ *Upon entry,a barrier gate arm is in the down position, which requires the parker to present a valid credential at the Access Control Pedestal or at the Entry BOXX prior to the gate arm opening. For example, a monthly parker with an RFID proximity would present their access credential to the card reader for approval.*

☐ *Once the credential has been approved for the date, time and location, the card transaction data is*

approved then the barrier gate arm opens.

- *The Pedestal, card reader, and parking control software are a key components of the parking BOXX full featured ticketing system.*

MICROCONTROLLE :

The micro-grid control system as the core of the system controls the optimal operation of the entire smart park. In order to ensure the efficient operation of the entire system, the energy management system is needed for smart control and automatic scheduling.

TYPES OF MICRO :

> 8-bit Microcontrollers: These

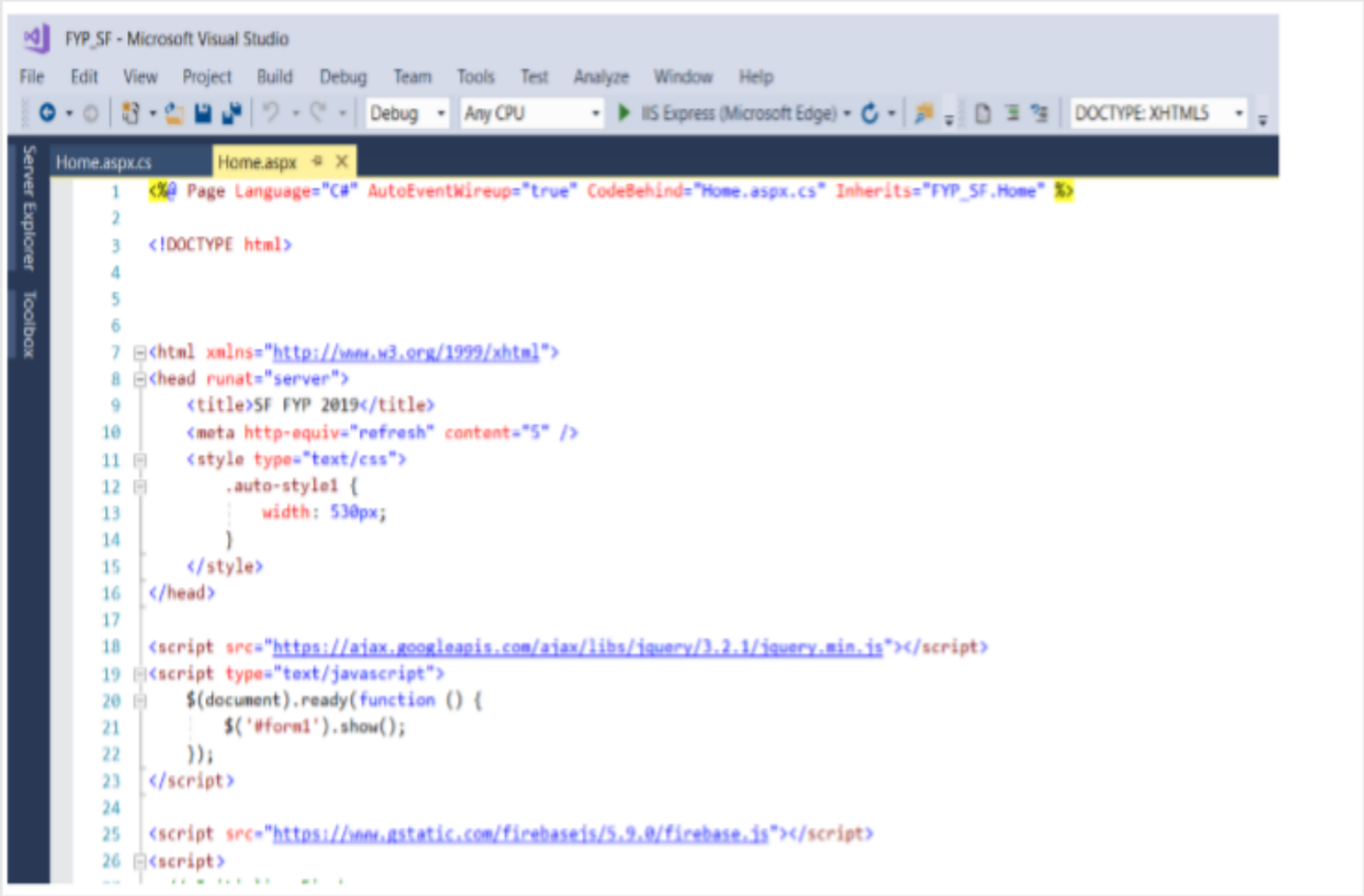
are the most basic type of microcontroller , typically used in simple applications such as toys, small appliances, and remote controls.

>16-bit Microcontroller: These are more advanced than 8-bit microcontrollers and are capable of performing more complex tasks.

Microsoft Visual Studio :

In Microsoft Visual Studio, HTML programming language is used. Visual Studio is a combination of the powerful developer tooling with a source code editor . Hypertext Markup Language (HTML) is the standard markup language for generating web application and web pages. The HTML code on Microsoft Visual Studio. After that, the webpage needs to be published (as demonstrated in Figure) before

users can use it.

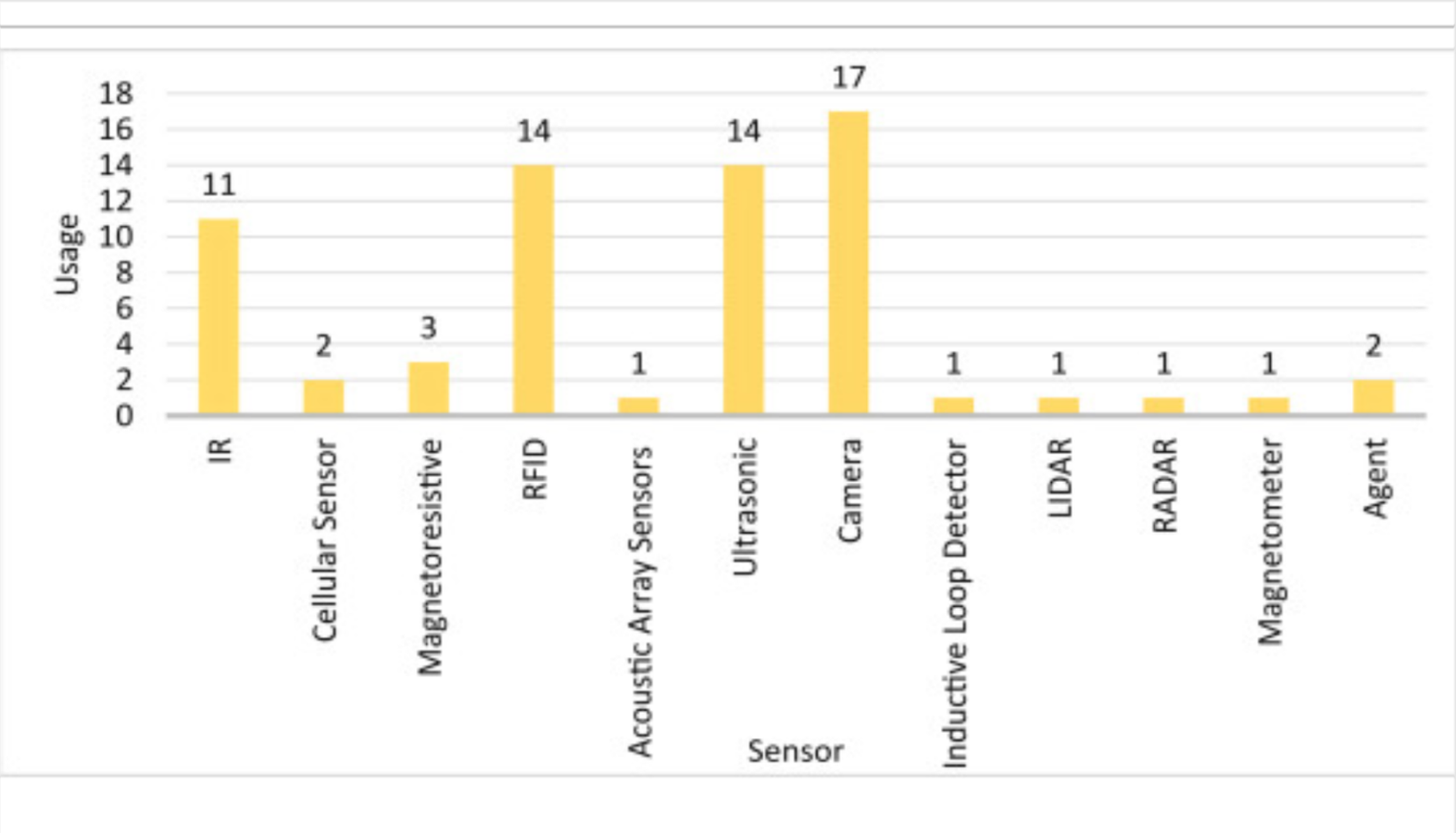


HTML Code on Microsoft Visual Studio

CLOSING :

The usage data of different sensors by various SPSs are represented . From the figure, it can be seen that the Camera is the highest used sensors. Although the camera network has a high deployment cost, it

can provide a wide coverage area, reducing the number of sensors required in a given area.



**Many of the systems that used cameras📸 deployed different computational techniques(such as ML,DL, etc.) to detect parking lot occupancy. As a result, the necessity of vehicle detection sensors(such as IR sensors, ultrasonic sensors, etc.) becomes low to almost zero.*

**Camera networks also provide*

surveillance facilities and license plate detection, which improves overall security. On the other hand, ultrasonic and RFID sensors are the second most used sensors.

**The Ultrasonic sensors are mainly used for vehicle detection to provide real-time parking lot occupancy status. But this type of sensor is prone to environmental changes . That is why this type of sensor more suitable for closed parking facilities. RFID sensor is another frequently used .*

THANK YOU !!!...

(a)

(b)