

Automatic Parking System Slot For Smart Cities

B. Rubini, Dr. D. Tamilarasi

Abstract: Parking space is turning into a serious trouble appropriate to daily life expand in vehicles are increased on the road. Predominantly, in city with massive peoples and residents, or in locations where activities of sports or inventive occasions are listed, looking for parking area is a predominant trouble and discovering a vehicles parking area can be a infuriating experience. The most common issues in cities Internet of matters is addressing such as traffic jams and vehicle parking availability. This Project focuses on developing a smart parking system which will sense the vacant slot the usage of a sensor and the micro controller transmits the records to the information base. App is growing to show the vacant parking slot reachable in specific area title.

Index Terms: IR sensor, raspberry pi, microcontroller.

1. INTRODUCTION

With the growth of population and cost-effective development, the wide variety of automobiles is increasing day by day on the road. For the city's Parking has emerged as one of the essential troubles, and very costly. Since parking is limited in major cities and in most important sights all around the world. For instance, finding a parking slot in a mall at some stage in weekends is so difficult. Lot of fuel is wasted in this manner of finding the parking slot. It is an extremely irritating task for drivers to find a parking slot. Thus, the ways for parking will have to be constructed to accommodate intelligent, progressive and environment friendly of the parking demand in the efficiently. In recent years are developed many parking preparation structures that try to enhance upon the basic system. Personal advantages and disadvantages these new structures have to establish. All these systems to discover if a vehicle is in the parking slot need to require a mechanism at low cost[1]. This mechanism can range from primary sensor to discover the vehicle for a threshold distance or to complicated sensors (optical). Once the parking area slot sensors while detect any vehicles on the slot area sensors passing data to the system to desires a way to notify the drivers and indication given to signals whether the parking slot free are occupied[2]. Problem Statement To enhance a parking system that can realize the presence of vehicle in a unique slot the use of an IR sensor, and through

2 METHODOLOGY

2.1 SENSORS

The parking slot (Occupied or Vacant) each parking slot is equipped with sensor which checks the status and indication given to the signals and system. In this task 4 IR sensors are used to detect the presence of the vehicle for 4 slots but its implementation can be extended to quantity of slots. The IR sensor module consists of three pins those are Vcc, Ground, and OUT. The Vcc for this module used is 5V. The out pin of the sensor module is linked to Raspberry Pi whose position is to detect the output from the sensor module output pins and to ship the information to the firebase[3].

2.2 RASPBERRY PI

The programming of the raspberryPi is executed the usage of a simple platform referred to as node-red. Programming tool Node-RED is a visual programming developed at the beginning and flow based improvement tool by means of IBM with for hardware devices together, Now recent trends IoT based online offering are the major area to simplify the work flow of APIs and online offerings as part of the Internet of Things NBS. This visual tool is used to get the GPO pin data from the raspberry indirectly. These records are given to fire base which is a database of Google. Where a actual time statistics base is created named as smart parking system where the slot data is updated. Each and every slot is given a particular Child identify (variable in fire base) ex. Space1, Space2, etc. The fire base is interfaced to App which consist all the slot information. The MIT App inventor is used to create the App. The MIT App inventor is a consumer pleasant interface where the App can be created without difficulty the usage of scratch. The consumer can without t problems view all the slot records for the app. The display of the app is like a matrix in our case 2x2matrix as we use only 4 sensors. Each time when the user presses the refresh button accessible in the bottom of the app web page the information is updates and the color of the label is updated. The Labels given in the app are occupied and vacant. The label is indicated with a color pink when the slot is occupied whereas the label changes its color to green when the slot is vacant.

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- B. Rubini is currently pursuing doctoral program in electric power engineering in Vels institute of science technology and advanced studies, India, PH-9551097788. E-mail: rubini.se@velsuniv.ac.in
- Dr. D. Tamilarasi is currently working as an associate professor in electronic and communication engineering in MVJ college of engineering, Banglore, PH-9551054576. E-mail: tamilarasi8884@gmail.com

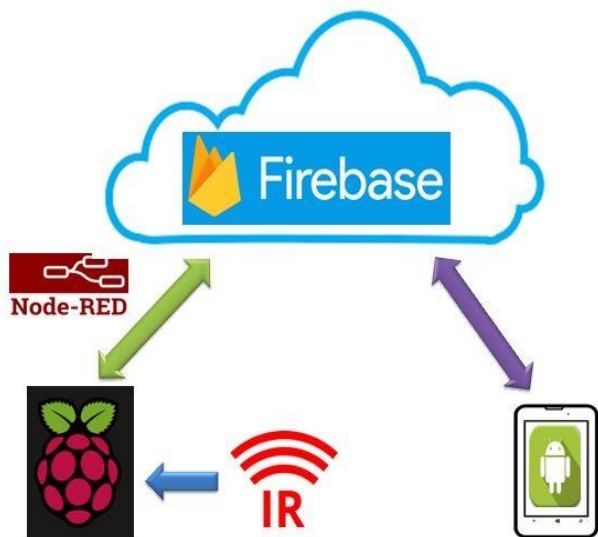


Figure 1: Layout diagram

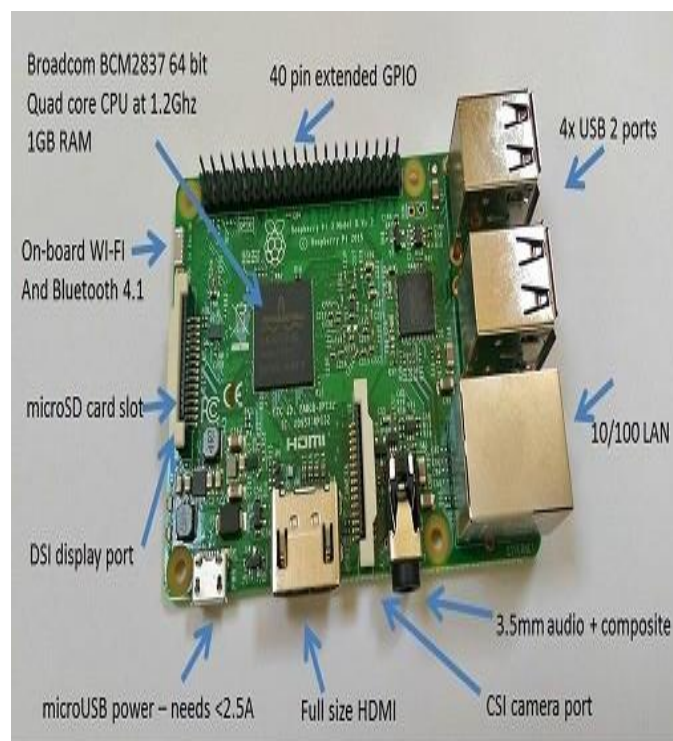


Figure 3: ARDUINO UNO R3


	Raspberry Pi 3 Model B	Raspberry Pi Zero	Raspberry Pi 2 Model B	Raspberry Pi Model B+
				
Introduction Date	2/29/2016	11/25/2015	2/2/2015	7/14/2014
SoC	BCM2837	BCM2835	BCM2836	BCM2835
CPU	Quad Cortex A53 @ 1.2GHz	ARM11 @ 1GHz	Quad Cortex A7 @ 900MHz	ARM11 @ 700MHz
Instruction set	ARMv8-A	ARMv6	ARMv7-A	ARMv6
GPU	400MHz VideoCore IV	250MHz VideoCore IV	250MHz VideoCore IV	250MHz VideoCore IV
RAM	1GB SDRAM	512 MB SDRAM	1GB SDRAM	512MB SDRAM
Storage	micro-SD	micro-SD	micro-SD	micro-SD
Ethernet	10/100	none	10/100	10/100
Wireless	802.11n / Bluetooth 4.0	none	none	none
Video Output	HDMI / Composite	HDMI / Composite	HDMI / Composite	HDMI / Composite
Audio Output	HDMI / Headphone	HDMI	HDMI / Headphone	HDMI / Headphone
GPIO	40	40	40	40
Price	\$35	\$5	\$35	\$35

Figure 2: Raspberry Pi

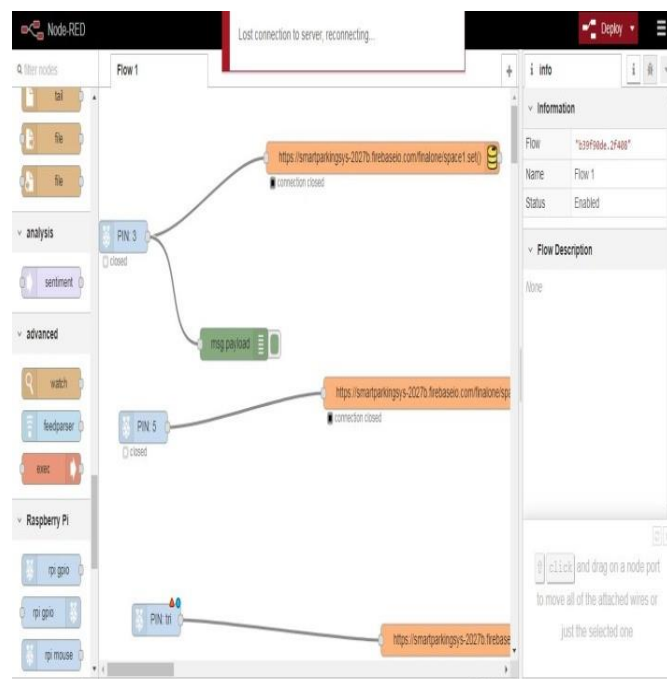


Figure 4: Program Computation

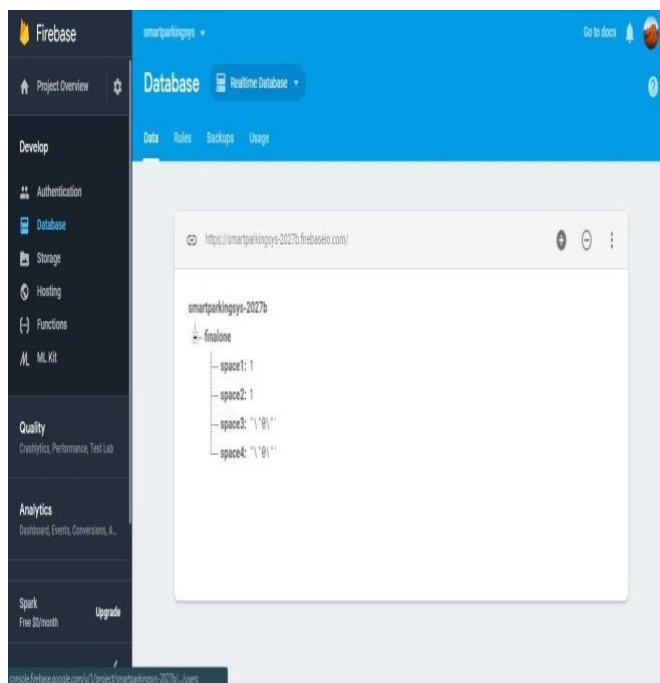


Figure 5: fire base

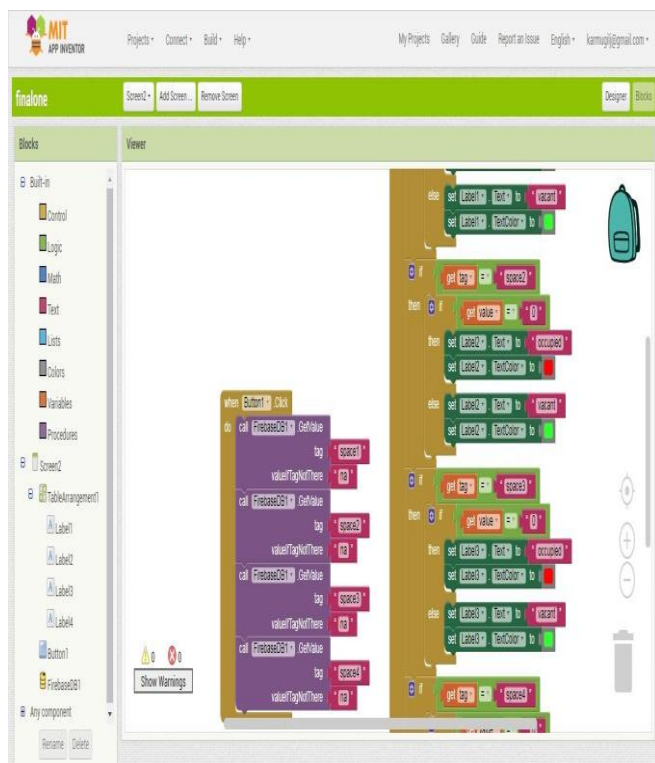


Figure 6: app development



Fig:7 Working Model Image (All Slots Filled Vacant Means Display)

Experimental results shows that the parking slots vacant place displayed in LCD screen

5 CONCLUSION

The conclusion is that an android App named Parking Slot Finder allows the user to find the empty place parking slot in that specific area and thus making it simple for the driver to find the vacant slot except any frustration and saves fuel.

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Dr.D.Tamilarasi is currently working as Associate Professor in the Department of Electronics and Communication Engineering at MVJ college of Engineering, Whitefield, Bangalore. She received the PhD degree in Power Electronics from Anna University in 2018 and B.E degree in Electronics & amp; Communication Engineering and M.E degree in Power Electronics and Drives from Anna University in 2005 and 2008 respectively. She has 10 years of teaching experience and she has Published more than 20 Papers in International and national journals and conferences. She is the life member of Institution of Electronics and Telecommunication Engineers and Indian Society for Technical Education. Her research areas are Power Electronics and Embedded System. Mrs.B.Rubini obtained her UG Degree in Electrical and Electronics Engineering from Vivekananda College of engineering for women, Anna University, and PG Degree in Power Systems from Anna University Coimbatore, in 2008 and 2011 respectively. Presently Research scholar in Vels Institute of Science Technology and Advanced Studies Research works broadly in ARC Flash Analysis and PPE calculations. Currently working as an Assistant Professor in the Department of Electrical and Electronics Engineering, Vels Institute of Science, Technology & Advanced Studies (VISTAS), and Chennai, India.

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4 RESULTS

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