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FREEWAY TOLL HEAP USING ANPR & OFDM TECHNOLOGY

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I. Abstract:

This paper share with the design of an embedded system based toll accumulation using ANPR & OFDM technology. By using this method we can avoid long queues in the toll gate. Here we discuss how, the toll accumulation using ANPR & OFDM Technology and this lead to freeway. That is without the tollgate manual collection can be avoided and the toll fee can be collect.Here we use the ANPR camera for the number plate deduction and OFDM technology is used for the collection and confirmation message to the vehicle owner.

Keywords: - ANPR, OFDM and Raspberry Pi

II. INTRODUCTION

Recent estimates suggest that today's population size is roughly equivalent to 6.5% total number of people ever born. As the population increase, the vehicle population also increased. And nobody have the time to spent according those people, waiting in a tollgate for toll payment is time consuming process and also overcrowding of vehicle lead traffic block that lead to trouble to the public.In the existing system toll collection of vehicle on road by manually. It has limitations some of them are like traffic block, security problem to vehicles. In this case rewriting the transport system is needed.

The solution involves "freeway tall heap using ANPR & OFDM Technology". This lead to freeway. That is we don't need a tollgate system by proposing this system. In this paper we are using Raspberry Pi processor which is interfaced with our ANPR camera & IR sensors for the collection of amount.When the vehicle is entered to the way, the number plate is recognized Raspberry Pi processor programmed by python language based on the use of Raspbian, a Debi an- based Linux operating system.

When the vehicle entered in to the way, IR Sensors sense the vehicle the entering the way and also exit of the vehicle. At this time the amount is deducted from their account and a confirmation message is sent to the owners registered number. It is done by the OFDM technology

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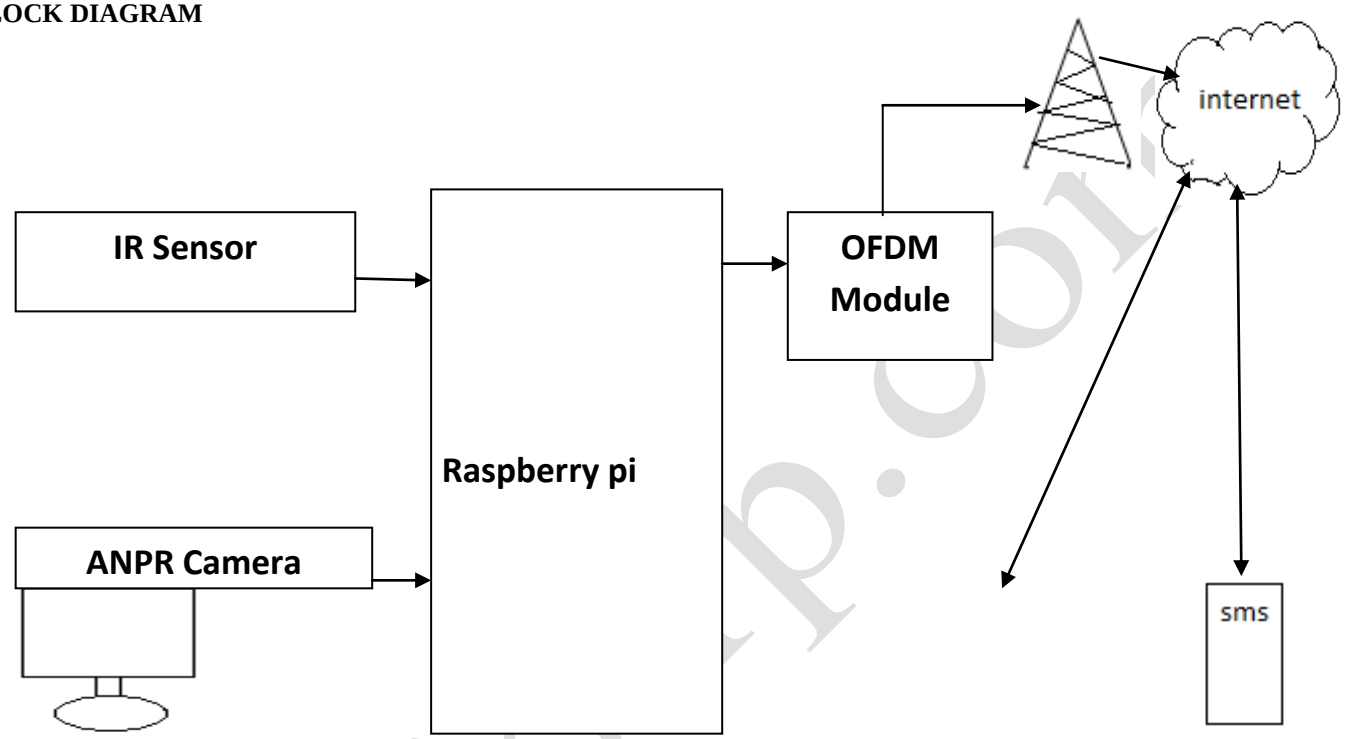
BLOCK DIAGRAM

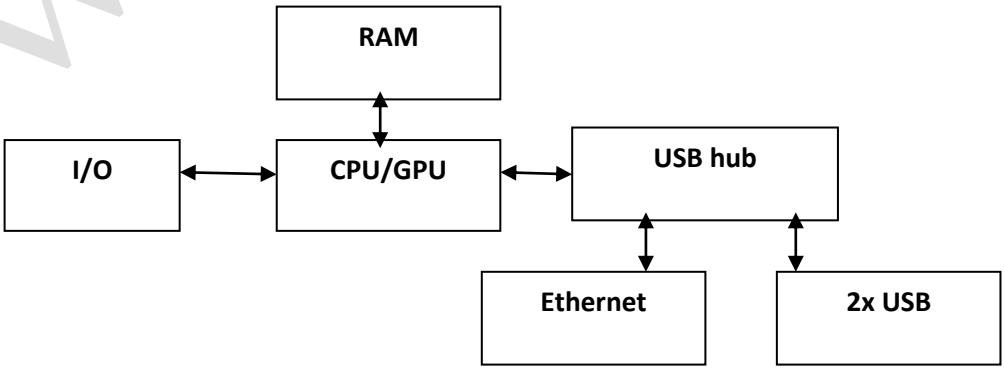


Toll system

III. BLOCK DIAGRAM DISCREPTION:

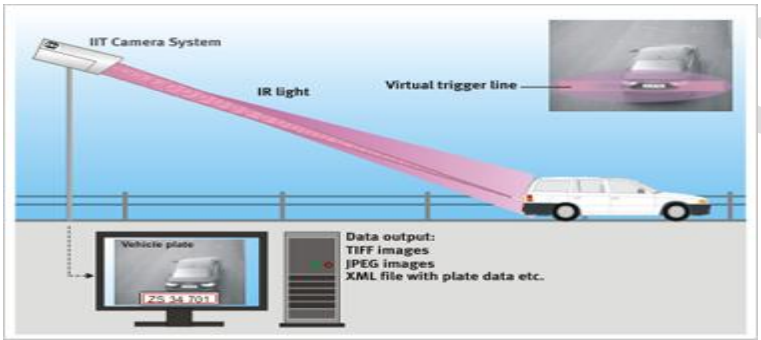
Raspberry Pi:

It is a combination of small single based computers developed by the Raspberry Pi Foundation to promote the teaching of basic computer science in schools and in developing countries. Its processor speed ranges from 700 MHz to 1.2GHz for the Pi 3; on board memory ranges from 256 MB to 1 GB RAM. The board has one to four USBports. The Raspberry Pi hardware consist of RAM, I/O, CPU, USB HUB, Ethernet, 2x USB. Its performance is based on the quad-core ARM Cortex-A53 performance of a Raspberry Pi.Raspberry Pi can be operated with any generic USB computer keyboard and mouse. The GPU commonly used range of 400MHz Video Core IV multimedia. The video outputs are compact with HDMI, composite video (PAL and NTSC) via 3.5 mm jack the power supply required for the working is 5V via MicroUSB OR GPIO header. Its weight of 45g and size of 85.60mm*56.5mm.



Automatic Number Plate Recognition Camera (ANPR):

it is technology that uses optical character recognition on images to read vehicle registration plates to create vehicle location data. It is used for the electronic toll collection on pay-per-use roads and as method of cataloguing the movements of traffic, for example by highways agencies. This system commonly uses an infrared lighting to allow the camera the camera to take picture at any time of day or night. This ANPR Camera can be used for the section control, to measure average vehicle speed over longer distances. As well as traffic management systems, which determine traffic flow using the time it takes vehicles to pass two ANPR sites...etc.



Orthogonal frequency division multiplexing*:*

Iit is a method of encoding digital data on the multiple carrier frequencies. OFDM technology has develop for the scheme for wideband digital communication, used in applications such as digital TV and audio broadcasting, DSL internet access, wireless networks, power line networks and 4G mobile communications. High spectral efficiency as compared to other double sideband modulation schemes, spread spectrum, etc. robust against narrow-band co-channel interference. It has low sensitivity to time management errors.

WORKING OF PROJECT:

In this paper we design the freeway toll heap using ANPR & OFDM technology based on raspberry Pi and ANPR system and also the using the wireless OFDM technology is discuss here. The aim of implementation of this designing is to reduce time wasting in the tollgate and e payment also done through this. Byfixing the ANPR camera the vehicles don't want to stop on the tollbooths instead the recognized vehicle payment is deducted. It is done by our processor, i.e. the when it sensed by the ANPR the message is passed to processor and the amount is deducted from their bank account immediately and the confirmation message is sent to the owner.

CONCLUSION:

By this method the overall process it takes a fraction of seconds with the e payment. The data are recorded with sufficient details in the system. It also helps in the time management. An increase in a toll lane service rate causes a decrease in the average waitingtime of the vehicle in the toll booths. And also it requires a less in fracture than a manual tollbooth.

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