RF BASED NUMBER PLATE SYSTEM

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Abstract—*In modern times people have being put forth to face many a problems that not only kills time but also the peace of mind with which they work and survive. Traffic violation and road safety is one among them. Traffic signals and tolls are being overloaded with loads of vehicles which not only puts pressure on officials but also on each and every individuals who are being related with that scenario and environment. This cause and effect plot not only ends her but leads to all other places.one big solution to this was OCR but it came up with its own loop holes which favoured few to violate rules. Not just people but also weather and nature played spoiled sport to at many a times.*

Keywords— *RF receiver,atmel microcontroller,LCD display,RS232,Dip Switch*

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1. INTRODUCTION

RF based number plates helps us to stores the vehicle owners information along with vehicle's information Like his/her license ,vehicle's RC ,insurance ,and most importantly the engine's number.The basic idea of this system is to identify and analyze a vehicle's information and authenticity. Many few nations have adopted various methods and techniques to sense and read a number plate without much ado but have gone in vain. Every other technique that they bring about ends up with new issue though it overcomes the previously existing technique. This RF based number plates system uses basics components to ensure road and vehicles safety. This proposed idea can not only change the current system in which the road traffic is being manipulated but also take the system towards much lesser chaos and complexity than that of now. The simplicity of the hardware modules and the software being used to solve a complex issue makes this idea stand out in its category . The components used are very basic and quite user friendly but stills works at the finest to the solve the issues faced in the previous methods been used as of now.

2. PROBLEM IDENTIFICATION

Though few nations have adopted optical number plate recognition system it has not quite achieved in finding out the authenticity of the vehicle's information.It just recognizes the plate and the country code in the plate
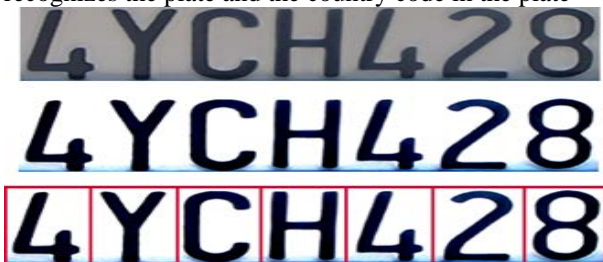

Fig 1:A number plate under an OCR system

The difficulty faced due to OCR is that when the plate is too far away the resolution of the image gets degraded thus resulting in poor resolution image. Since the vehicle is in motion, it is subjected to motion blur. The lighting plays a major role in digital image processing. Over exposure and reflection can cause serious damage to image resolution. Dirt or stickers on plates can obstruct the cameras view over the plate. Fonts on the plate can also degrade the image and causes ambiguity. Sometimes when vehicle takes up different lanes can cause blurry images. Each and every nation follows different techniques. All these are the drawbacks being faced in the optical recognition system and these sum up to push the RF to overcome all these drawback to ensure proper safety. The placement of censors plays a major role so as to ensure unbiased sensing takes place even at the worst case scenario and even when the weather is not at its best.

3. EXISTING DETAILS

- *OCR*

OCR isthe mechanical or electronic conversion of images of typed, handwritten or printed text into machine-encoded text. It is widely used as a form of data entry from printed paper data records, whether passport documents, invoices, bank statements, computerised receipts, business cards, mail, printouts of static-data, or any suitable documentation. It is a common method of digitising printed texts so that it can be electronically edited, searched, stored more compactly, displayed on-line, and used in machine processes such as machine translation, text-to-speech, key data and text mining. OCR is a field of research in pattern recognition, artificial intelligence and computer vision.Early versions needed to be trained with images of each character, and worked on one font at a time. Advanced systems capable of producing a high degree of recognition accuracy for most fonts are now common. Some systems are capable of reproducing formatted output

that closely approximates the original page including images, columns, and other non-textual components.

• *SALIK*

salik (In Arabic: سالك meaning "clear and moving") is the name given to the electronic toll road system in Dubai, United Arab Emirates, which is based on RF technology, automatically deducting a fee when a toll gate is passed under. The Salik toll was launched by Dubai's Dubai Roads and Transport Authority (RTA) on 1 July 2007

Figure 2:salik welcome card

Motorists are required to buy a 100 AED pre-paid card that is affixed to their windscreens. 4 AED ($1.08) is deducted from their account each time they pass through a toll gate. Initially, there were two toll gates, one near Al Garhoud Bridge, and one near Mall of the Emirates on Sheikh Zayed Road, but later in September 2008 two more gates were installed on Maktoum Bridge and at Safa. A further pair of gates was installed on Ittihad Road, the principal route from Dubai to neighbouring Sharjah and by the Dubai Airport Tunnel.

The maximum charge per day per car using the tolled roads will be 24 AED ($6.48) However, as of July 1, 2013 this has been scrapped and there is no longer an upper limit that vehicles will be charged. Alternative routes include Business Bay Crossing, Floating Bridge (close to Al Mage connects Al Ittihad Road .

4. METHODOLOGY USED

A.ATMEL 89S52

AT89S52 is the 40 pin, 8 bit Microcontroller manufactured by Atmel group. It is the flash type reprogrammable memory. Advantage of this flash memory is we can erase the program with in few minutes. It has 4kb on chip ROM and 128 bytes internal RAM and 32 I/O pin as arranged as port 0 to port 3 each has 8 bit bin .Port 0 contain 8 data line(D0-D7) as well as low order address line(AO-A7). Port 2 contain higher order address line (A8-A15). Port 3 contains special purpose register such as serial input receiver register SBUF, interrupt INT0,INT1 and timers T0 , T1 many of the pins have multi functions which can be used as general purpose I/O pins (or) Special purpose function can be decided by the programmer itself.
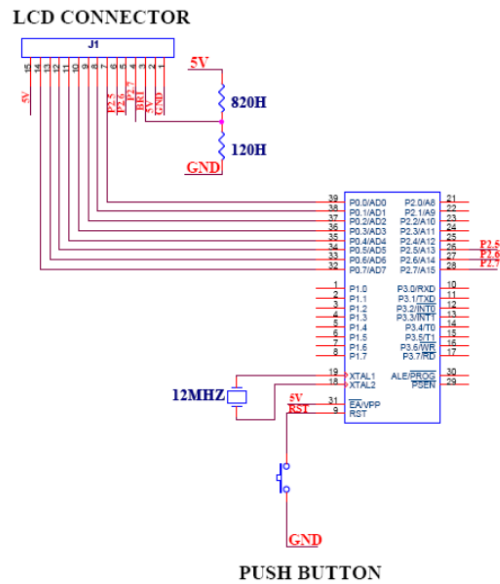

Figure 3:ATMEL 89S52
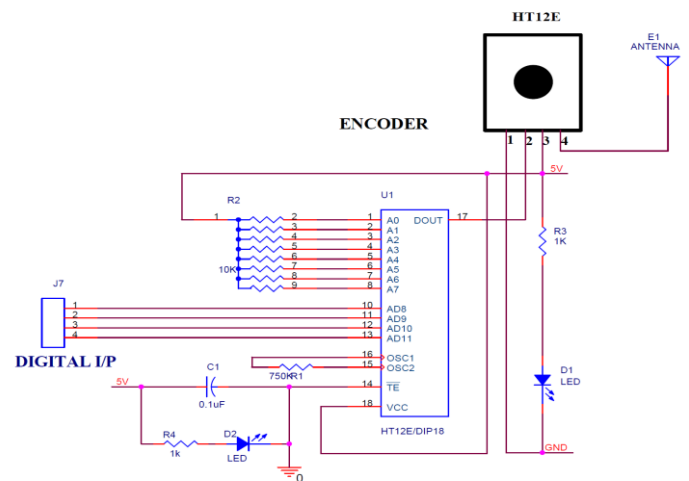
B. ENCODER WITH RF TRANSMITTER

Figure 3:Enocder with RF Transmitter

This circuit. utilizes the RF module (Tx/Rx) for making a wireless remote, which could be used to drive an output from a distant place. RF module, as the name suggests, uses radio frequency to send signals. These signals are transmitted at a particular frequency and a baud rate. A receiver can receive these signals only if it is configured for that frequency. A four channel encoder/decoder pair has also been used in this system. The input signals, at the transmitter side, are taken through four switches while the outputs are monitored on a set of four LEDs corresponding to each input switch. The circuit can be used for designing Remote Appliance Control system. The outputs from the receiver can drive corresponding relays connected to any household appliance.

C.DECODER WITH RF RECEIVER
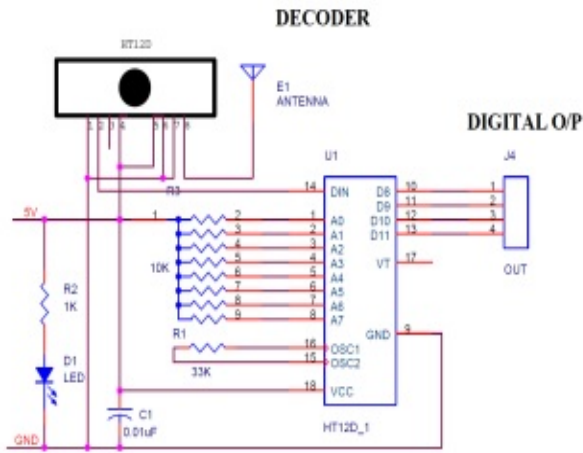
DECODER

Figure 4.Decoder with RF Receiver

HT12D IC comes from HolTek Company. HT12D is a decoder integrated circuit that belongs to 212 series of decoders. This series of decoders are mainly used for remote control system applications, like burglar alarm, car door controller, security system etc. It is mainly provided to interface RF and infrared circuits. They are paired with 212 series of encoders. The chosen pair of encoder/decoder should have same number of addresses and data format. In simple terms, HT12D converts the serial input into parallel outputs.
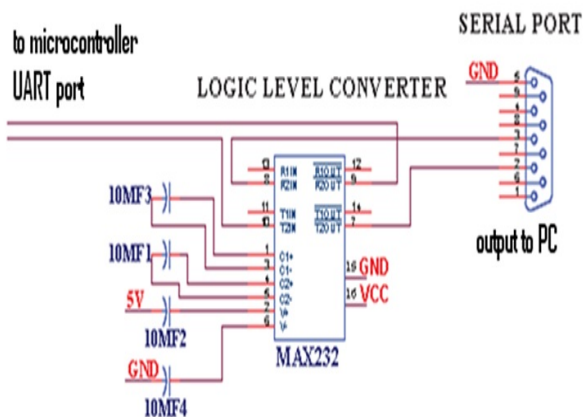
D.RS232

Figure 5.RS232

In communications, RS-232 is a standard for serial binary data interconnection between a DTE (Data terminal equipment) and a DCE (Data Circuit-terminating Equipment). It is commonly used in computer serial ports. In this circuit the MAX 232 IC is . used as level logic converter. The MAX232 is a dual driver/receiver that includes a capacitive voltage generator to supply EIA 232 voltage levels from a single 5v supply. Each receiver converts EIA-232 to 5v TTL/CMOS levels. Each driver converts TLL/CMOS input levels into EIA-232 levels.
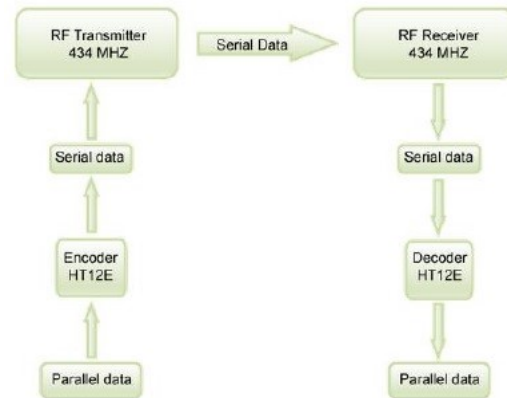
E.RF TRANSMITTER AND RECEIVER

Figure 6..RF Transmitter and RF Receiver

This radio frequency (RF) transmission system employs Amplitude Shift Keying (ASK) with transmitter/receiver (Tx/Rx) pair as shown in the figure 4.10.1.operating at 434 MHz. The transmitter module takes serial input and transmits these signals through RF. The transmitted signals are received by the receiver module placed away from the source of transmission. The system allows one way communication between two nodes, namely, transmission and reception. The RF module has been used in conjunction with a set of four channel encoder/decoder ICs. Here HT12E & HT12D have been used as encoder and decoder respectively. The encoder converts the parallel inputs (from the remote switches) into serial set of signals. These signals are serially transferred through RF to the reception point.
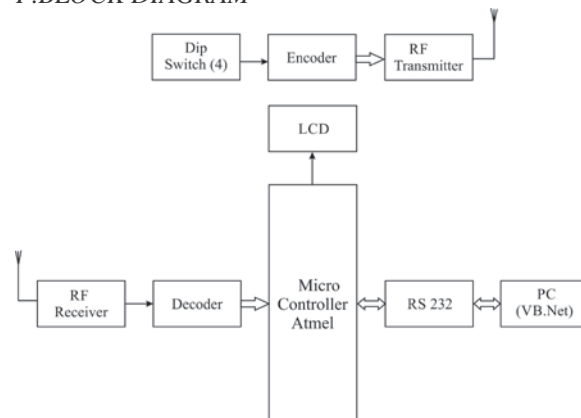
F.BLOCK DIAGRAM

Figure 6.Block Diagram of Proposed system

In the initial step, dip switch being connected to the encoder ,the encoded data is being sent to the RF transmitter which is then being received by the RF receiver and decoded. The decoded data is sent to the Atmel microcontroller which communicates to the pc through serial data communication.

5. RESULT

A prototype has been designed and implemented so as to ensure proper safety of vehicle and time saving capability in sensing a number plate without much ado .

This proposed idea can not only overcome the disadvantages of optical recognition system but also adds up to the number sensing technology
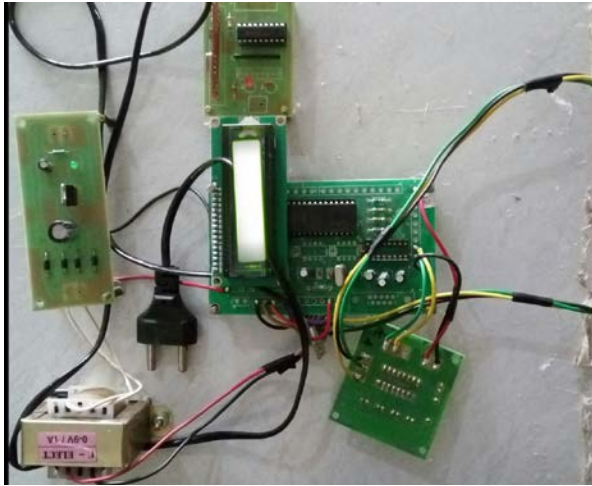

Figure 7.Prototype of proposed system

6. CONCLUSION

This RF BASED NUMBER PLATE SYSTEM not only hold key in identifying just the number plate of a vehicle but it can also sense the authenticity of the vehicle and of the owner simultaneously. Thus it proves itself as a great empowerment in the field of vehicle forensics and recognition.

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