INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X
Impact factor: 4.295
(Volume 5, Issue 1)
Available online at: www.ijariit.com

A survey on identification of vehicle number plate using Viola Jones

P. V. Vishnu Teja
vishnu.sunnyp@gmail.com
Sathyabama Institute of Science and Technology, Chennai, Tamil Nadu

Araddhana Arvind Deshmukh
aadeshmukhskn@gmail.com
Centre for Development of Advanced Computing, Pune, Maharashtra

Bhupenra Pratap Singh
bhupendra.jmd@gmail.com
Centre for Development of Advanced Computing, Pune, Maharashtra

Vaishali Prakash Maheshkar
vaishali@cdac.in
Centre for Development of Advanced Computing, Pune, Maharashtra

Dr. Kavi Priya
ecekavipriya@gmail.com
Sathyabama Institute of Science and Technology, Chennai, Tamil Nadu

ABSTRACT

In the existing system, some people who are driving vehicles without obeying the rule and also there is no automatic detection system to find the people who are all violating public safety. In the proposed system we introduce an automatic detection system when people overrule the road safety. We implement a detection system to identify the vehicle by scanning number plate using OCR. IOT (Internet of Things) is technology in which we can integrate hardware and software here we integrate mat lab and hardware sensors. We use the IR sensor to detect the vehicle which is crossing the signal line. And also we identify the theft vehicle using the same OCR system

Keywords— *Internet of Things, OCR, Automatic detection system*

1. INTRODUCTION

Character recognition (OCR) is the process of converting an image representation of a document into an editable format [1]. This application enables users to search for documents stored in the format of images by converting them into text, which can be easily performed and processed by computers. Each OCR system contains a few processing stages, in which a particular task can be accomplished, and the output of each stage is considered the input for the next stage. A typical OCR system consists of a few main stages, including preprocessing, segmentation, feature extraction, and classification. However, the ultimate goal of developing a method with the same reading capabilities as humans has remained unreached even after many years of intensive investigation and research

2. RELATED WORK

2.1 Zigbee

Using ZigBee, we can achieve the distance of 70mts but it can reach greater distances by relaying data from one node to the next node in an interconnected system.

It has the technical standard of 802.15.4 because it takes the full advantage of MAC layers and physical radio. The main aim of ZigBee is to control and monitoring the applications where relatively low power consumption, low level of data throughput is needed, and the possibility of the remote. Security, lighting controls, sensors...and many other applications for this technology.

2.2 Physical and MAC layers

There are three licensed bands Bluetooth 2.4 GHz, HIPERLAN 5.8 GHz and IEEE 802.11/Wi-Fi 2.450 GHz and 5.8 GHz bands. This is specified to operate at 2.4 GHz. But at 2.4 GHz there are nearly sixteen channels available and the data rate is 250kbps. For 9 GHz there are nearly ten channels and data rate of 40 kbps, while at 8.6 GHz there is only one channel and data rate up to 20 kbps.

The modulation methods can vary according to the band we are using. Direct sequence spread spectrum (DSSS) is used in many (all) cases. However, for the 8.6 and 9 GHz bands, the form of modulation is binary phase shift keying. For the 2.4 GHz band, Offset Quadrature Phase Shift Keying (OQPSK) is employed.

The fact is that systems may operate in heavily swarming environments, and in areas where levels of inapposite interference are high, the 802.15.4 Specification has incorporated a variety of features to ensure exceedingly reliable operation. This quality of assessment includes energy detection at receiver and clear channel. CSMA (Carrier Sense Multiple Access) techniques are used to determine when to transmit and where to transmit, so that unnecessary conflicts are avoided

2.3 Data transfer

The data is transferred in form of packets. It has a maximum size of 128 bytes, it can allow a maximum of 104 bytes. Compared to other systems this appears slow, so the

applications 802.15.4 and ZigBee are should use at requiring very low data rates. The supports 64 bit and 16 bit short addresses. The 64-bit addresses can identify uniquely because every device has a unique IP address. If the network is set up once, the 16-bit addresses can be used and allow over 65000 nodes

It has an open superframe design with a method for synchronization of time. It can also recognise that some messages needed to be given high priority. To attain this, an assurance time slot mechanism has been integrating into the specification. This empowers the high priority messages to be sent over the network as rapidly as possible

2.4 Upper layers (ZigBee)

Above the physical and MAC layers defined by 802.15.4, the ZigBee standard itself defines the upper layers of the system. This includes many aspects including the messaging, the configurations that can be used, along with security aspects and the application profile layers.

Three different networks topologies that support ZigBee, namely hybrid networks or cluster tree, star and mesh. Each has its own pros (advantages) which can be used in different situations.

Star network topology is most commonly used, it has the advantage of simplicity. As the name suggests it is formed in a star configuration with all nodes are connected to a common central network

Peer to peer or Mesh networks permits high degrees of reliability. It consists of a different nodes placed as per our need, and nodes that near have an ability to communicate with each other, this will form a mesh or peer to peer. Notifications (messages) will be routed over the network uses the variety of stations as relays. Proper routes that can be used so that this makes the network robust. If intercession is present in any section, then another section of the network will be used instead of it. This is called as a cluster tree network. This is a mixture of mesh and star topologies.

Zigbee and 802.15.4 have been enhanced to make sure that low power utilization is the main feature. The low power design will allow the battery used for years, allows the network without constant maintenance.

2.5 IR Sensor

An IR (Infrared) sensor is a device that effuses to sense some aspects of the neighbouring. This sensor can detect the motion and measure the heat of an object. There are some types of sensors that can only measure the IR radiation, instead of emitting it is called as Passive Infrared Sensor. In this infrared spectrum, all the objects radiate the thermal radiations. These radiations are unseen, this unseen radiation can be detected by an IR sensor. The detector is IR photodiode and the emitter is IR LED that is sensitive to infrared light of the equal wavelength as that is emitted by the infrared LED. When IR light drops on the photodiode, the resistances and these producing voltages, variation in proportion to the significance (magnitude) of the infrared light received.

IR technology addresses different types of wireless operations. Remote and Sensing controls are the main areas. In the EM (electromagnetic) spectrum, IR portion is split into three regions: far infrared region, mid-infrared region and near-infrared region. The wavelengths of these regions and their applications are shown below.

- Far infrared region- 3000 nm to 10,00,000 nm - Thermal imaging
- Mid-infrared region- 1400 nm to 3000 nm - Heat sensing
- Near-infrared region- 700 nm to 1400 nm - IR sensors, fibre optic.

The frequency range of infrared is higher than a microwave and lesser than visible light.

For optical communication and optical sensing, photo-optics technologies are used in the nearby IR region as the RF (Radio Frequency) is complex than light when implemented as a source of the signal. Optical wireless communication is done with infrared data transmission for short-range applications. An IR sensor detects or/and emits infrared radiation to sense its nearby environment.

3. PROPOSED SYSTEM

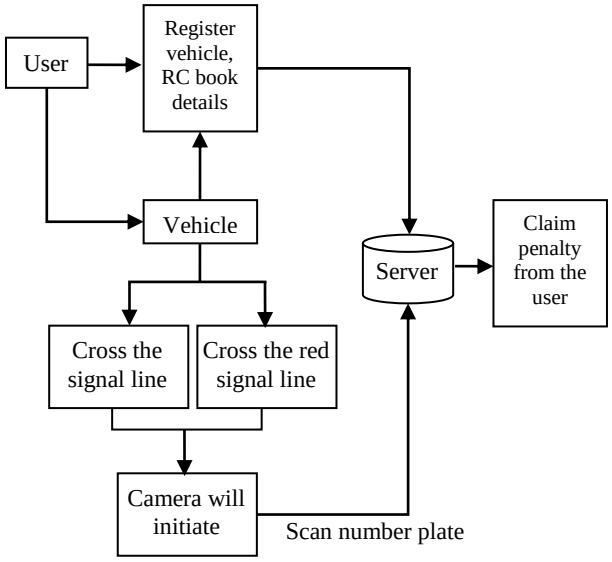

Fig. 1: Server communication

In the proposed system user will register their vehicle information with their name, address, RC book details, license details etc. those details will be stored on the database. We propose two different types of alerting system when people overrule the principles. The first part of this paper is scanning the number plate when people cross the signal line. In every signal line, we fix the IR sensor to detect the movement of vehicles. If people try to cross the signal line IR sensor will send the alert to the control room via ZigBee. Then automatically signal camera will initiate and scan the number plate and send that vehicle information to the control room after that system will display all the information about the vehicle and owner.

In the same way, the red signal crossing will be detected and send those details to the control take action against the people.

3.1 Vehicle theft detection

In this module, we identify the theft vehicle using a camera by scanning the number plate using OCR.

4. CONCLUSION

This paper infers that we implement the new system to identify the vehicle when people overrule the rules. Using IOT we implement this method and find some solution for the public issues to avoid and save the people from overruling the rules.

The OCR plays the major roll on the proposed methods. MATLAB is used to recognize the image (letters) from the number plate and send that information via Zigbee.

Through the proposed system we find some solution for the existing problem.

5. REFERENCES

[1] A. M. Al-Shatnawi, "A new method in image steganography with improved image quality," *Applied Mathematical Sciences*, vol. 6, no. 79, pp. 3907-3915, 2012.

[2] H. A. Al-Muhtaseb, S. A. Mahmoud, and R. S. Qahwaji, "Recognition of off-line printed Arabic text using Hidden Markov Models," *Signal Processing*, vol. 88, no. 12, pp. 2902-2912, 2008.

[3] V. Vuori, M. Aksela, J. Laaksonen, E. Oja, and J. Kangas, "Adaptive character recognizer for a hand-held device: Implementation and evaluation setup," in *Proc. of the 7th IWFHR*, 2000, pp. 13-22.

[4] Z. Fan, D. Bi, L. He, M. Shiping, S. Gao, and C. Li, "Low-level structure feature extraction for image processing via stacked sparse denoising autoencoder," *Neurocomputing*, vol. 243, pp. 12-20, 2017.

[5] M. A. Abuzaraida, A. M. Zeki, and A. M. Zeki, "Segmentation techniques for online Arabic handwriting recognition: a survey," in *Information and Communication Technology for the Muslim World (ICT4M), 2010 International Conference on*, 2010, pp. D37-D40: IEEE.

[6] C. Shanthi and N. Pappa, "An artificial intelligence based improved classification of two-phase flow patterns with feature extracted from acquired images," *ISA Transactions*, vol. 68, pp. 425-432, 2017.

[7] M. Khemakhem and A. Belghith, "A multipurpose multi-agent system based on a loosely coupled architecture to speed up the DTW algorithm for Arabic printed cursive OCR," in *Computer Systems and Applications, 2005. The 3rd ACS/IEEE International Conference on*, 2005, p. 121: IEEE.

[8] A. Mesleh *et al.*, "An optical character recognition," *Contemporary Engineering Sciences*, vol. 5, no. 11, pp. 521-529, 2012.

[9] S. Hakak, A. Kamsin, O. Tayan, M. Y. I. Idris, A. Gani, and S. Zerdoumi, "Preserving Content Integrity of Digital Holy Quran: Survey and Open Challenges," *IEEE Access*, 2017.

[10] D. Motawa, A. Amin, and R. Sabourin, "Segmentation of Arabic cursive script," in *Document Analysis and Recognition, 1997., Proceedings of the Fourth International Conference on*, 1997, vol. 2, pp. 625-628: IEEE.

