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CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1.	AN ANALYSIS OF THE IMPACT OF MOBILE BANKING SERVICE QUALITY ON CUSTOMER SATISFACTION AND LOYALTY: A CASE STUDY OF STANDARD CHARTERED BANK OF ZIMBABWE <i>DR. B. NGWENYA & A. MANJERA</i>	1
2.	REINFORCEMENT OF LECTURE PRESENTATION BY USE OF ANIMATION IN MATHEMATICS <i>WILLIAM NKOMO & BERTHA KARIMBIKA</i>	6
3.	ANALYTICS CUSTOMER RELATIONSHIP MANAGEMENT PROGRAMS AND TECHNOLOGIES: ISSUES AND TRENDS IN BANKING SECTOR <i>S.POOMINATHAN, M.BHAVANI & DR. M. R. VASUDEVAN</i>	12
4.	UNDERSTANDING NEED OF FLOWER GROWERS OF HIMACHAL PRADESH <i>APARNA MAITRA PATI & SUKHJINDER SINGH</i>	16
5.	CHALLENGES AND PROBLEMS ENCOUNTERED BY WOMEN ENTREPRENEURS IN NELLORE DISTRICT <i>C. PRAKASH, R.VANI & E. VENKATESH</i>	22
6.	CAR NUMBER PLATE DETECTION AND RECOGNITION <i>JOYASHRI BASAK & DR. RATIKA PRADHAN</i>	28
7.	AN ANALYTICAL STUDY ON DIMENSIONS OF TRAINING & DEVELOPMENT AND ITS IMPACT ON ORGANISATIONAL EFFECTIVENESS WITH REFERENCE TO SELECTED IT COMPANIES IN BANGALORE <i>DR. T.P. RENUKA MURTHY, DR. MAHESHA KEMPEGOWDA & VANISHREE.G.M</i>	32
8.	EMPOWERING CHILDREN WITH SPECIAL NEEDS THROUGH ASSISTIVE TECHNOLOGY IN THE CLASSROOM <i>SUHANA SYED BURHAN & DR. SARA BEGUM</i>	36
9.	A SURVEY ON HAND GESTURE RECOGNITION <i>JHUMA SUNUWAR & DR. RATIKA PRADHAN</i>	40
10.	AN EMPIRICAL ANALYSIS ON ONLINE SHOPPING SATISFACTION AND LOYALTY OF CUSTOMER WITH SPECIAL REFERENCE TO TAMILNADU <i>S.POOMINATHAN & DR. S. AMILAN</i>	44
11.	A STUDY OF CONSUMER BEHAVIOUR ON TWO-WHEELERS WITH SPECIAL REFERENCE TO BAJAJ PRODUCTS IN SALEM <i>DR. A. VINAYAGAMOORTHY, M. SANGEETHA & L.MARY ANTONI RSOALIN</i>	48
12.	A STUDY OF INTERNET BANKING PROCESS AND PRACTICE OF STATE BANK OF INDIA <i>DR. MANOJKUMAR J. GAIKWAD & ARVIND K. RAUT</i>	52
13.	FIRM'S DEBT MATURITY STRUCTURE IN PETRODOLLAR COUNTRIES: THE CASE OF KSA LISTED COMPANIES <i>DR. BOUABIDI MOHAMED & DR. OSAMAH HUSSIEN RAWASHDEH</i>	54
14.	AN EMPIRICAL STUDY OF ABSENTEEISM IN PUMPS INDUSTRY WITH SPECIAL REFERENCE TO COIMBATORE <i>DR. S. SARAVANAN</i>	65
15.	SCRUM IN AGILE TESTING <i>GOWDHAMI.D & ARUNA DEVI.P</i>	72
16.	THE INFLUENCE OF RECAPITALISATION IN THE NIGERIAN INSURANCE MARKET ON MARINE INSURANCE <i>NWOKORO, I. A.</i>	75
17.	AN APPRAISAL OF ROUTING AND SCHEDULING IN LINER SHIPPING (CASE STUDY: LAGOS PORT COMPLEX) <i>OBED B.C NDIKOM & BUHARI SODIQ</i>	79
18.	ROLE OF TEACHERS IN DEVELOPING EMOTIONAL INTELLIGENCE <i>TIMY THAMBI</i>	87
19.	MICRO-CREDIT MANAGEMENT BY PUNJAB NATIONAL BANK WITH REFERENCE TO FINANCING SHGs IN VARANASI <i>SOFIA KHAN</i>	89
20.	OPINION ANALYSIS ON TRANSPORT ISSUES AMONG WOMEN CONSTRUCTION WORKERS IN KODAIKANAL <i>P.LALITHA</i>	96
	REQUEST FOR FEEDBACK & DISCLAIMER	99

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CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

JOURNAL AND OTHER ARTICLES

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19-22 June.

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CAR NUMBER PLATE DETECTION AND RECOGNITION**JOYASHRI BASAK****STUDENT****DEPARTMENT OF COMPUTER SCIENCE****SIKKIM MANIPAL INSTITUTE OF TECHNOLOGY****MAJHITAR****DR. RATIKA PRADHAN****HEAD****DEPARTMENT OF COMPUTER APPLICATION****SIKKIM MANIPAL INSTITUTE OF TECHNOLOGY****MAJHITAR****ABSTRACT**

Car number plate detection and recognition is a very important field of digital image processing. Although, many researchers have already been worked on it but still it is not has been properly work on every image. In this paper we have analysis some existing algorithm or methods. On this basis of the analysis we have proposed an algorithm. This algorithm have five module: Pre-processing of images, localization of license plate, screw correction, segmentation of characters, number identification using template matching.

KEYWORDS

Detection, Localization, Recognition.

1. INTRODUCTION

We know that there are currently more than half a billion cars on road worldwide. Every car has its own identification number which is called the licence plate number. This number plays an important role in Public traffic. It is not possible for a person to monitor all the vehicles which are passing with their speed and note down their licence number. So detection of those license plate and recognition there character is a very important research topic now a day. License plate recognition applies image processing and character recognition technology to identify vehicles by reading their license plates. Anti-terrorism and public security is increasing worldwide, so the global law enforcement has been deploying vehicle license plate recognition systems. Mostly vehicles used by criminals are either stolen vehicles or vehicles hung with stolen license plates. Mostly vehicle make accident and run away from their leaving no trace. Using this recognition we can trace them. License plate recognition is also significant to save the lives and the properties of the chauffeurs, the passengers and to improve the stability and the authority of the law execution in transportation. The two major values license plate recognition adds to systems are automation and security.

2. LITERATURE SURVEY

We have analyst some papers on this field. This are stated below.

Ronak P Patel[1] have proposed an algorithms. They use Morphological operation, Thresholding operation, Edge detection, Bounding box analysis for number plate extraction, character separation using Segmentation and character recognition using Template method. In this methods have disadvantages of angle of image and it cannot detect two row license plate. Kuo-Ming Hung[2] uses the probability distribution of the license plate between the two lights barking in the captured image. we use the morphology method Black Top-Hat to enhance the level of separation of the license plate characters. But if the light of head light of the car behind is not bright enough, it will result in weak edge characteristics of the character and LP background. That will cause the LP region to be treated as noise and being filtered out, and effect the positioning of the LP. Kumar Parasuraman [3] has proposed algorithm consists of three major parts: Extraction of plate region, segmentation of characters and recognition of plate characters. For extracting the Plate region, edge detection algorithm and vertical projection method are used. In segmentation part, filtering, thinning and vertical and horizontal projection are used. And finally, chain code concept with different parameter is used for recognition of the characters. But by this technique angled image cannot be detected properly. Er. Kavneet Kaur[4] have proposed algorithm has three major parts:

vehicle number plate extraction, character segmentation and Optical Character Recognition (OCR). Number plate extraction is that stage where vehicle number plate is detected. font type, noise in image, tilting etc are big issue in their proposal. Prathamesh Kulkarni[5] use feature based methodology for localization of Indian number plates. And then features of number plates are used to find the probable number plate locations. The major sources of error were the tilt of the number plate, the non-English script and extreme variation in the dimensions of the characters. Ziad Shaaban[6] proposed three stages: detection and extraction of a license plate area by video camera segmentation of the plate characters and digits and character and digit recognition. It has the problem of recognizing the colour of plates and the old types of plates. Cosmo H. Munuo[7] uses the steps, license plate; localization, sizing and orientation, normalization, character recognitions and geometric analysis. There are some other papers which are listed below.

TABLE 1: COMPARISON TABLE AMONG VARIOUS RESEARCH WORK

Sr. No.	Year of Publication	Author	Paper Title	Methods	Research Gap
1.	2012	Arulmozhi, K. Centre for Inf. Technol. & Eng., M.S. Univ., Tirunelveli, India Perumal, S.A.; Siddick, A.; Nallaperumal, K.	Image enhancement techniques on Indian license plate localized image for improved character segmentation	Using LPR algorithms consists of three steps 1) location of license plate 2) segmentation It also use skew technique ,Adaptive threshold ,Otsu threshold	It only works on the image modification. There has no discussion on character recognition.
2.	2011	VinhDu Mai; Dept. of Comput. Sci. & Technol., Tongji Univ., Shanghai, China ; Duoqian Miao; Ruizhi Wang; Hongyun Zhang	An improved method for Vietnam License Plate location	Morphology operation on grayscale image, image subtract operation on grayscale image, image binarization based on threshold, edge detection use Canny operator, morphology operation on binary image, finding the license plate (LP) angle & rotating LP based Radon transform and bilinear interpolation, and then cutting exactly license plate region based on measuring properties of Vietnam license plate regions	It only works on image of license plate. It does not tell the various size of character recognition of image of license plate
3.	2013	Jinn-Li Tan; ECE Dept., Univ. Teknol. Malaysia, Skudai, Malaysia ; Abu-Bakar, S.A.R.; Mokji, M.M.	License plate localization based on edge-geometrical features using morphological approach	Gaussian operation followed by Sobel vertical edge mask. Prior to that, gamma correction is applied to increase the detection of edges. morphological operations and calculate geometrical features of these regions and use rule-based classifier to correctly identify the true plate region.	It does not discuss about character recognition
4.	2009	Kulkarni, P.; Dept. of Electron. & Telecommun., Univ. of Pune, Pune, India ; Khatri, A.; Banga, P.; Shah, K.	A feature based approach for localization of Indian number plates	A two-step approach for localization is presented. In the first step, the features of characters are used to find the probable characters locations. In the second step, the features of number plates are used to find the probable number plate locations	The major sources of error were the tilt of the number plate, the non-English script and extreme variation in the dimensions of the characters, which can be aptly removed by enhancing the approach further.
5	2010	Babu, C.N.K.; C. M. S. Coll. of Eng., CMS Nagar, Namakkal, India ; Siva Subramanian, T.; Parasuraman, K.	A feature based approach for license plate-recognition of Indian number plates	Adaptive median filter is applied to remove the noise from the image.	It does not work on double row license plate

3. LICENSE PLATE LOCALIZATION AND DETECTION

A. Preprocessing

The image is captured using a digital camera. The image file is saved in jpg or jpeg format. The input isolated image is filtered to improve the quality of the image or to reduce the resolution of the image by using filters.

B. Edge Detection

Edge detection is a fundamental step in several fields such as pattern recognition, image processing and computer vision and the first step of image analysis and understanding. Edges define the boundaries between regions in an image, which helps with segmentation and image recognition. The classification of edge detection introduced in is based on the behavioural study of these edges with respect to the following differentiation operators: Gradient edge Detectors (first derivative or classical), Zero crossing (second derivative), Laplacian of Gaussian (LoG), Gaussian edge detectors, colour edge detectors. In this paper, Prewitt detector operator is used to obtain the edge detection image.

C. Plate Extraction

The input image is converted to grey scale. Then the grey scale image is then converted into binary image. Here we use bounding box to take the license plate region. With the proportion of height and width select the license plate region. The following steps:

- Step1: Determine the vertical borders of the rectangle plate by applying the horizontal run length on edged binary image. Then the vertical run length encoding is applied.
- Step2: Determine the vertical borders of the rectangle plate by applying the vertical run length on edged binary image. Then the horizontal run length encoding is applied.
- Step 3: Apply the vertical and horizontal histograms on the images obtained from step 1 and 2

D. Normalization

There are several methods to compute the skew angle for the vehicle license plate: horizontal skew, vertical skew and combination of both horizontal and vertical skew. We have the skew detection operation and element the skew angle.

E. Segmentation

The plate image determined using the above steps is converted into binary image. Then bounding box operation is done on the binary image and segments the characters in separate box. Each box are then resized into the same size of template images.

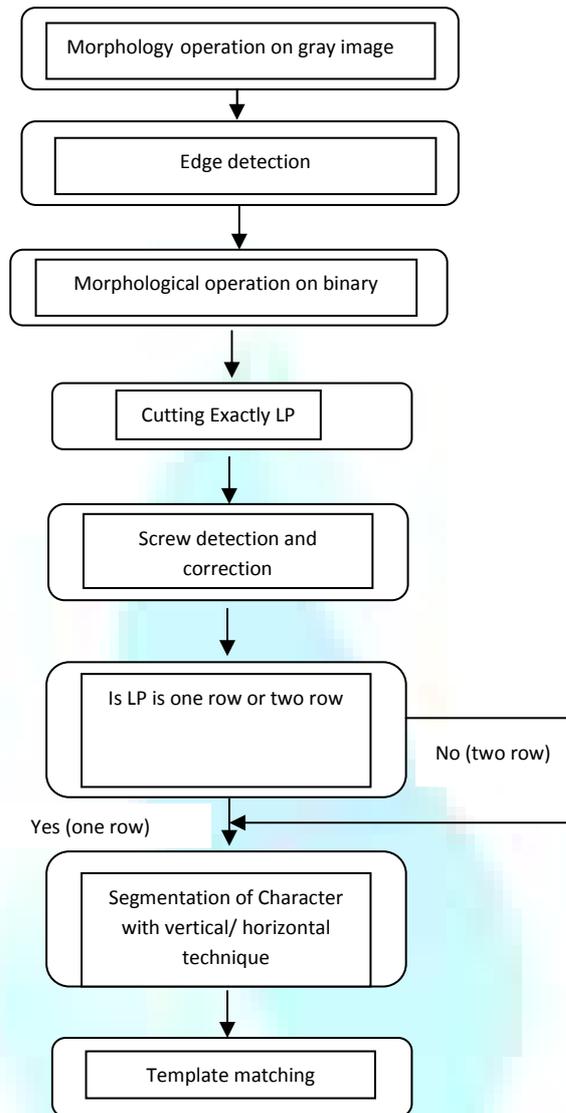
F. Template matching

Normalized character image compare with each template character image and find correlation between segmented character and template character. Selecting the most relevant image and write into text file.

4. PROPOSED WORK

License plate detection and recognition is an image processing technology and it is a very important field of research. It identifies the vehicle with their license plate number. It keeps the huge data of the vehicles without any human interaction. Basically this work can be consists of four phases: Pre-processing of image, number plate extraction, character segmentation, character recognition. The proposed work can be shown through a flow chart as below:

FIG 1: FLOW CHART FOR THE PROPOSED PROCESS



5. CONCLUSION

On the basis of literature survey we have taken some problem which were not yet solved. In this paper we tried to solve those problems. On the basis of the proposed algorithm we can solve the existing problem

REFERENCES

1. Ronak P Patel¹, Narendra M Patel², Keyur Brahmbhatt³, "Automatic Licenses Plate Recognition", in 2013 *IJCSMC*, Vol. 2, Issue. 4, pp.285 – 294.
2. Kuo-Ming Hung^{1,2*} and Ching-Tang Hsieh², "A Real-Time Mobile Vehicle License Plate Detection and Recognition", in 2010 *Tamkang Journal of Science and Engineering*, Vol. 13, No. 4, pp. 433_442
3. Kumar Parasuraman, "An Efficient Method for Indian Vehicle License Plate Extraction and Character Segmentation", in 2010 *IEEE International Conference on Computational Intelligence and Computing Research*
4. Er. Kavneet Kaur¹, Vijay Kumar Banga², "NUMBER PLATE RECOGNITION USING OCR TECHNIQUE", in *IJRET*, Volume: 02 Issue: 09
5. Prathamesh Kulkarni, Ashish Khatri, Prateek Banga, Kushal Shah, "A Feature Based Approach for Localization of Indian Number Plates", 2009 *IEEE*.
6. Ziad Shaaban, "An Intelligent License Plate Recognition System", VOL.11 No.7, July 2011, *IJCSNS*
7. Cosmo H.Munuo¹, Dr. Michael Kisangiri², "Vehicle Number Plates Detection and Recognition using improved Algorithms: A Review with Tanzanian Case study", Volume 3 Issue 5, May 2014, Page No. 5828-5832, *IJCES*.
8. J.G. PARK, "An Intelligent Framework of Illumination Effects Elimination for Car License Plate Character Segmentation", in *Proceedings of the Ninth International Conference on Machine Learning and Cybernetics*, 2010, pp.1268-1272
9. Aleš JANOTA, Jiří ZÁHRADNÍK, Juraj SPÁLEK, "Attributes Selection for License Plate Recognition based on Decision Trees", in *Acta Electrotechnica et Informatica* No. 4, Vol. 5, 2005, pp.1-7.
10. Tran Duc Duan, Tran Le Hong Du, Tran Vinh Phuoc, Nguyen Viet Hoang, "Building an Automatic Vehicle License-Plate Recognition System," in *Intl. Conf. in Computer Science – RIVF'05*, 2005, pp.59-63.
11. Lihong Zheng and Xiangjian He, "Number Plate Recognition Based on Support Vector Machines," in *Proceedings of the IEEE International Conference on Video and Signal Based Surveillance (AVSS'06)*, 2006.
12. Siti Norul Huda Sheikh Abdullah, Marzuki Khalid and Rubiyah Yusof, Khairuddin Omar, "License Plate Recognition using Multi-cluster and Multilayer Neural Networks," 2006, pp.1818-1823.
13. Guangying Ge, Jianjian Xu, Minghong Wang, "On the Study of Image Characters Location, Segmentation and Pattern Recognition using LSSVM," in *Proceedings of the 6th World Congress on Intelligent Control and Automation*, 2006, pp.9650-9654.
14. Zhenxue Chen, Guoyou Wang, Jianguo Liu and Chenyun Liu, "Automatic License Plate Location and Recognition Based on Feature Saliency," in *International Journal of Computational Cognition*, Vol5, No2, 2007, pp.1-9.
15. Osllan Osiris Vergara Villegas, Daniel González Balderrama, Humbertode Jesús Ochoa Domínguez and Vianey Guadalupe Cruz Sánchez, "License Plate Recognition Using a Novel Fuzzy Multilayer Neural Network," in *International Journal of Computers*, Vol3, 2009, pp.31-40.

16. Weihua Wang, "License Plate Recognition Algorithm Based on Radial Basis Function Neural Networks," in 2009 International Symposium on Intelligent Ubiquitous Computing and Education, 2009, pp.38-41.
17. Kaushik Deb, Hyun-Uk Chae, "Vehicle License Plate Detection Method Based on Sliding concentric Windows and Histogram," in Journal of Computers, Vol 4, No. 8, 2009, pp. 771-777.
18. Neng-Sheng Pai, Sheng-Fu Huang, Ying-Piao Kuo, Chao-Lin Kuo, "License Plate Recognition Based on Extension Theory," in 2010 International Symposium on Computer, Communication, Control and Automation, 2010, pp.164-67.



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