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Survey on Pedestrian Detection on low quality images using Support Vector Machine and B.G modelling technique

Raj Akhil MSS[1], Arunya R[2]*, and Manikanta KVNS[3].

[1]Sathyabama University, Rajiv Gandhi Salai, Jeppiaar Nagar, Chennai - 600 119, Tamil Nadu, India.
[2]Sathyabama University, Rajiv Gandhi Salai, Jeppiaar Nagar, Chennai - 600 119, Tamil Nadu, India.
[3]Sathyabama University, Rajiv Gandhi Salai, Jeppiaar Nagar, Chennai - 600 119, Tamil Nadu, India.

ABSTRACT

In this concept efficient Pedestrian classification system is introduced to detect the multiple road side walking pedestrian in real-time processing. Texture and colour are two important properties that are used to describe a scene. Local binary pattern (LBP) texture based background subtraction gives the texture regions achieving pedestrian protection in the field of computer vision. Here the task of pedestrian detection (PD) involves stages such as pre-processing, ROI selection, feature extraction, classification, verification/refinement and tracking. Of all the steps involved in the framework, the paper presents the work done towards implementing the feature extraction and classification stages in particular. It is of paramount importance that the extracted features classifier distinguish between a pedestrian and a non-pedestrian. The presented work focuses on the implementation of the LBP conceptual background changes obtaining and Histogram of Oriented Gradients (HOG) features with modified parameters to Classifying is achieved using Support Vector Machine (SVM).

Keywords: DWT(Discrete Wavelet Transform), SVM(Support Vector Machine), LBP(Local Binary Pattern), PD(Pedestrian Detection)

Corresponding author

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INTRODUCTON

The need for efficient storage and retrieval of images – recognized by the users of large images collection such as image libraries and design archives for many. After studying the issues involved in managing visual information in some depth, the participants came to a conclusion that images were indeed likely to play a great role in electronically- mediated communication. In modern daily life the need of the image recognition has increased to a greater extent, for the security purpose, for the analysis of the images, and motion of the objects, etc. However, significant research advances, there is great need in involving the collaboration between the disciplines before image providers could take maximum advantage of the opportunities offered. They identified a number of critical areas where research was greatly required in the areas of data representation, feature extractions and indexing, image query matching and user interfacing.

LITERATURE SURVEY ANALYSIS:-

On a research by Marco Pedersoli, Jordi Gonzàlez, Xu Hu, and Xavier Roca, Pedestrian detection is included in most of the driving assistance system . Unfortunately, there is still a tradeoff between precision and real time. To detect as many pedestrians as possible, for a reliable detection we need a excellent precision-recall, at the same time, avoiding too many false alarms; in addition, high speed computation is requried for quick reactions to emergency situations. Based on deformable templates novel approaches have been proposed since these deliver a reasonable detection performance, they are computationally too expensive for the performance in real-time. From this paper, we present a system for pedestrian detection based on a hierarchical multiresolution part-based model. During exhibiting a speedup of more than one order of magnitude, due to the high speed coarse-to-fine inference technique, also due to local deformation of the units, we can obtain state-of-the-art is detected accurately in the technique that is proposed . Moreover, the system here explicitly infers the level of resolution available so that the detection of small examples is feasible at very low cost. We conclude this analysis by presenting how a G.P.U(Graphics Processing Unit) optimized implementation of our proposed system is adoptable for real-time pedestrian detection in terms of both accuracy and speed.

DRAW BACK:- This method has high computational cost and too expensive hence it is difficult.

Piotr Dolla´r, Christian Wojek, Bernt Schiele, and Pietro Perona have researched and have come out with an technique.Pedestrian detection is one of the important area in computer vision, there are several applications that have the potential to impact quality of life. In recent years, the number of methodologies for the detection pedestrians in monocular images has been increasing. However, multiple data sets and widely varying evaluation protocols are used, making direct comparisons difficult. To address these derelictions, we go trough an extensive evaluation of the state of the art in a unified framework. They made three primary contributions: They have combined a large, well-annotated, and realistic monocular pedestrian detection data set and study the statistics of the size, position, and occlusion patterns of pedestrians in urban areas 2) They proposed a refined frame-rate evaluation methodology that allows us to carry out probing and informative comparisons, including measuring performance in relation to scale and occlusion, and 3) The performance of sixteen pretrained state-of-the-art detectors across six data sets have been compared. Our study lead us to assess the state of the art and provides a framework for gauging future efforts. Despite our experiments there is significant progress, the performance still has a great scope of improvement. In particular, detection is disappointing at low resolutions and for partially occluded pedestrians. The objective of this paper is to provide an overview of the current state of the art from both methodological and experimental perspectives. They have coverd the main components of a pedestrian detection system and the underlying models. The paper contains an experimental study of the pedestrian detection. We consider a diverse set of state-of-the-art systems: wavelet-based AdaBoost cascade, Histogram Of Oriented Gradients(HOG) /linear Support Vvector Machine(SVM) , Near Nnoise(NN)/LRF , and combined detection of shape and texture . Experiments are performed on an extensive data set captured onboard a vehicle driving through urban environment. The data set includes many thousands of training samples also with a 27-minute test sequence consisting and using more than 20,000 images with annotated pedestrian locations. We consider a generic evaluation setting and one specific to pedestrian detection who is handling a vehicle. Results indicate a clear advantage of Histogram Of Oriented Gradients(HOG) /linear Support Vvector Machine(SVM) at higher image resolutions, lower processing speeds, at lower image resolutions and in real-time processing speeds a superiority of the wavelet-based AdaBoost cascade approach. The data set is made public for benchmarking purposes i.e 8.5 gb.

***DRAWBACKS*:-** The lack of explicit models

In the paper published by P. Vasuki, S. Veluchamy, They saw pedestrian detection is an important key problem in Advanced Driver Assistance Systems (ADAS). Un-signalized pedestrian crossing zone are dangerous places, where pedestrians traffic is heavy . This is the main factor for most of the accidents. For that, this paper illustrates a machine learning approach for detecting the pedestrian zone and also to detect the pedestrians crossing in that zone. is disappointing at low resolutions and for partially occluded pedestrians.

***DRAWBACKS*:-**Direct comparisons difficult.

Markus Enzweiler has researched an eplored a technique,this is implemented by two different stages. By the advantages of extended Center Symmetric –Local Binary Pattern (XCS-LBP) method and Adaptive Background Mixture Model(ABMM) for Foreground detection in the first stage, the system checks for the presence of the pedestrian zone by combining. Then it uses the Histograms of Oriented Gradient (HOG) for the best possible and appropriate set of features and Linear Support Vector Machine (LinSVM) to classify whether the pedestrians present on the road or not. The reason why the Linear SVM classifier is selected is because SVM can provide the most and maximum generalization capacity and classifies more effectively. In the second stage, it analyzes the pedestrian crossing event for detecting the pedestrians who were crossing the zone suddenly. This second stage is performed, only if there is a presence of pedestrian it is identified in the input video frames. So in this system, it processes only the video frames which contain only the pedestrians. Thus, this approach processes the input video frames more rapidly and attains higher detection rates.

***DRAWBACKS*:- Insecure in using**

Navneet Dalal and Bill Triggs had the study on, question of feature sets for robust visual object recognition, adopting linear SVM based human detection as a test case. After reviewing the existing edge and gradient based descriptors, we show experimentally that grids of Histograms of Oriented Gradient (HOG) descriptors significantly perform existing feature sets for human detection. We study the effect of computation on performance of each stage, concluding that fine-scale gradients on fine orientation binning with relatively coarse spatial binning, and high-quality local contrast normalization are more important in overlapping descriptor blocks for good and better results. The new approach gives separation on the original MIT pedestrian database, so we introduce a more improving dataset wchich contains over 1800 annotated human images along with a large range of pose variations and backgrounds.

***DRAWBACKS*:-** Cost of this is method is high.

Existing Method

The method that is existing uses the Key point descriptors, and to dectect the local features of the image we use scale invariant feature transform(SIFT) based sparse features representation, a statistical method of examining texture that considers the spatial relationship of pixels is used i.e gray-level co-occurrence matrix (GLCM) for the imformation of the texture of an image and Local Binary Pattern analysis and there after with the help of the texture and the colour the Pedestrian detection is done.

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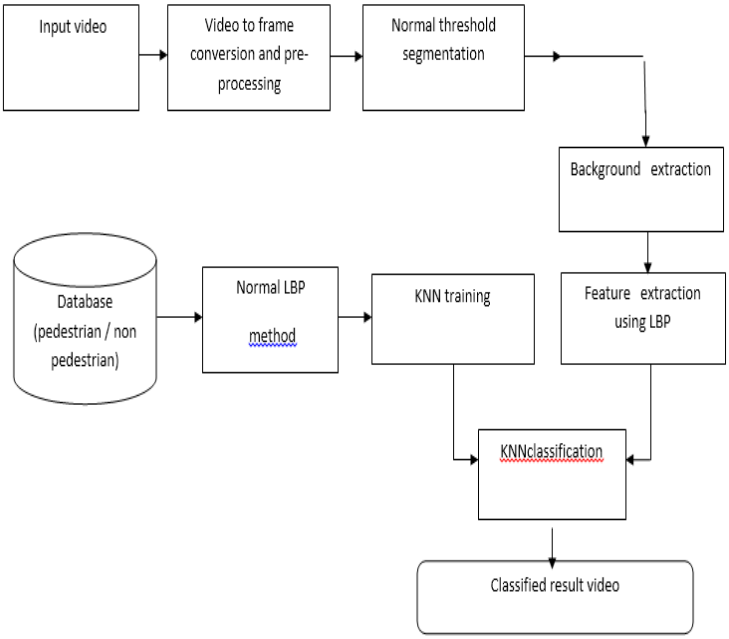
Block Diagram:

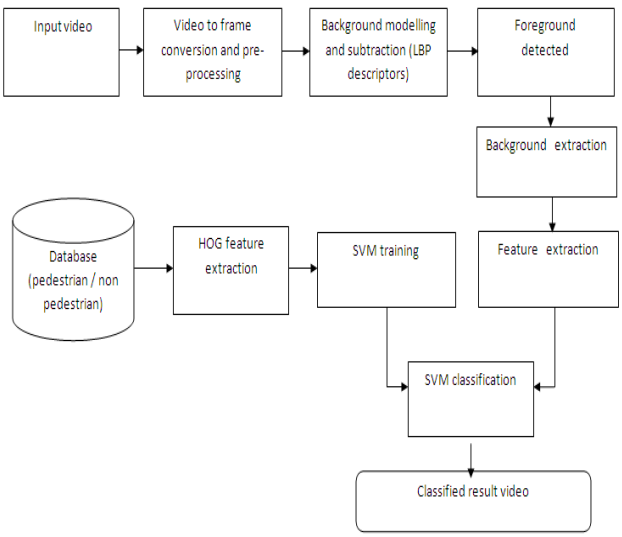


Drawbacks

- It is sensitive illumination changes leads to more background noises
- It is time consuming process
- It is not provides better results due to varying light conditions, shadows and other occlusions

Proposed Method

- New Pedestrian classification system using SVM classification.
- Background modelling and subtraction (LBP descriptors)



PROPOSED METHODLOGIES:-

- Background modelling and subtraction (LBP descriptors)
- Foreground detected
- Background extraction

- Feature extraction
- SVM classification

CONCLUSION

The method that is existing uses the Key point descriptors, and to dectect the local features of the image we use scale invariant feature transform(SIFT) based sparse features representation, a statistical method of examining texture that considers the spatial relationship of pixels is used i.e gray-level co-occurrence matrix (GLCM) for the imformation of the texture of an image and Local Binary Pattern analysis and there after with the help of the texture and the colour the Pedestrian detection is done. New Pedestrian classification system using SVM classification. Background modelling and subtraction (LBP descriptors) and so by using the these tecniques the detection of the pedestrian can be made even out of moving objects. Better accuracy in segmentation under various illuminations. Better accuracy in segmentation under various illuminations. Flexibility in background updating model . It is less sensitive to background noise.

REFERENCES

[1] M. Pedersoli, J. Gonzalez, X. Hu, X. Roca, and J. Gonzàlez, "Toward Real-Time Pedestrian Detection Based on a Deformable Template Model," *IEEE Trans. Intell. Transp. Syst.*, vol. 15, no. 1, pp. 355–364, 2014.

[2] P. Dollar, C. Wojek, B. Schiele, P. Perona, and P. Dollár, "Pedestrian detection: An evaluation of the state of the art," *Pattern Anal. Mach. Intell. IEEE Trans.*, vol. 34, no. 4, pp. 743–761, Apr. 2012.

[3] M. Enzweiler and D. M. Gavrila, "Monocular pedestrian detection: survey and experiments.," *IEEE Trans. Pattern Anal. Mach. Intell.*, vol. 31, no. 12, pp. 2179–95, Dec. 2009.

[4] D. Gerónimo, A. M. Lopez, A. D. Sappa, and T. Graf, "Survey of pedestrian detection for advanced driver assistance systems," *Pattern Anal. Mach. Intell. IEEE Trans.*, vol. 32, no. 7, pp. 1239– 1258, 2010.

[5] N. Dalal and B. Triggs, "Histograms of oriented gradients for human detection," in *Computer Vision and Pattern Recognition, 2005. CVPR 2005. IEEE Computer Society Conference on*, 2005, vol. 1, pp. 886–893.