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This Project is approved and sponsored by
Karnataka State Council for Science and Technology

A Project report on

"Pedestrian Detection and Protection System using Shapelet and Haar Detection System for Traffic Junctions"

A Dissertation work submitted in partial fulfillment of the requirement for the award of the degree of

Bachelor of Engineering in Computer Science and Engineering

by

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2013-2014

ABSTRACT

The objective of our project is to detect pedestrians in images and video sequences as it is an essential and significant task in any intelligent Video surveillance system, Driving assistance system, Image and video retrieval.

Detection system has received tremendous attention in the vision community but has numerous challenges and complexities. Since the detection systems are critical to the success of next generation automotive vision systems, it must be easily configurable by new environment. We present a work on detection system that can be trained to detect the pedestrians in the real time version of the system.

We obtain the images of pedestrians and determine whether each pedestrian candidate is suitable or not on the basis of average value and height of the respective pedestrian candidate as appeared on the image and performs selection processing for eliminating unsuitable candidates.

Detection of pedestrians in images and video sequences is important for many applications but is very challenging due to the various silhouettes of pedestrians and partial occlusions. This paper describes a two-stage robust pedestrian detection approach. The first stage uses a full body detector applied to a single image to generate pedestrian candidates. In the second stage, each pedestrian candidate is verified with a detector ensemble consisting of part detectors. The full body detector is trained based on improved shapelet features, while the part detectors make use of Haar-like wavelets as features. All the detectors are trained by a boosting method. The responses of the part detectors are then combined using a detector ensemble.

A novel classification method called PL-SVM is used to integrate samples from shapelet and haar-like wavelets. The PL-SVM consists of multiple linear SVMs and has the ability to do non-linear classification. In the application of the PL-SVM to human detection, each linear SVM of the PL-SVM is responsible for one cluster of humans in a specific view or posture. All the linear SVMs combined can well tackle the multi-view and multi-posture detection problem.This approach can robustly detect pedestrians in different situations.