Moving Object Detection Using Histogram of Uniformly Oriented Gradient

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Abstract : Moving object detection (MOD) is an important issue in advanced driver assistance systems (ADAS). There are two important moving objects, pedestrians and scooters in ADAS. In real-world systems, there exist two important challenges for MOD, including the computational complexity and the detection accuracy. The histogram of oriented gradient (HOG) features can easily detect the edge of object without invariance to changes in illumination and shadowing. However, to reduce the execution time for real-time systems, the image size should be down sampled which would lead the outlier influence to increase. For this reason, we propose the histogram of uniformly-oriented gradient (HUG) features to get better accurate description of the contour of human body. In the testing phase, the support vector machine (SVM) with linear kernel function is involved. Experimental results show the correctness and effectiveness of the proposed method. With SVM classifiers, the real testing results show the proposed HUG features achieve better than classification performance than the HOG ones.

Keywords : moving object detection, histogram of oriented gradient, histogram of uniformly-oriented gradient, linear support vector machine

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