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Classification of Moving Objects in Surveillance Video

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Abstract

The major task in the smart surveillance system is to classify the moving object blobs into predefined classes. This task is vital as the semantics of the classification helps in understanding and interpretation of high level vision analysis such as object recognition, object behaviour understanding and event detection. In this paper, a moving object classification method is proposed based on features of the object shape. The seven invariant Hu moments features are employed to represent the motion object blob for classification. The suitability of symbolic representation of these feature values for classification of moving objects in particular to inter class classification is studied in this work. The symbolic representation scheme, particularly the interval value based symbolic scheme is used to represent the variations among the classes. The matching of symbolic feature values is performed by applying symbolic similarity measure. The segmented foreground motion object blobs are classified into single person, group of people, two wheeler, small vehicle or big vehicle classes using a simple nearest neighbor classifier. The proposed classification method is experimented on the benchmark DARPA Neovison2 and IEEE PETS datasets. Further, classification accuracy has been ascertained using the F-measure accuracy metric.
Keywords: Object classification, Surveillance video, Symbolic representation, Interval value.