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A SURVEY ON CODING BINARY VISUAL FEATURES EXTRACTED FROM VIDEO SEQUENCES

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Abstract - *In pattern recognition and in image processing, feature extraction starts from an initial set of measured data and builds derived values intended to be informative and non-redundant, facilitating the subsequent learning and generalization steps, and in some cases leading to better human interpretations.When the input data to an algorithm is too large to be processed and it is suspected to be redundant then it can be transformed into a reduced set of features . Visual descriptors are descriptions of the visual features of the contents in images, videos, or algorithms or applications that produce such descriptions.*

KeyWords: Pattern recognition ,Visual features, Image processing, Feature extraction,Visual descriptors.

1.INTRODUCTION

Feature extraction is a type of dimensionality reduction that efficiently represents interesting parts of an image as a compact feature vector. This approach is useful when image sizes are large and a reduced feature representation is required toquickly complete tasks such as image matching and retrieval.Descriptors are the first step to find out the connection between pixels contained in a digital image and what humans recall after having observed an image or a group of images after some minutes.Binary local features represent an alternative to real-valued descriptors.A compact representation based on global features is preferred when dealing with large collections.

The visual content is acquired at a node, compressed and then sent to a central unit for further processing according to the compress-then-analyze (CTA) paradigm in the case of traditional approach.. In the traditionally adopted compress-then-analyze (CTA) paradigm, images acquired from camera nodes are JPEG compressed and sent to a central controller for further analysis.In the case of analyze-then-compress (ATC) approach camera nodes perform visual features extraction.It then transmit a compressed version of the extracted features and the relative keypoints information to a central controller. At the central controller, the received features are matched against a database of labeled features, so that object recognition or image retrieval can be performed .

2 LITERATURE SURVEY

2.1 Coding Binary Local Features Extracted From Video Sequences

Local features refer to a pattern or distinct structure found in an image, such as a point, edge, or small image patch. They are usually associated with an image patch that differs from its immediate surroundings by texture, color, or intensity. Feature extraction involves computing a descriptor, which is typically done on regions centered around detected features. Descriptors rely on image processing to transform a local pixel neighborhood into a compact vector representation. This new representation permits comparison between neighborhoods regardless of changes in scale or orientation. Descriptors, such as SIFT or SURF, rely on local gradient computations. Binary descriptors, such as BRISK or FREAK, rely on pairs of local intensity differences, which are then encoded into a binary vector.

2.2 Compress-Then-Analyze VS. Analyze- Then-Compress

In the case of compress-then-analyze (CTA) paradigm, images acquired from camera nodes are JPEG compressed and sent to a central controller for further analysis.In the case of analyze-then-compress (ATC) approach camera nodes perform visual features extraction.It then transmit a compressed version of the extracted features and the relative keypoints information to a central controller. At the central controller, the received features are matched against a database of labeled features, so that object recognition or image retrieval can be performed .

2.3 Evaluation Of Low – Complexity Visual Feature Detectors And Descriptors

Feature detection selects regions of an image that have unique content, such as corners or blobs. Use feature detection to find points of interest that you can use for further processing. These points do not necessarily correspond to physical structures, such as the corners of a table. The key to feature detection is to find features that remain locally invariant so that you can detect them even in the presence of rotation or scale change.Binary descriptors can achieve a performance similar to that of non binarydescriptors,with much lower complexity.Evaluation is done for an image retrieval task as well as standalone.a good score in the standalone evaluation did not always lead to high accuracy in the image retrieval task.

2.4 Rate -Accuracy Optimization Of Binary Descriptors

Scale-invariant feature transform (SIFT) is an algorithm to detect and describe local features in images. SIFT can robustly identify objects even among clutter and under partial occlusion, because the SIFT feature descriptor is invariant to uniform scaling, orientation, and partially invariant to affine distortion and illumination changes.The descriptor is represented by means of a binary string, in which each bit is the result of the pair-wise comparison of smoothed pixel values properly selected in a patch around each keypoint.

3 CONCLUSION

This paper deals with various coding schemes tailored to both local and global binary features,which aims at exploiting both spatial and temporal redundancy by means of intra- and inter-frame coding.Binary local features represent an alternative to real-valued descriptors.The efficiency was evaluated by means of rate-efficiency curves with respect to traditional visual analysis tasks. This survey is basically done to study about various coding schemes for extracting local and global binary visual features from video sequences.

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