JOINT VIDEO CODING AND TRACKING APPROACH

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ABSTRACT

Conventional video analysis approaches are based on sample-compress-and-analyze strategy, with the three activities being designed and optimized separately one from each other. This can be inefficient, since both acquisition and coding are carried out on the entire signal, while most of their results are discarded in the compression and in the analysis processes, with a noticeable waste of bandwidth and storage resources. This paper proposes a joint compressive video coding and analysis scheme and, as a specific application example, to consider the problem of object tracking in video sequences. This shows that, weaving together compressive sensing and the information computed by the analysis module, the bit-rate required to perform reconstruction and tracking of the foreground object size can be considerably reduced, with respect to a conventional disjoint approach that postpones the analysis after the video signal is recovered in the pixel domain. These findings suggest that considerable gains in performance can be potentially obtained in video analysis applications, provided that a joint analysis-aware design of acquisition, coding and signal recovery is carried out.

KEYWORDS: Bounding Box – Background Subtraction – Foreground Recovering.