Object Trajectory Extraction by Using Mean of Motion Vectors Form Compressed Video Bitstream

Authors : Ching-Ting Hsu, Wei-Hua Ho, Yi-Chun Chang

Abstract : Video object tracking is one of the popular research topics in computer graphics area. The trajectory can be applied in security, traffic control, even the sports training. The trajectory for sports training can be utilized to analyze the athlete's performance without traditional sensors. There are many relevant works which utilize mean shift algorithm with background subtraction. This kind of the schemes should select a kernel function which may affect the accuracy and performance. In this paper, we consider the motion information in the pre-coded bitstream. The proposed algorithm extracts the trajectory by composing the motion vectors from the pre-coded bitstream. We gather the motion vectors from the overlap area of the object and calculate mean of the overlapped motion vectors. We implement and simulate our proposed algorithm in H.264 video codec. The performance is better than relevant works and keeps the accuracy of the object trajectory. The experimental results show that the proposed trajectory extraction can extract trajectory form the pre-coded bitstream in high accuracy and achieve higher performance other relevant works.

Keywords : H.264, video bitstream, video object tracking, sports training
Conference Title : ICVFI 2015 : International Conference on Visual Field and Imaging
Conference Location : Melbourne, Australia
Conference Dates : December 13-14, 2015