عنوان مقاله:

Fast Homography Refinement in Soccer Videos

محل انتشار:

نهمین کنفرانس ماشین بینایی و پردازش تصویر ایران (سال: 1394)

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خلاصه مقاله:

Sports video analysis and camera calibration are important applications which rely on accurate homography computation as a challenging task. Homography refinement is an important step in the task of accurate homography computationand homography tracking. Also, in certain applications (such as homography tracking) the process speed is of great importance. A robust and fast method for accurate refinement of highly inaccurate homographies in soccer video frames is proposed in this paper. To achieve that goal, a new homography model fitting method named the point-line (PL) method is proposed. It uses point-line correspondences to compute the homography, ratherthan point correspondences or line correspondences used by the common direct linear transformation (DLT) method. The method can be used as a fast homography refinement algorithm but it is sensitive to outliers. In order to make it robust to outliers, the PL method is employed in two different schemes: a random sample consensus (RANSAC) scheme and an iterative scheme. The two schemes are then evaluated on a set of video frames and are compared to the state-of-the-art methods. They are proved to beaccurate and robust to noise and one of them is at least 3.9 times faster in soccer penalty area scenes

کلمات کلیدی:

homography refinement, model fitting, court model, RANSAC, sports video analysis, soccer