VIDEO SHOT BOUNDARY DETECTION BY STRUCTURAL ANALYSIS OF LOCAL IMAGE FEATURES

Murat Birinci, Serkan Kiranyaz, Moncef Gabbouj

Department of Signal Processing
Tampere University of Technology

DEMO PROPOSAL

We propose a demonstration of our method for video shot boundary detection that is presented in our paper that involves clear presentation of the method and idea, together with the illustration of the results in real time.

The proposed method in our paper utilizes local image features extracted around keypoints and analyzes their spatial structure. Thus, we demonstrate how those keypoints' spatial distribution varies at each frame as the video progresses.

Fig.1. Two sample frames and extracted keypoints

Fig.1 shows two close frames and corresponding keypoints extracted from those frames. As it is apparent in those images a certain structure is observable, particularly on the object in focus. While Fig.1 show only a simple example on steady frames, observing such structures as the video progresses enables the viewer to grasp the idea underlying our proposed approach. Moreover, presentation of the matched structures as shown in Fig.2 will enhance such understanding. A comparison of two video sequences overlaid with matched keypoints via direct matching and structural analysis, as in Fig.2.(a) and Fig.2.(b), and observing their variation particularly at shot boundaries will enable the user to understand the contribution of the proposed idea.

(a)

(b)
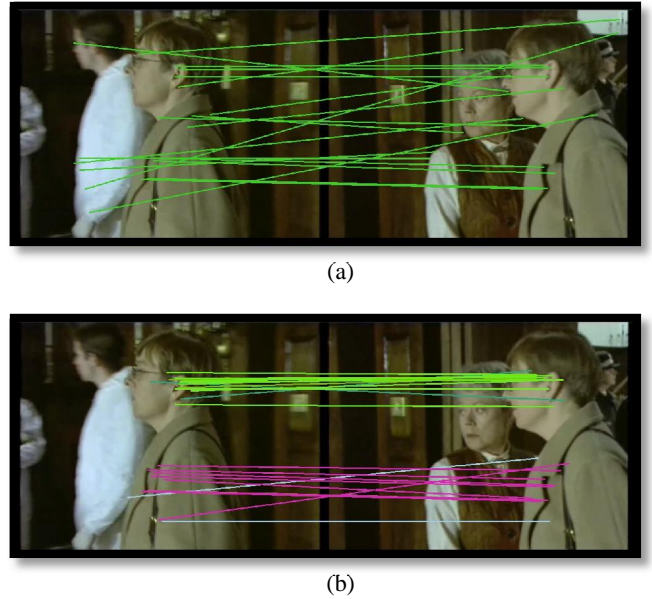
Fig.2. Two sample frames overlaid with keypoint matches via (a) direct matching, (b) structural analysis.

In addition to the demonstration of the structural analysis, another significant contribution of our method, namely the top-down approach, is to be demonstrated. In other words, Table 4 in our paper will be extracted in real time presenting the viewers how the algorithm progresses and lets them to observe the improvement in computation time. In order to provide a clear demonstration, instead of

Fig.3. Presentation of detected shot boundaries

merely running the algorithm and presenting the time-analysis results, the progress of the algorithm will be updated in real-time providing the viewers the position of the currently processed frame and the process that is being done. By doing so, the viewers will realize both the nature of the presented top-down approach and the significant improvement in computation time.

The extracted shot boundaries will be presented as a filmstrip as in Fig.3 together with the ground-truth boundaries.