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Video Text Information Detection and Localization in Lecture Videos Using Moments

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Abstract : This paper presents a robust and accurate method for text detection and localization over lecture videos. Frame regions are classified into text or background based on visual feature analysis. However, lecture video shows significant degradation mainly related to acquisition conditions, camera motion and environmental changes resulting in low quality videos. Hence, affecting feature extraction and description efficiency. Moreover, traditional text detection methods cannot be directly applied to lecture videos. Therefore, robust feature extraction methods dedicated to this specific video genre are required for robust and accurate text detection and extraction. Method consists of a three-step process: Slide region detection and segmentation; Feature extraction and non-text filtering. For robust and effective features extraction moment functions are used. Two distinct types of moments are used: orthogonal and non-orthogonal. For orthogonal Zernike Moments, both Pseudo Zernike moments are used, whereas for non-orthogonal ones Hu moments are used. Expressivity and description efficiency are given and discussed. Proposed approach shows that in general, orthogonal moments show high accuracy in comparison to the non-orthogonal one. Pseudo Zernike moments are more effective than Zernike with better computation time.

Keywords : text detection, text localization, lecture videos, pseudo zernike moments
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