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عنوان مقاله:

Plant Classification in Images of Natural Scenes Using Segmentations Fusion

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خلاصه مقاله:

This paper presents a novel approach to automatic classifying and identifying of tree leaves using image segmentation fusion. With the development of mobile devices and remote access, automatic plant identification in images taken in natural scenes has received much attention. Image segmentation plays a key role in most plant identification methods, especially in complex background images. Where there are no presumptions about leaf and background, segmentation of leaves in images with complex background is very difficult. In addition, each image has special conditions, so parameters of the algorithm must be set for each image. In this paper, image segmentation fusion is used to overcome this problem. A fast method based on maximum mutual information is used to fuse the results of leaf segmentation algorithms with different parameters. Applying Tsallis entropy and g-calculus, generalized mutual information equations are derived and used to obtain the best consensus segmentation. To evaluate the proposed methods, a dataset with tree leaf images in natural scenes and complex backgrounds is used. These images were taken from Pl@ntLeaves dataset and modified so that they do not have a presumption. The experimental results show the use of Tsallis entropy and g-calculus in image segmentation fusion, improves plant species identification.

کلمات کلیدی:

g-calculus, Image Segmentation Fusion, Mutual Information, Plant Classification, Tsallis Entropy

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