Annotated Outdoor Image Compression Based on Sky Replacement

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Abstract:

The sky is a basic component in outdoor images. Due to the low gradient values of the sky, it has high priority in seam removing for content aware image resizing and the result of enlarging image contributes obvious artificial pixels. The proportion of images which contains sky is over 40% of the daily recent explored images on Flickr (see section V). This paper presents a new technique for annotated outdoor image compression (AOIC) depending on sky replacing. We compress the outdoor images by replacing the sky region with the nearest sky in a predefined sky database to reduce image size. Our work is composed of two stages: encoding stage and decoding stage. In the encoding stage, we use sky annotation polygon to distinguish sky and non-sky regions. The sky features are extracted from the sky region (e.g. sky type, mean HSV, cloud type, and sun existence/relative position). These features are used to find the nearest sky feature from a predefined database of sky features. The sky ID and the sky polygon vertices are composed with non-sky region image. On the decoding stage, we use the sky ID to load the sky from the predefined sky database and compose the sky with the non-sky region (compressed image). Our method is tested using the standard outdoor images of LabelMe database which contain sky. Our method removes the sky and replaces it instead of shrinking the sky region in content aware image resize. Our AOIC can be used for reducing the file size of any image formats of outdoors that contains sky.

Keywords:

Image compression, annotation, outdoors, sky, features.

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