



Sky Detection Using K-HSV Descriptor

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Abstract:

Many outdoor images contain sky. The sky detection and segmentation is important for image enhancement, horizon detection, and obstacle avoidance in unmanned air vehicles. Most researches in sky detection and segmentation are for blue sky only. Our work is proposed to detect and segment three categories of skies: blue sky, cloudy sky, and sunset sky. There are two types of sky detection methods: pixel based detection and block based detection. The main advantage of pixel based detection is the high correct detection ratio. There are many descriptors used in object detection such as color descriptors, color-shape descriptors, and shape descriptors. This work studies sky detection and segmentation with different descriptor types. The sky is classified into blue sky, cloudy sky, and sunset sky. For each sky type, the sky is detected using pixel based detection and block based detection. We improve the sky detection ratio using K-HSV descriptors. The sky detection with K-HSV descriptors has 86.16% correct ratio for blue sky. We decrease The number of keypoints used in sky segmentation to 200 random selected keypoints of all dense sampling keypoints. The sky segmentation based on 200 color moment invariant descriptors obtained 78.25% for blue sky, 61.63% for cloudy sky, and 62.27% for sunset sky.

Keywords:

Sky detection, sky segmentation, classification, color descriptors

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