

An RGB-NIR Image Fusion Method for Improving Feature Matching

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Abstract

The quality of RGB images can be degraded by poor weather or lighting conditions. Thus, to make computer vision techniques work correctly, images need to be enhanced first. This paper proposes an RGB image enhancement method for improving feature matching which is a core step in most computer vision techniques. The proposed method decomposes near-infrared (NIR) image into fine detail, medium detail, and base images by using weighted least squares filters (WLSF) and boosts the medium detail image. Then, the fine and boosted medium detail images are combined, and the combined NIR detail image replaces the luminance detail image of an RGB image. Experiments demonstrate that the proposed method can effectively enhance RGB image; hence more stable image features are extracted. In addition, the method can minimize the loss of the useful visual (or optical) information of the original RGB image that can be used for other vision tasks.

Keywords: image fusion, feature matching, near-infrared (NIR), detail boosting

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