

Finding Region of Interest in the Infrared Image of Electrical Installation

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ABSTRACT

This paper presents a method of automatically finding the region of interests (ROIs) in an infrared image of electrical installations. These regions are very important, particularly for diagnosing the thermal condition of electrical equipment. For a vast number of electrical equipment to be inspected, manual region selection of the images normally will take a lot of time. Therefore, an automatic region detection system is more preferred. However, due to the nature of the infrared image, the conventional segmentation methods have some limitations in order to properly find the desired ROIs. In addition, all objects within the image commonly have heterogeneous pixel intensities causing the segmented regions tend to be over segmented or some parts of the target objects either be divided into multiple regions or merging with the background image. Therefore, this paper proposes a new segmentation method of detecting the repeated structures of electrical equipment within an infrared image by taking the advantage of local keypoint feature matching. Experimental results indicate that the proposed method achieves a better performance for detecting the target ROIs compared with the conventional methods. The algorithm was tested on real infrared images with diverse irregular intensity variations and cluttered background. Finally, the performance of the proposed method was qualitatively and quantitatively evaluated.

KEYWORDS: Infrared image; Local keypoint; Electrical installation; Region of interest; Qualitative evaluation

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