

# EVALUATION CRITERIA FOR IMAGE FUSION PERFORMANCE IN DIFFERENT APPLICATIONS

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## **ABSTRACT:**

Image fusion is an effective approach for enriching multi-source remotely sensed information. It has wide applications. When images with a similar acquisition time are used, the expected result is to obtain a fused image that retains the spatial resolution from the panchromatic image and color content from the multi-spectral image, to perform land use/cover classification, or to extract geo-spatial information, and it can be used in thematic mapping, as well as the establishment and update of geo-spatial databases; when images with different dates are used, the main purpose of image fusion is to detect the changes over a period of time, and it can be employed in disaster monitoring, environmental monitoring, land use/cover change monitoring, etc. Aiming at these two types of applications, this paper summarized the evaluation methods for image fusion performance in the level of pixel-based processing and decision-based processing. It developed a quantitative analysis method for assessment of the pixel-level image fusion for change detection. This method integrates spectral features and spatial texture features which constitute the most important visual content of an image. The main idea of this method is to compare the image similarity between the regions where changed parcels are located and the regions where there are no changes using the similarity measure. The practical application examples of the evaluation criteria for different applications were also given.

**TOPIC:** Data fusion and data assimilation

**ALTERNATIVE TOPIC:** Data fusion and data assimilation