

Multimodality Medical Images for Healthcare Disease Analysis

B. Rajalingam ✉, R. Santhoshkumar ✉, P. Santosh Kumar Patra, M. Narayanan, G. Govinda Rajulu, T. Poongothai

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Summary

Image fusion has grown as a powerful technique to enhance the aspects of the image, boosting its quality and making it more clear and descriptive, thanks to recent advancements in imaging technology and instrumentation. In medical assessment, using the specific quality of each image and combining them ensures precise diagnosis. The goal of this study is to see if a single domain radiological image can provide information about blood flow and metabolism. MRI and CT imaging offer information on the location and hard tissues. Organ functioning features can be seen in SPECT and PET imaging. As a result, the combined frame can more precisely localize disease. The fundamental aim for medical picture fusion is to improve disease diagnosis, reduce storage space, make clinical instruments more effective, enable accurate and effective distant assessment, and enhance the information content in a single image. To create hybrid algorithms for multimodal medical image fusion employing a mix of CT/MRI, MRI/PET, and MRI/SPECT medical imaging for better visual interpretation of diseases by radiologists for the goal of accurate diagnosis, therapy planning, and patient follow-up. The following are the goals of this study: 1. to contribute to multimodal medical picture fusion by creating novel hybrid algorithms; 2. to combine MRI pictures with CT, PET, and SPECT images in order to extract the relevant information from each multimodal medical imaging; 3. to employ hybrid fusion algorithms to fuse multimodal medical pictures for accurate diagnosis and precise localization of cancers and lesions; and 4. to create a generalized method that can be used to combine anatomical and functional pictures regardless of imaging modalities.

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