

MINI-REVIEW

The significance of image fusion in nuclear medicine and molecular imaging

Supplementary Files

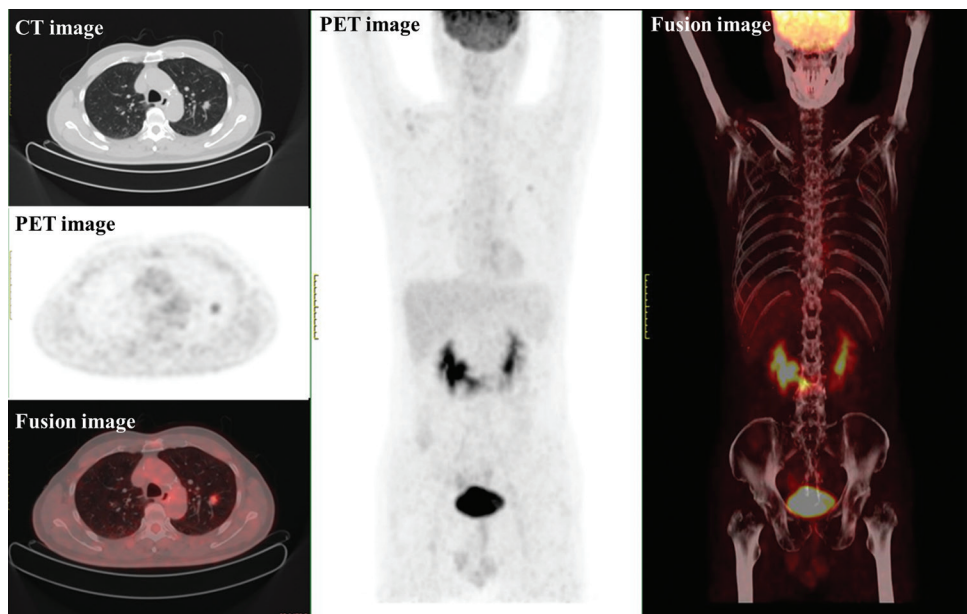


Figure S1. Illustration of positron emission tomography/computed tomography multimodal image fusion.

Table S1. Comparison of different image fusion methods

Fusion methods	Advantages	Disadvantages
Spatial fusion	(i) Simple and easy to execute. (ii) High computational efficiency and fast speed.	(i) The image has low contrast. (ii) The image always has a low signal-to-noise ratio.
Frequency fusion	Compared to spatial fusion, (i) It has a higher signal-to-noise ratio. (ii) The accuracy of feature extraction is higher, and the fusion effect is better.	(ii) This method is usually time-consuming and has poor real-time performance. (iii) The image has a low spatial resolution.
Decision-level fusion	(i) It has good real-time performance and self-adaptability. (ii) It has efficient compatibility with multi-sensor environmental characteristics information.	This method is rather complex and time-consuming.
Sparse representation fusion	(i) The model construction is simple and easy to understand. (ii) The model preserves the structural information of the image while maintaining the details.	(i) The method has high complexity and low computational efficiency. (ii) The method has a poor ability to extract subtle details.
Hybrid fusion	(i) Make full use of the information from the input image. (ii) The image clarity and contrast have been improved. (iii) Reduce the aliasing artifacts in the output results.	(i) Only suitable for small-scale samples. (ii) This method is complex and time-consuming.
Deep learning-based method	(i) The method avoids the subjective influence of human judgment on the outcome. (ii) The input of large datasets enhances the performance of data fusion. (iii) The method increases the interpretability of high-dimensional data and deep-level information. (iv) The method has the ability to learn features in layers, and the feature expression is more diverse.	(i) Complex parameters, uncontrollable training process. (ii) Neural network training requires high hardware requirements. (iii) Strict requirements are placed on the training dataset, necessitating a large-scale dataset for training.