

# Medical Image Classification Using Non-Negative Sparse representation and ANFIS Neuro -Fuzzy Learning Method

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With the rapid development of modern medical imaging technology, medical image classification has become more and more important in medical diagnosis and clinical practice. Conventional medical image classification algorithms usually neglect the semantic gap problem between low-level features and high-level image semantic, which will largely degrade the classification performance. To solve this problem, a multi-scale non-negative sparse coding based medical image classification algorithm is proposed. Firstly, Medical images are decomposed into multiple scale layers, thus diverse visual details can be extracted different scale layers. Secondly, for each scale layer, the non-negative sparse coding model with fisher discriminative analysis is constructed to obtain the discriminative sparse representation of medical images. Then, the obtained multi-scale non-negative sparse coding features are combined to form a multi-scale feature histogram as the final representation for a medical image. Finally, neuro-fuzzy classifier is combined to conduct medical image classification. The experimental results demonstrate that our proposed algorithm can effectively utilize multi-scale and contextual spatial information of medical images, reduce the semantic gap in a large degree and improve medical image classification performance.

**Keywords :** Keywords: Medical image classification, Multi- scaled Decomposition, Sparse Coding, Semantic Gap.

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