

HYPER-SPECTRAL IMAGE CLASSIFICATION AND FUSION BY DEEP LEARNING WITH CONTEXTUAL CNN

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In recent years, Convolution Neural Network (CNN) has achieved a series of breakthrough results in large-scale identification tasks such as image classification and recognition, target location and detection. Combining spatial information with spectral information for classifying hyper spectral images can dramatically improve the performance. This paper proposes a simple but innovative framework to automatically generate spatial-spectral features for hyper spectral image classification. The sole aim is to yield a single fused image, which could be more informative for an efficient clinical analysis. Our project presents multimodal fusion framework using the non-sub-sampled Contour let transform (NSCT) domains for images acquired using two distinct Hyper Spectral and Multi Spectral Images. The major advantage of using NSCT is to improve upon the shift variance, directionality, and phase information in the finally fused image. The first stage employs a NSCT domain for fusion and then second stage to enhance the contrast of the diagnostic features by using Guided filter. A quantitative analysis of fused images is carried out using dedicated fusion metrics. The fusion responses of the proposed approach are also compared with other state-of-the-art fusion approaches; depicting the superiority of the obtained fusion results.