

Seminar Series in Data Science and AI

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Topic

Towards Arbitrary Resolution in Hyperspectral and Multispectral Image Fusion from an Unsupervised Neural Representation

Date | Time

18th April 2024 (Thursday) | 4:30 pm – 5:30 pm (HK Time)

Venue

Y302, Main Campus

Abstract

The fusion of a low-resolution hyperspectral image (HSI) with a high-resolution (HR) multispectral image has emerged as an effective technique for achieving HSI super-resolution (SR). Previous studies have mainly concentrated on estimating the posterior distribution of the latent HR HSI, leveraging an appropriate image prior and likelihood computed from the discrepancy between the latent HSI and observed images. Low rankness stands out for preserving latent HSI characteristics through matrix decomposition among the various priors. However, this method only enhances resolution within the dimensions of the two modalities. To overcome this limitation, we propose a novel continuous matrix function representation by integrating two neural representations into the decomposition, capturing spatial and spectral information, respectively. This approach enables us to harness both the low-rankness from the decomposition and the continuity from neural representation in an unsupervised manner. Theoretically, we prove the low-rank property and Lipschitz continuity in the proposed matrix function decomposition. Experimentally, our method significantly surpasses existing techniques and achieves user-desired resolutions without the need for neural network retraining or interpolation.

ALL ARE WELCOME