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Zhaoying Liu,was born in 1986. She received her PhD from Beihang University in 2015. From 2015 to 2017 she was a postdoctoral researcher at Beijing University of Technology (BJUT). She is currently an Associate Professor in the College of Computer Science, Beijing University of Technology (BJUT). She has extensive research experience in computer vision, image processing, and deep learning, supported by grants from Natural Science Foundation of China, Scientific and Technology Program of Beijing Municipal Education Commission. She has published more than 40 papers. She is a Member of China Computer Federation (CCF) and Chinese Association for Artificial Intelligence (CAAI).

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Speech Title (English):

Multi-Task Learning Driven Infrared and Visible Image Fusion

Speech Abstract

Infrared and visible image fusion aims to integrate complementary information from the two modalities, yielding fused images that concurrently preserve salient targets and rich details. This technique holds substantial application value in domains such as nocturnal surveillance and intelligent security. However, existing methods still suffer from insufficient fusion quality in complex scenarios (e.g., low-light conditions), struggling to balance brightness performance, detail preservation, and structural clarity simultaneously. Furthermore, most approaches prioritize visual quality as the core optimization objective, with inadequate consideration of the demands of downstream visual tasks, leading to limited adaptability of fusion results to tasks like object detection and semantic segmentation. To address these challenges, this paper proposes a semantic-prompt-based multi task infrared and visible image fusion model, termed SP-LEGFusion. This method incorporates a semantic segmentation task into the fusion framework and leverages text prompt information to modulate fusion features, thereby enhancing the model's capacity to represent scene semantic information and its adaptability to diverse task requirements. Additionally, a multi task optimization strategy is designed, integrating adaptive loss weight adjustment and conflict gradient correction to improve the stability and overall performance of multi-task training. Experimental results demonstrate that the proposed method not only enhances fusion performance but also achieves superior results in downstream tasks including object detection and semantic segmentation.