

Supplementary Material

CUDiff: Consistency and Uncertainty Guided Conditional Diffusion for Infrared and Visible Image Fusion

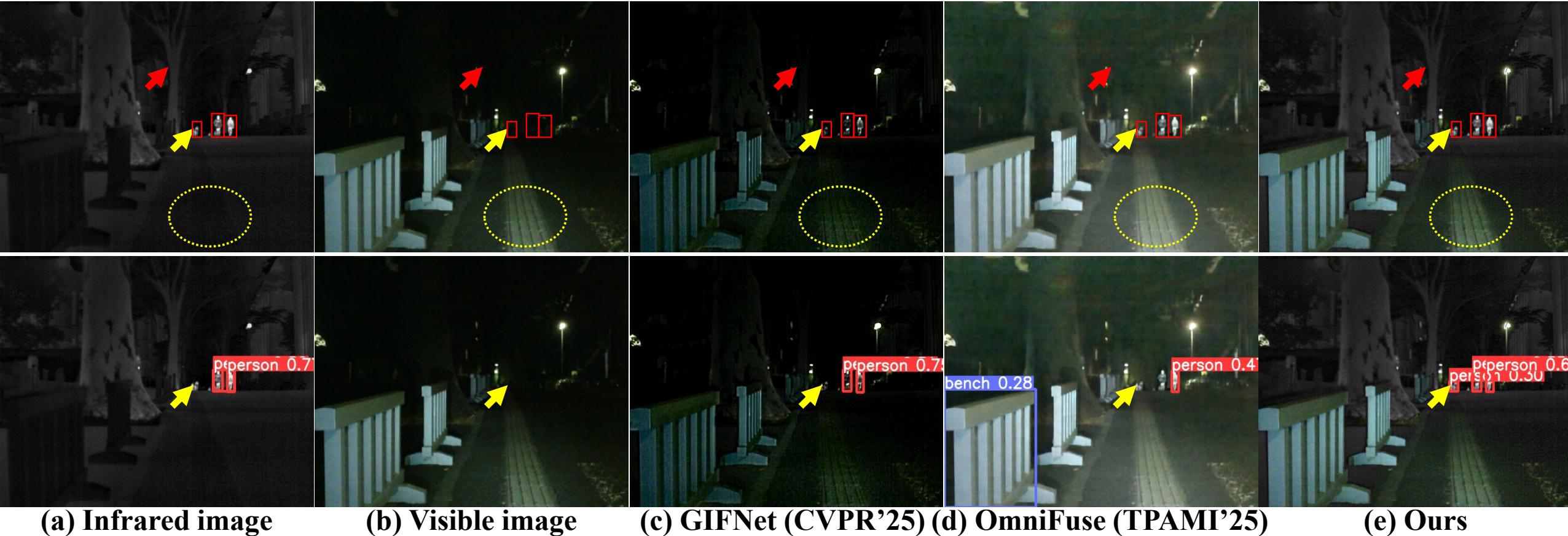


Figure 1: The illustration of an example ('00850N') from the MSRS dataset includes the infrared image, visible image, and fused image in the first row, along with their corresponding object detection results in the second row.

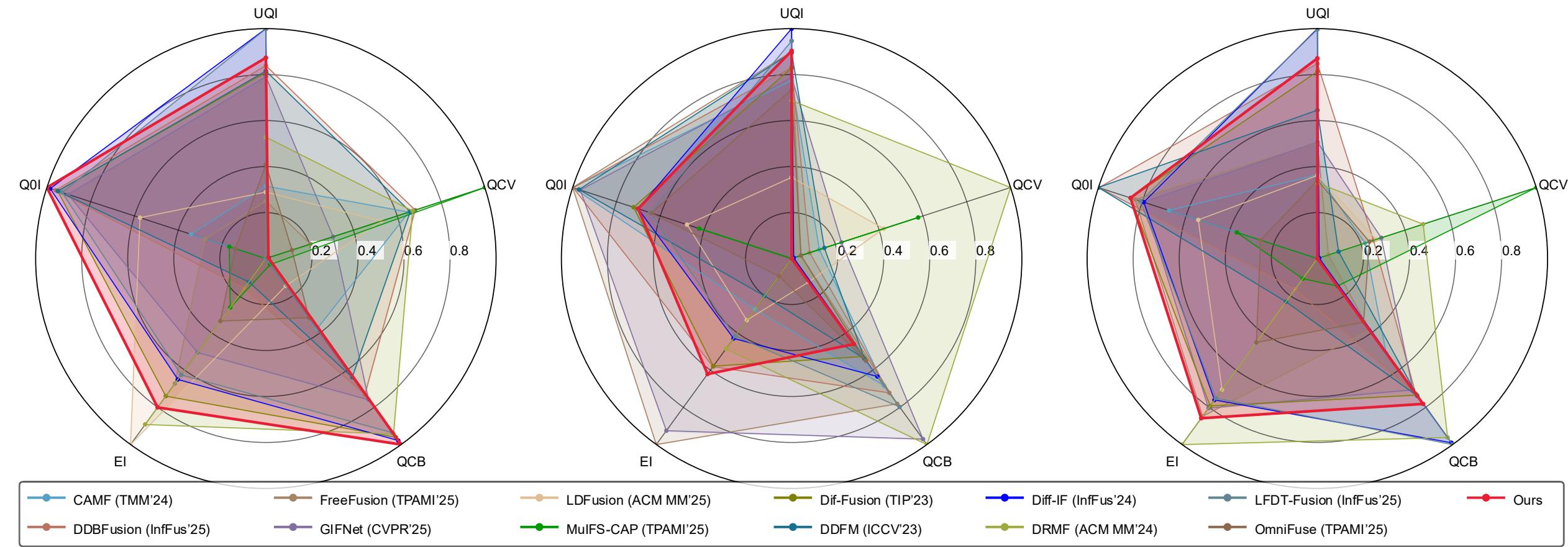
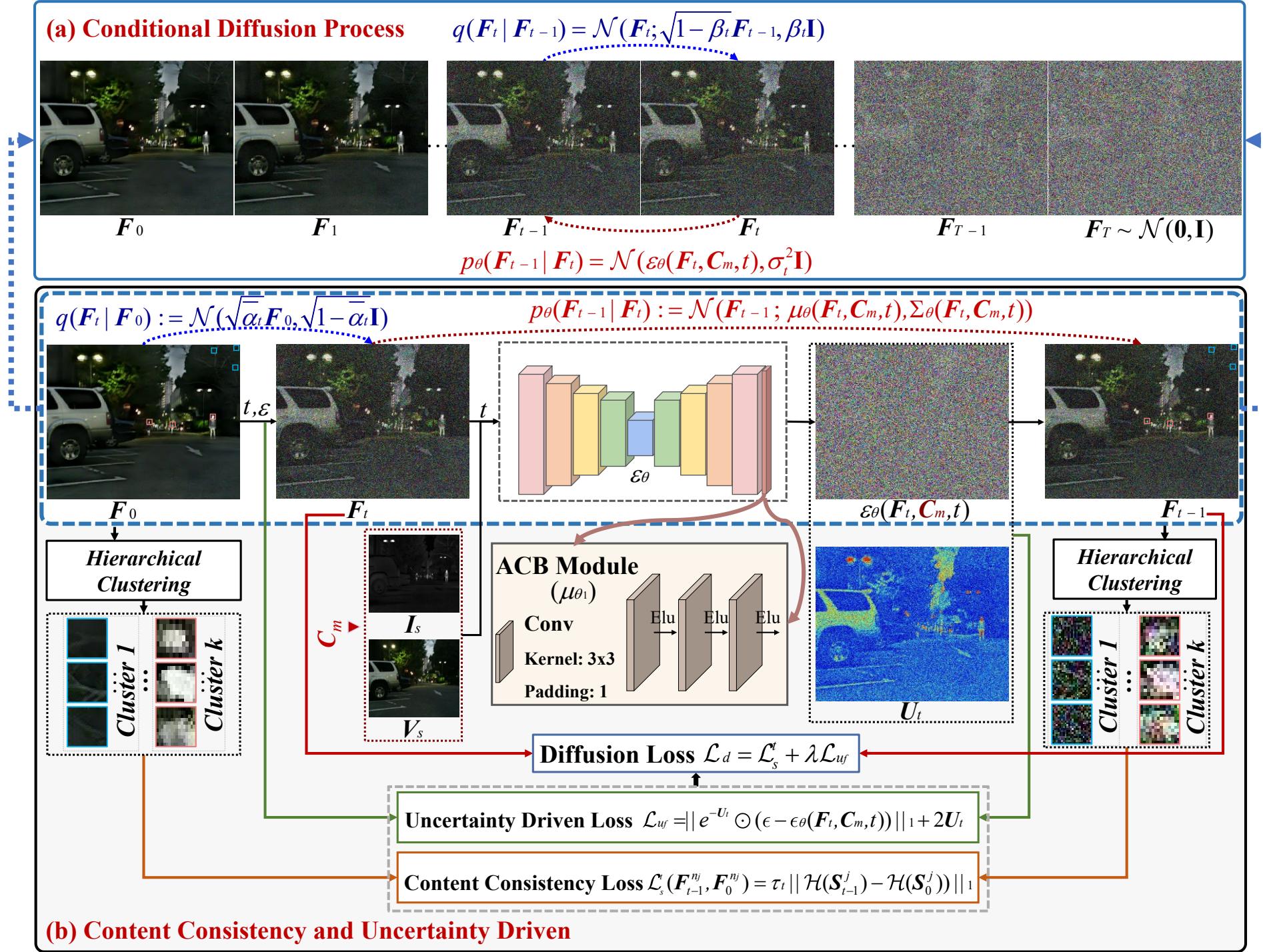


Figure 2: The comparison with 12 state-of-the-art IVIF methods on the fusion result includes the ranking plots across five diverse metrics for three datasets (MSRS, TNO, and LLVIP from left to right).

Figure 3: (a) The process of the conditional diffusion model. (b) The schematic diagram of content consistency and uncertainty driven.



Fusion Module Incorporating Conditional Diffusion Features

Frozen Learnable

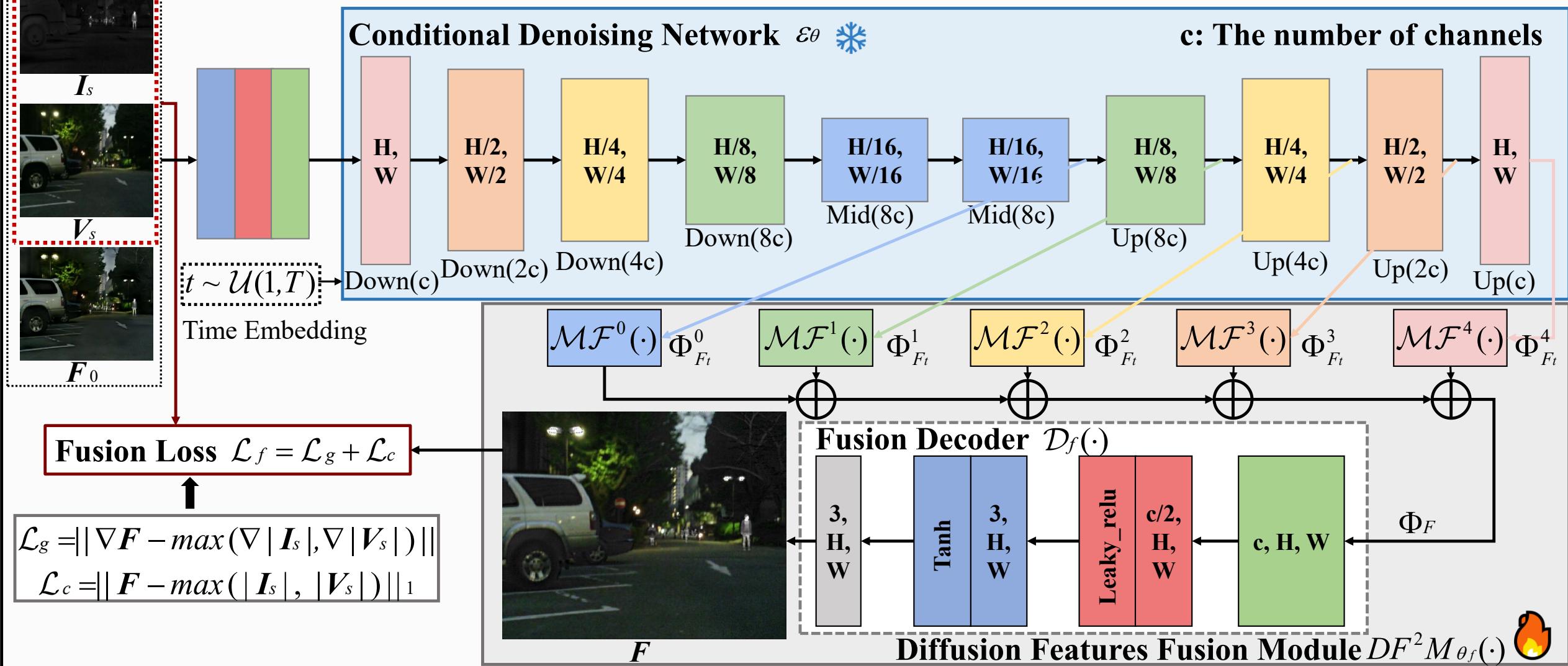


Figure 4: The diffusion feature fusion module (DF^2M) for generating the final fused image F .

Figure 5: Qualitative comparison of 12 state-of-the-art methods is performed on the images ‘00055D’ and ‘001254N’ from the MSRS dataset. The color bar represents the intensity distribution mapped by the Jet colormap, ranging from blue (low values) to red (high values).

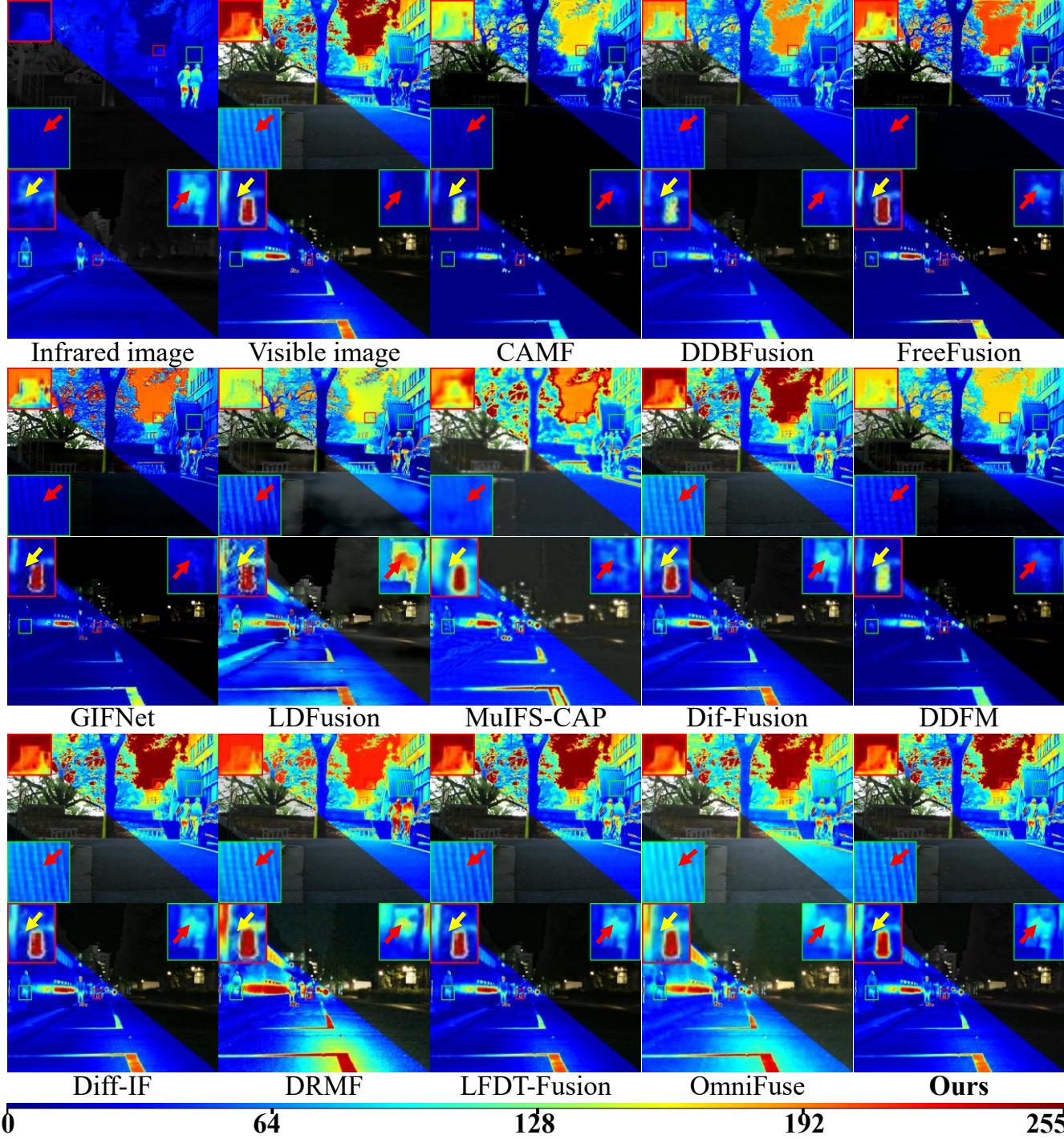


Figure 6: Qualitative comparison of 12 state-of-the-art methods is performed on the images ‘Kaptein_1654’ and ‘SandPath’ from the TNO dataset.

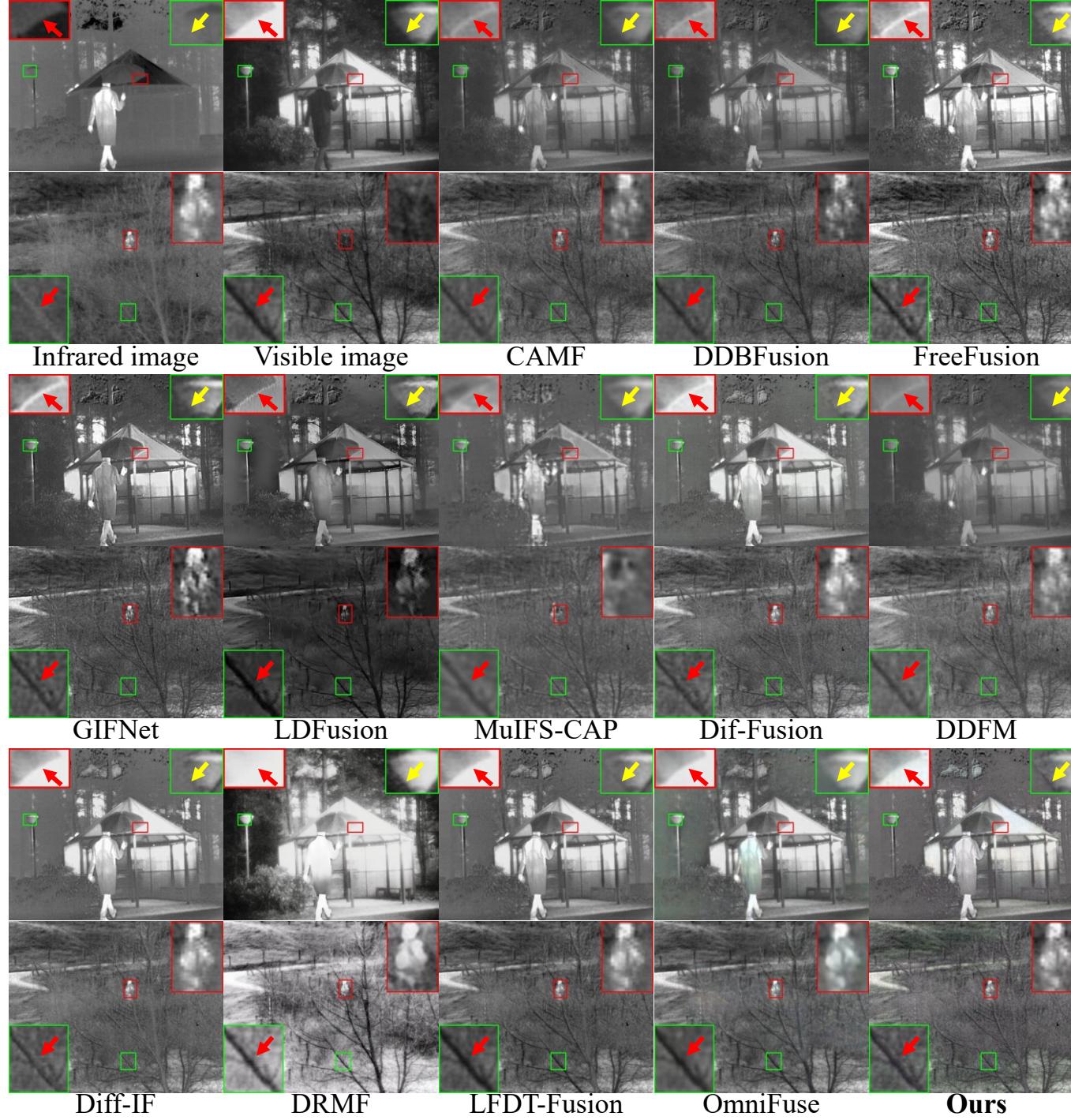
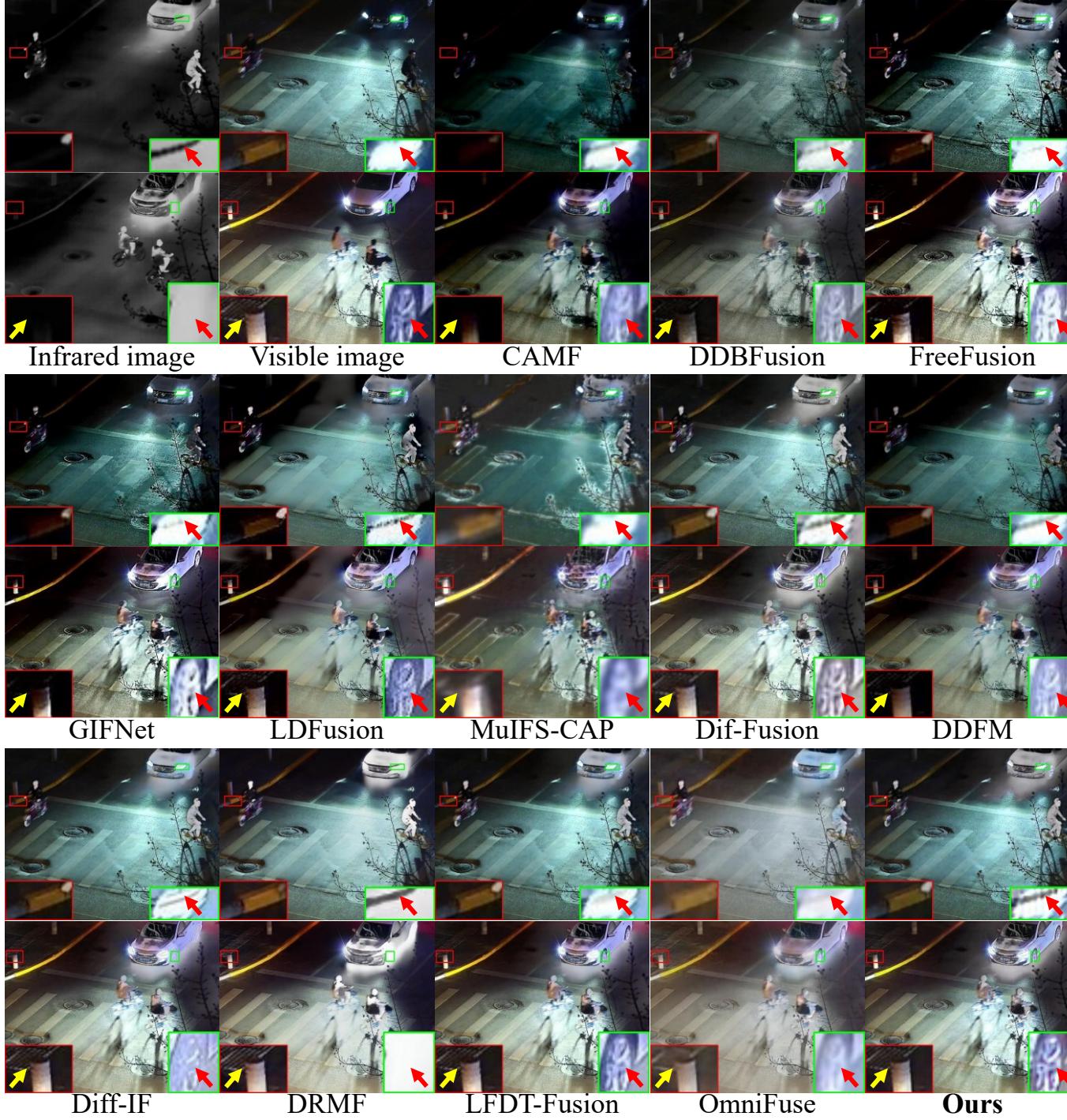


Figure 7: Qualitative comparison of 12 state-of-the-art methods is performed on the images ‘Scenario1’ and ‘Scenario2’ from the LLVIP dataset.



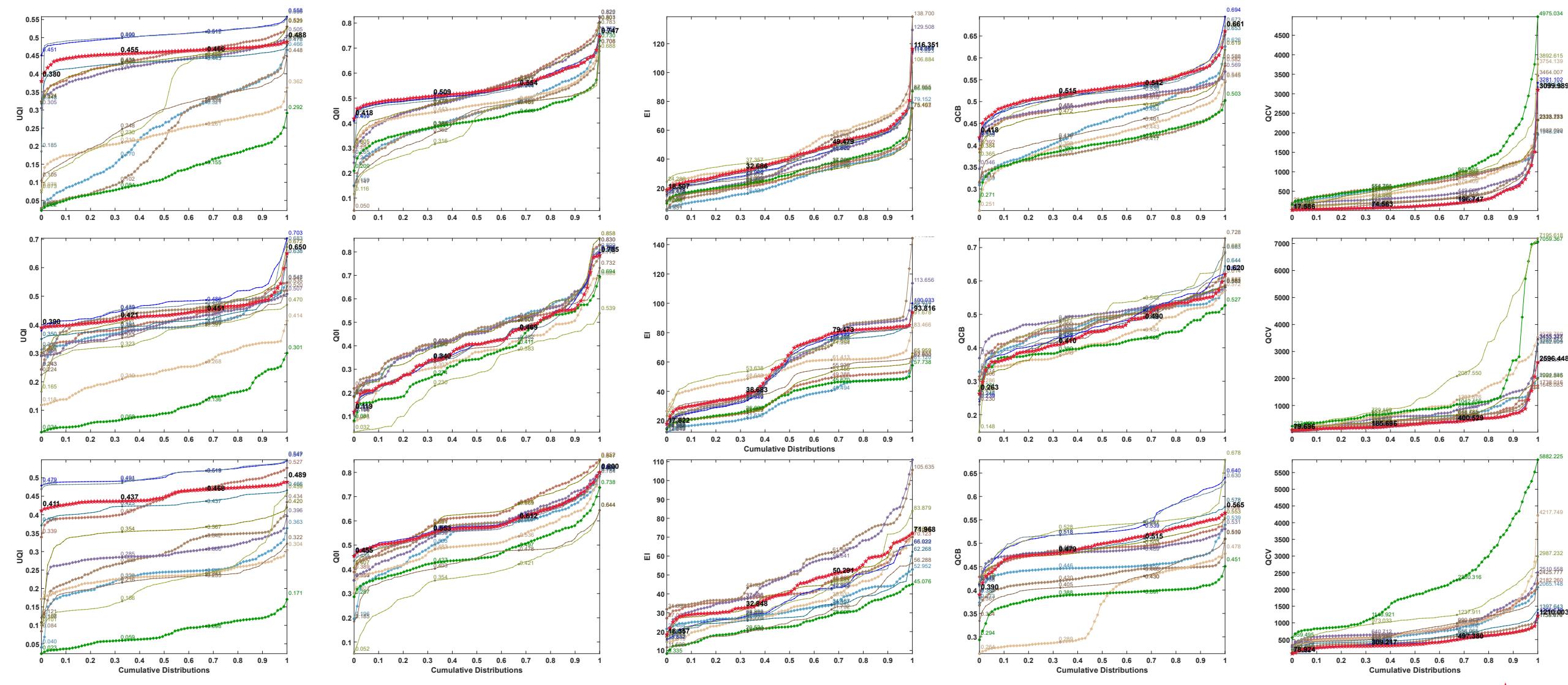


Figure 8: Quantitative comparisons of CUDiff and 12 state-of-the-art methods across three datasets—MSRS, TNO, and LLVIP (from top to bottom)—using five evaluation metrics: UQI, QOI, EI, QCB, and QCV (from left to right).

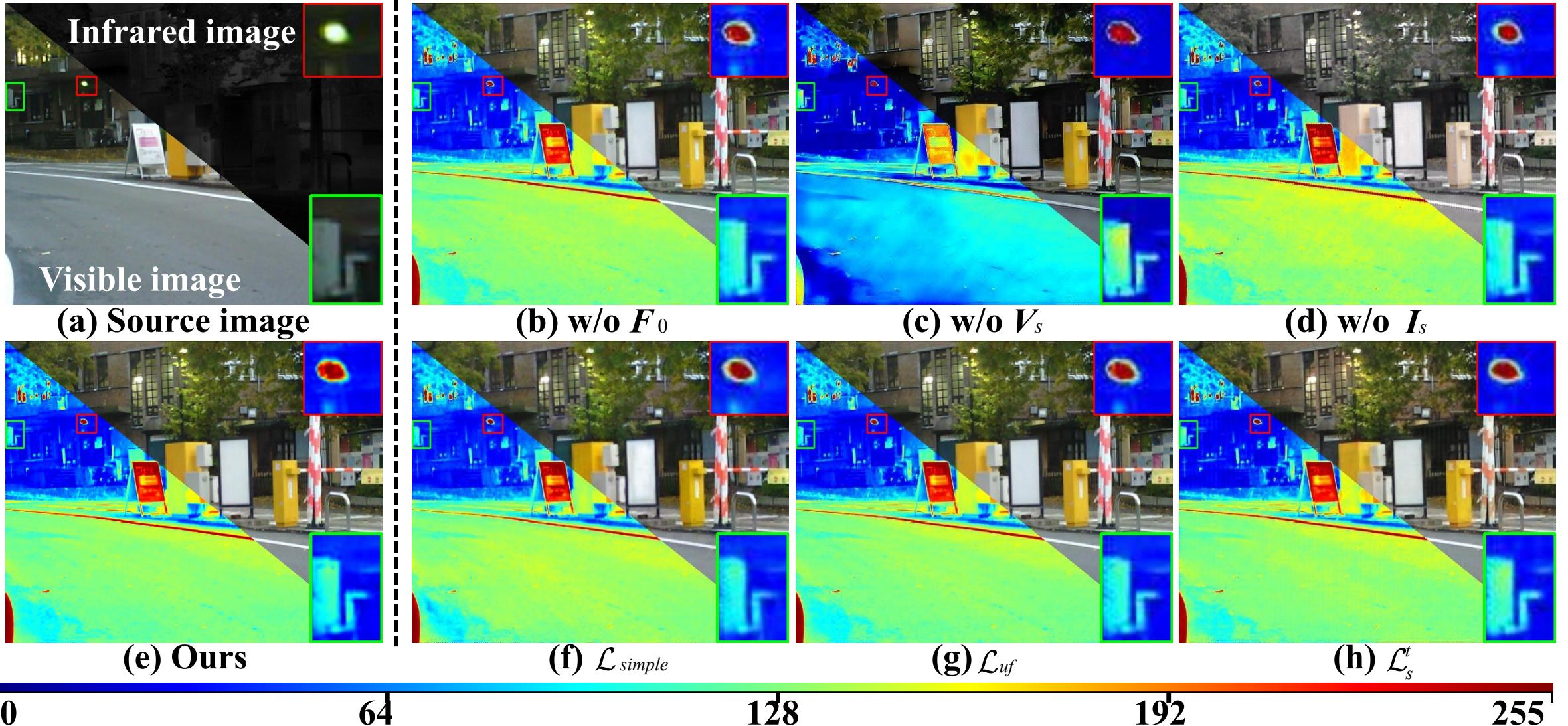


Figure 9: Qualitative comparisons of the ablation experiments on ‘01578D’ image from MSRS dataset. The color bar represents the intensity distribution mapped by the Jet colormap, ranging from blue (low values) to red (high values).

Figure 10: The object detection results for the images ‘01599D’ and ‘01315N’ are obtained by 12 state-of-the-art methods and CUDiff, respectively.

