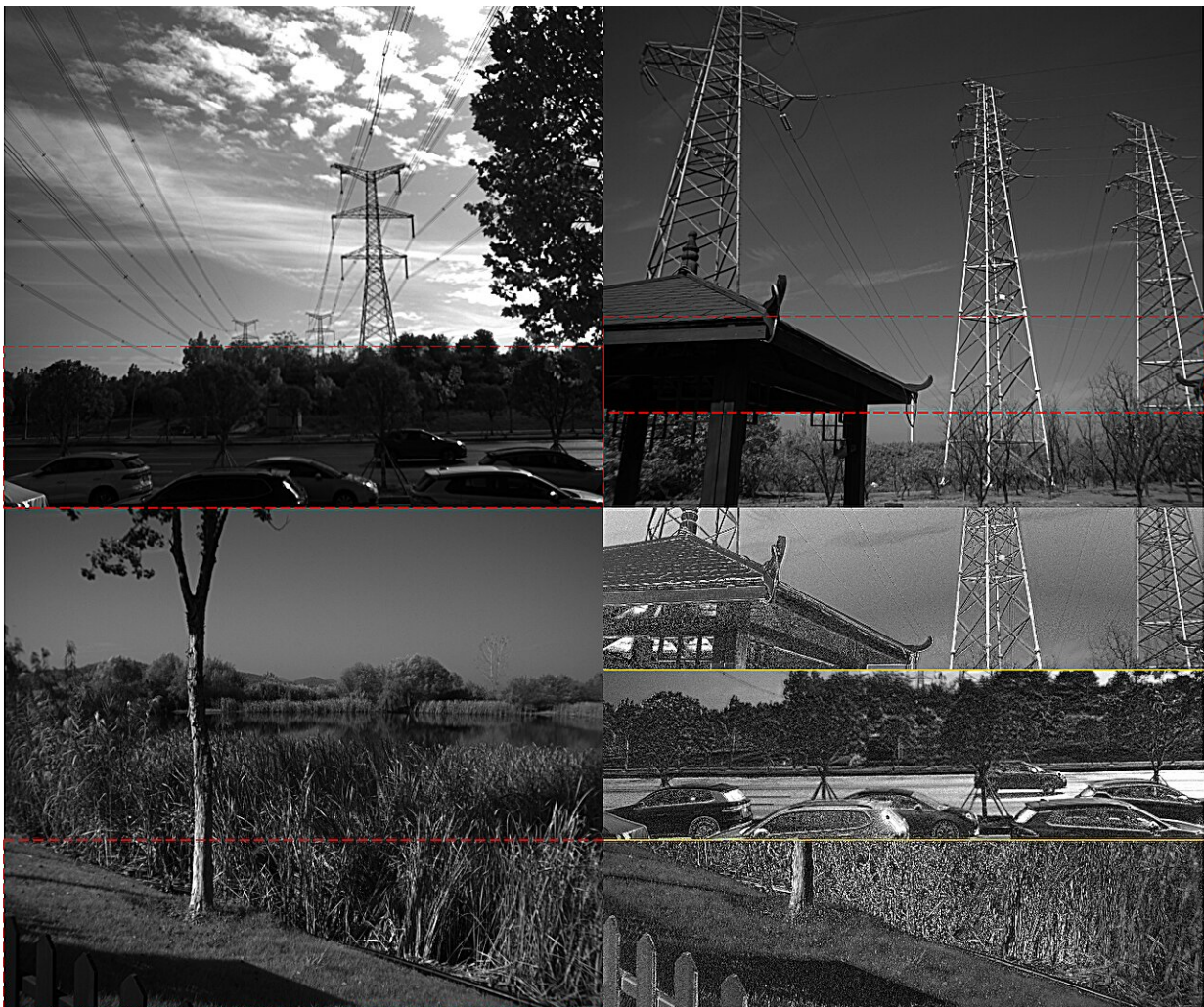


A multi-dimensional image information fusion algorithm based on NSCT transform

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Polarization fusion images can highlight the target. Credit: Yuxiang Su , Xi Liang , Danhua Cao , Zhenyu Yang , Yuanlong Peng , Ming Zhao

The intensity image is consistent with human vision, but sometimes, the target cannot be completely distinguished from the background. Polarization images can distinguish the target more effectively and highlight the contour and texture details, although it does not conform to human visual perception.

By employing image fusion techniques, these two types of images can be combined to reveal multi-dimensional features effectively. This fusion process compensates for the limitations of information obtained from a single image sensor, providing more reliable and accurate target information.

Researchers led by Prof. Ming Zhao at Huazhong University of Science and Technology (HUST), China, are interested in an image fusion algorithm that fuses two images with different information dimensions into one image.

Their idea is to preprocess the polarization image and visible image, decompose the image into high-frequency sub-bands and low-frequency sub-bands by the nonsubsampling contourlet transform (NSCT), fuse the sub-bands according to the fusion rules of the designed preserved edges, and finally obtain the [fusion](#) image by NSCT inverse transformation.

The researchers predict potential applications, such as using fused [images](#) for electrical grid video surveillance, that could allow targets in some complex environments to be highlighted.

The paper is [published](#) in the journal *Frontiers of Optoelectronics*.

More information: Yuxiang Su et al, Research on a multi-dimensional image information fusion algorithm based on NSCT transform, *Frontiers of Optoelectronics* (2024). [DOI: 10.1007/s12200-023-00104-0](https://doi.org/10.1007/s12200-023-00104-0)

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