

Special Issue

Computational Optical Imaging: Progress and Future Prospects

Message from the Guest Editors

Computational optical imaging is a cutting-edge field that deeply integrates optical imaging technology with modern computing. By co-optimizing optical system design and intelligent information processing, it overcomes the physical limitations of conventional imaging in resolution, signal-to-noise ratio (SNR), field of view, speed, and dimensionality. Rather than relying solely on hardware improvements, computational optical imaging leverages techniques such as coded sensing, computational reconstruction, and deep learning to extract high-dimensional information from compressed or degraded optical signals, enabling novel capabilities like super-resolution imaging, 3D reconstruction, phase imaging, and non-line-of-sight imaging. Topics of interest for this Special Issue include, but are not limited to, the following: Computational optical imaging; Super-resolution optical imaging; Single-molecule tracking technology; Deep learning for target tracking; Deep learning for image processing; Neuromorphic imaging; Digital holography.

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