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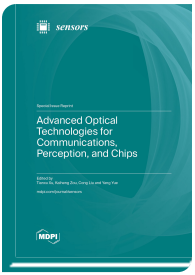
Special Issue Reprint

Advanced Optical Technologies for Communications, Perception, and Chips



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With iterative upgrades and the frequent application of new information technologies such as 5G, cloud computing, big data, and artificial intelligence, the global data traffic and the demand for computing power have ushered in explosive growth. Traditional data transmission speeds, information capacity, and chip computing performance can no longer meet the processing needs of big data. Recent progress in optical technologies has highlighted a feasible development route for these contradictions. In particular, optical communication, optical perception, and optical chips are considered to be the most promising research directions. At present, optical communication focuses on core technical issues, including larger bandwidths, lower latency, and smaller packet loss rates, to ensure that high-quality networks meet and support the development of new industries, such as 4K/8K live broadcast, VR/AR, and free-view video; optical perception technology has the advantages of convenient acquisition, low costs, and a large amount of information.

This Reprint focuses on the state-of-the-art advancements in optical technologies for communication, perception, and chips. Its scope encompasses digital, electrical, and optical signal processing theories, artificial intelligence, integrated chips, devices, and subsystems/systems, as well as future perspectives.

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