Special Issue Reprint

Optics for AI and AI for Optics

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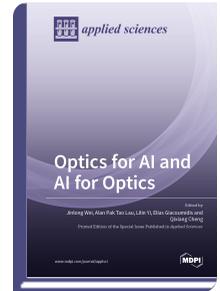Lilin Yi
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Artificial intelligence is deeply involved in our daily lives via reinforcing the digital transformation of modern economies and infrastructure. It relies on powerful computing clusters, which face bottlenecks of power consumption for both data transmission and intensive computing. Meanwhile, optics (especially optical communications, which underpin today's telecommunications) is penetrating short-reach connections down to the chip level, thus meeting with AI technology and creating numerous opportunities. This book is about the marriage of optics and AI and how each part can benefit from the other. Optics facilitates on-chip neural networks based on fast optical computing and energy-efficient interconnects and communications. On the other hand, AI enables efficient tools to address the challenges of today's optical communication networks, which behave in an increasingly complex manner. The book collects contributions from pioneering researchers from both academy and industry to discuss the challenges and solutions in each of the respective fields.

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