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Intelligent Horizons
AI and the Evolution to 6G

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As wireless communications evolve beyond 5G, artificial intelligence is becoming central to the design, operation, and optimization of next-generation networks. *Intelligent Horizons: AI and the Evolution to 6G* explores this convergence, examining how AI can enable more intelligent, adaptive, secure, and resilient communication systems.

Bringing together foundational concepts and advanced research, the volume covers AI-powered 6G architectures, physical layer enhancements, digital twins for network slicing, self-healing networks, autonomous maintenance, and approaches to improving user experience. It also examines security and privacy challenges, AI-assisted vehicular communications, and emerging applications of quantum neural networks.

The book extends its discussion beyond core network technologies to consider novel business applications and the preservation of digital film archives, illustrating the wider potential of intelligent connectivity. Through surveys, bibliometric analyses, and practical perspectives, its chapters assess technological opportunities alongside the ethical and societal considerations associated with increasingly autonomous communication systems.

Written for researchers, graduate students, industry professionals, and policymakers, *Intelligent Horizons* provides a comprehensive reference to the technologies and research directions shaping the transition to 6G. It offers a multidisciplinary perspective on how the integration of AI and wireless communications may influence future networks, industries, and everyday life.

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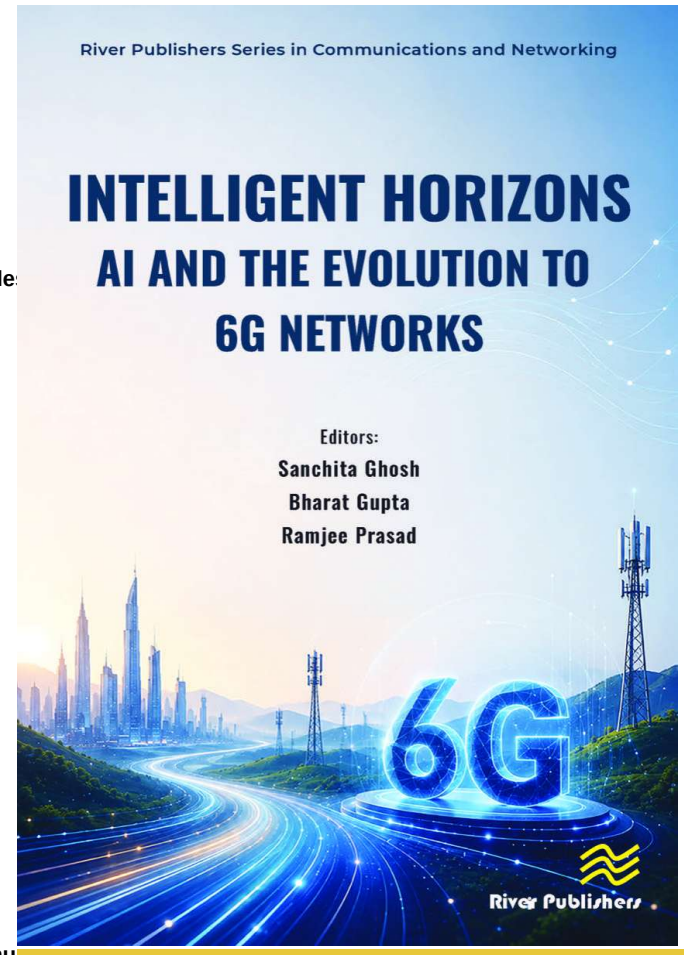

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