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Electronic Communication and Artificial Intelligence

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Electronic communication and artificial intelligence are rapidly transforming the way modern telecommunications systems, devices, and intelligent infrastructures are designed and operated. This book introduces readers to the expanding intersection of electrical engineering, computer engineering, and artificial intelligence, highlighting the foundational concepts, practical applications, and multidisciplinary career opportunities emerging from these converging fields. Covering topics such as AI-driven smart buildings, the Internet of Things, intelligent networking systems, adaptive beamforming, smart power grids, data analysis and visualization, advanced wireless communications, and intelligent antenna systems, the book demonstrates how modern engineering is increasingly defined by intelligent, connected technologies. A strong emphasis is placed on real-world applications that address some of today's most pressing engineering challenges—from autonomous structural control in high-rise buildings exposed to extreme weather and seismic activity, to AI-enabled smart homes that monitor safety, energy efficiency, and human well-being through integrated sensor networks and intelligent decision-making systems. Through practical examples spanning home automation, infrastructure resilience, wireless communications, and even aerospace applications, the authors reveal the breadth, impact, and future potential of electronic communication and AI engineering. Designed for students, researchers, and practicing engineers, this book provides both a solid foundation and a forward-looking exploration of one of the most dynamic and influential areas of modern technology.

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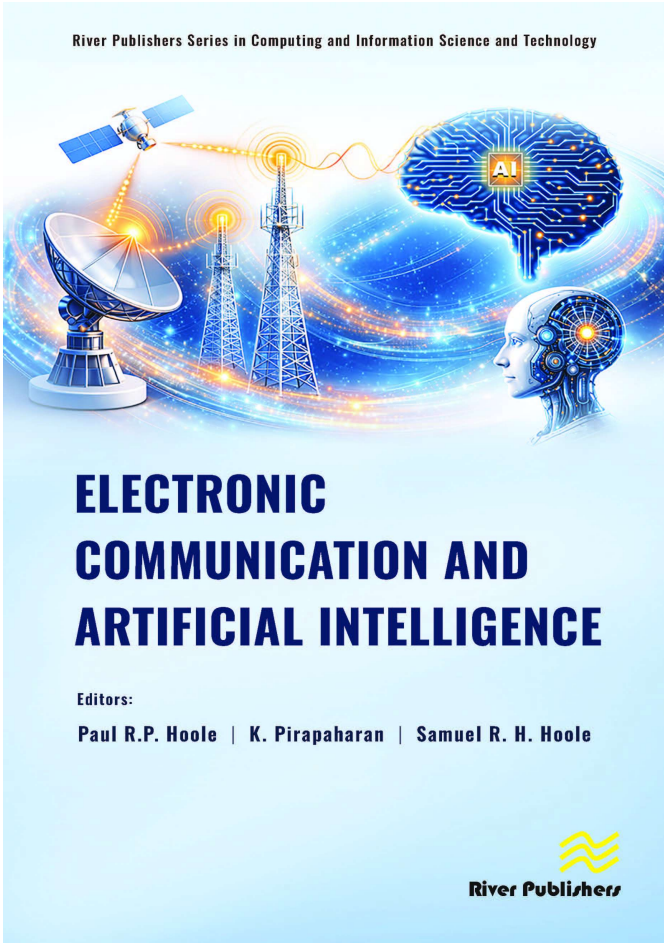

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