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AI Applications in Industry

Editor: Wai Yie Leong, Malaysia

AI Applications in Industry offers a comprehensive and forward-looking exploration of how artificial intelligence is reshaping the global industrial landscape. From manufacturing and energy systems to healthcare, logistics, construction, and smart cities, this book examines the transformative power of AI in driving efficiency, safety, sustainability, and innovation across sectors.

Written in a clear and authoritative style, the book bridges cutting-edge research with real-world implementation. It presents a structured overview of the key technologies—including machine learning, deep neural networks, generative AI, digital twins, computer vision, robotics, edge–cloud computing, and autonomous systems—and demonstrates how these capabilities are being deployed to solve complex industrial challenges. Through case studies, architecture diagrams, and actionable frameworks, readers gain insights into how AI optimizes production lines, enhances quality assurance, enables predictive maintenance, strengthens supply-chain resilience, and accelerates the transition toward Industry 5.0 and 6.0 paradigms.

This book also addresses the broader implications of AI adoption: governance, ethical considerations, cybersecurity, workforce transformation, ESG compliance, and the integration of human-centered design. With perspectives spanning engineering, policy, and strategic management, it equips industry leaders, engineers, researchers, policymakers, and students with a holistic understanding of AI's impact on modern industry.

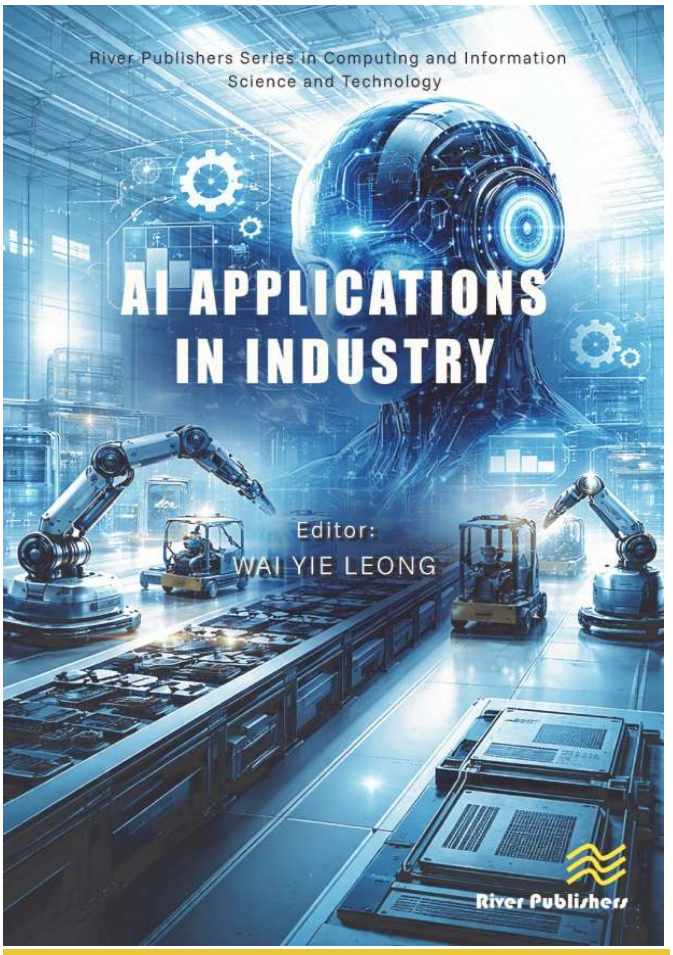
Key features include:

- A sector-by-sector analysis of AI implementations in manufacturing, energy, agriculture, healthcare, construction, transportation, and smart city systems
- Deep dives into enabling technologies such as digital twins, IoT sensors, robotics, edge AI, generative design, and autonomous systems
- Practical methodologies for deploying AI solutions with measurable ROI and sustainability outcomes
- Case studies from leading industries and national digital-transformation initiatives
- Frameworks for responsible, secure, and human-centric AI adoption
- Emerging trends, challenges, and future directions toward a more resilient, intelligent, and sustainable industrial ecosystem.

AI Applications in Industry is an essential reference for anyone seeking to understand or lead the next wave of digital and industrial transformation. Whether you are an engineer, academic, manager, or innovator, this book provides the insights and tools needed to harness AI's full potential in shaping tomorrow's industries.

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