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DRONES

Journey from First to Fifth Generation and Beyond

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Unmanned aerial vehicles (UAVs), or drones, are among the most transformative technologies of the 21st century, reshaping defense, industry, research, and everyday life. This comprehensive volume offers a global, interdisciplinary examination of drone technology, charting its progression from early radio-controlled aircraft to today's intelligent, autonomous systems.

Across nine concise chapters, the book delivers a clear, step-by-step understanding of UAV evolution, core engineering principles, and real-world applications. It spans the full arc of the drone revolution—from manually controlled prototypes of the early 1900s to fifth-generation, AI-driven swarms that define modern aerospace innovation. Each chapter integrates historical context, technical foundations, and forward-looking insights.

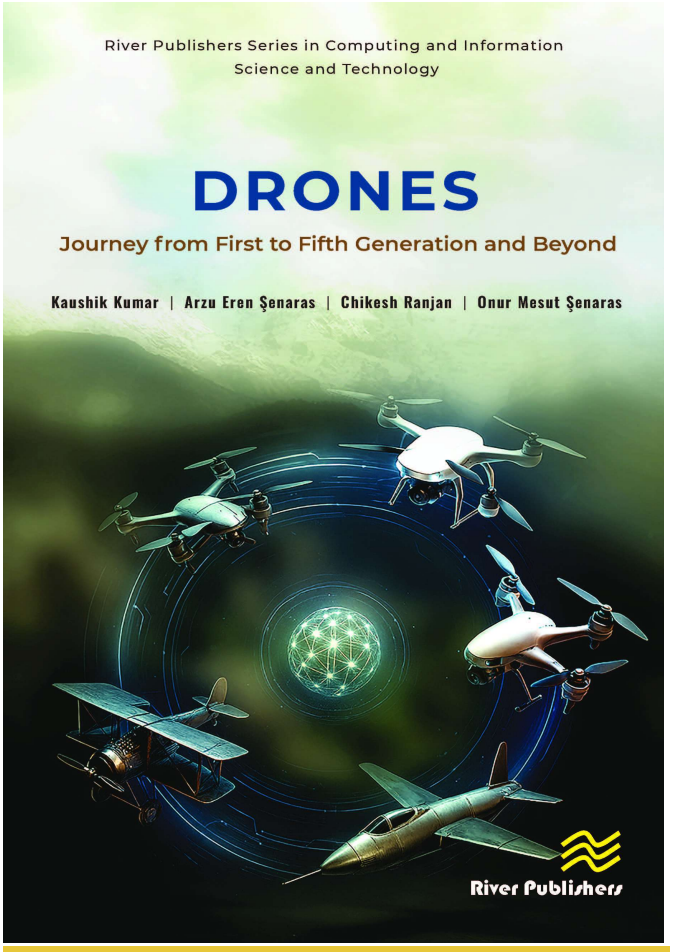
Key topics include:

- A chronological overview of UAV generations and their defining capabilities
- Aerodynamics, propulsion, control systems, and sensor integration
- Applications in defense, agriculture, logistics, environmental monitoring, and smart cities
- Advances in autonomy, artificial intelligence, swarm coordination, and quantum navigation
- Global perspectives on policy, ethics, sustainability, and emerging research.

Drawing on contributions from leading international experts, this book serves as a valuable reference for engineering students, researchers, UAV designers, policymakers, and industry practitioners. Authoritative and forward-thinking, it captures not only how drones have transformed the skies, but how they continue to shape the future of mobility, security, and sustainable technology.

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