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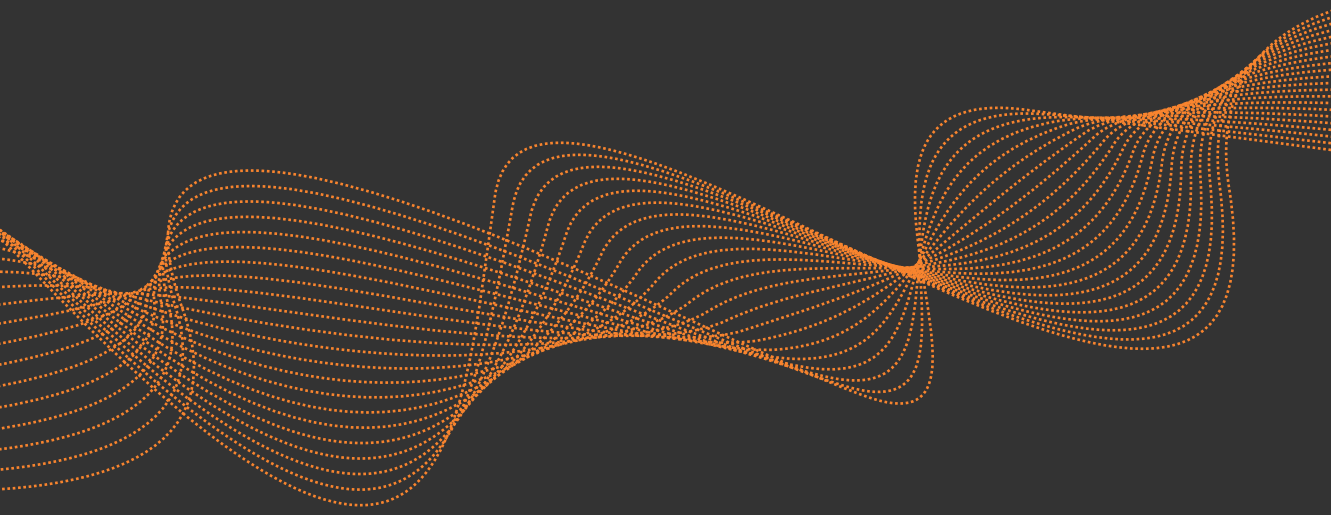
Integrating Artificial Intelligence and Reconfigurable Intelligent Surfaces in Urban Infrastructure: Enhancing Connectivity and Resilience



Ali Akbar Firoozi
Ali Asghar Firoozi

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Ali Akbar Firoozi

Department of Civil Engineering, Faculty of Engineering & Technology, University of Botswana, Gaborone, Botswana.

Ali Asghar Firoozi

Department of Civil Engineering, Faculty of Engineering, National University of Malaysia (UKM), Selangor, Malaysia.

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Preface

The convergence of Artificial Intelligence (AI) and Reconfigurable Intelligent Surfaces (RIS) within the realm of urban infrastructure marks a transformative epoch in the domains of civil engineering and urban planning. This monograph, "Integrating AI and RIS in Urban Infrastructure: Enhancing Connectivity and Resilience," embodies our concerted effort to encapsulate the theoretical frameworks, practical implementations, and future pathways for these pivotal technologies. The genesis of this book was driven by our observation of the increasing integration of AI and RIS in resolving complex urban challenges and their potential to significantly augment the connectivity and resilience of city infrastructures worldwide.

Throughout the pages of this monograph, we endeavor to provide a comprehensive exposition of how AI and RIS can fundamentally alter the landscape of urban development. We delve into the scientific principles that underlie these technologies, explore their practical applications through global case studies, and discuss the theoretical and practical implications of their broader adoption. Our goal is to furnish stakeholders, including engineers, planners, policymakers, and academics with a detailed understanding of these technologies' operational and strategic impacts on urban environments.

This book is structured to systematically guide the reader through the multifaceted aspects of AI and RIS integration, from foundational technologies and methodologies to advanced applications and future directions. By providing this structured approach, we aim to highlight the seamless synergy between AI and RIS and their role in crafting the future of smart cities. The subsequent chapters are designed to not only inform but also inspire further research and innovation in this burgeoning field, encouraging a proactive engagement with these technologies to forge resilient, efficient, and sustainable urban futures.

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