ISBN 978-81-994969-5-8   ISBN 978-81-994969-0-3

9 788199 496958   9 788199 496903

PREFACE

Artificial Intelligence (AI) has progressed from foundational theories to a powerful force driving innovation across science, industry, governance, and society. This edited volume, **Next-Generation Artificial Intelligence: From Foundations to Intelligent Applications**, brings together high-quality contributions that bridge fundamental concepts with emerging intelligent systems. The chapters in this book explore advancements such as deep learning architectures, computational intelligence, cognitive systems, and domain-specific AI solutions that are transforming sectors including healthcare, education, manufacturing, and digital governance. Each chapter has been authored by experts who offer rigorous analysis, practical insights, and forward-looking perspectives, reflecting the interdisciplinary and evolving nature of AI. As an edited research volume, the book aims to serve students, researchers, industry professionals, and policymakers who seek a comprehensive understanding of next-generation AI approaches, their capabilities, and their societal impact. We extend our sincere appreciation to all chapter authors for their contributions, to the reviewers for their constructive feedback, and to GSE Publications for their support in bringing this work to completion. It is our hope that this book will inspire continued research, innovation, and meaningful dialogue in the rapidly expanding field of Artificial Intelligence.

ACKNOWLEDGMENTS

ABOUT THIS BOOK

Next-Generation Artificial Intelligence: From Foundations to Intelligent Applications is an edited research volume that brings together cutting-edge developments, theoretical insights, and practical perspectives from across the rapidly evolving field of Artificial Intelligence. Designed for students, researchers, practitioners, and innovators, this book offers a comprehensive exploration of modern AI—from its mathematical and computational foundations to its advanced applications in healthcare, industry, education, governance, and beyond. Each chapter is authored by domain experts and presents a blend of conceptual clarity, methodological depth, and real-world relevance. By integrating foundational principles with next-generation intelligent systems, this volume serves as a valuable reference for understanding current AI trends, identifying future research directions, and supporting informed decision-making in technology-driven environments. With its interdisciplinary approach and high-quality contributions, this book aims to inspire continued innovation and foster meaningful progress in the broader landscape of artificial intelligence.

This book offers a unified platform for understanding how Artificial Intelligence is evolving toward more adaptive, transparent, and human-centric systems. By blending classical AI theories with contemporary breakthroughs—including deep neural networks, intelligent automation, natural language systems, and real-time decision frameworks—the volume provides readers with both a strong conceptual foundation and practical exposure to real-world innovations. The chapters collectively highlight the transformative potential of AI in addressing societal challenges, optimizing industrial processes, enhancing digital ecosystems, and enabling data-driven solutions across diverse domains. Whether used as an academic reference, a research companion, or a practical guide for emerging technologies, this book equips readers with the knowledge and perspective needed to engage meaningfully with next-generation Artificial Intelligence.