DeepScience

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Scalable Artificial Intelligence Systems

Cloud-Native, Edge-AI, MLOps, and Governance for Real-World Deployment

Scalable Artificial Intelligence Systems: Cloud-Native, Edge-AI, MLOps, and Governance for Real-World Deployment

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Preface

Artificial Intelligence (AI) has become essential across industries, transforming operations, decision-making, and value creation. As organizations worldwide use AI to address challenges in areas like healthcare, finance, cybersecurity, manufacturing, and infrastructure, the need for reliable and scalable AI systems continues to grow.

This book offers practical guidance for professionals designing and deploying scalable, compliant AI solutions in production environments. It covers modernizing legacy systems, building MLOps pipelines, and addressing ethical aspects of autonomous AI, providing essential insights and patterns for real-world applications.

We cover essential topics for enterprise AI success, such as scalable architectures (cloud-native, edge, hybrid), MLOps for lifecycle management, and governance for compliance and fairness. The text also outlines frameworks for explainable and federated AI in regulated fields, supporting privacy and distributed intelligence.

We demonstrate AI's impact on diagnostics, fraud detection, threat intelligence, and urban planning through case studies, and review how platforms like Azure, AWS, and GCP support scalable AI deployment.

This book highlights the need for ethical AI that upholds human values, privacy, and transparency. As AI shapes society, we must design, deploy, and govern it responsibly.

I invite you to explore these chapters with a mindset of both innovation and accountability—as together, we shape a future powered by intelligent and responsible systems.

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