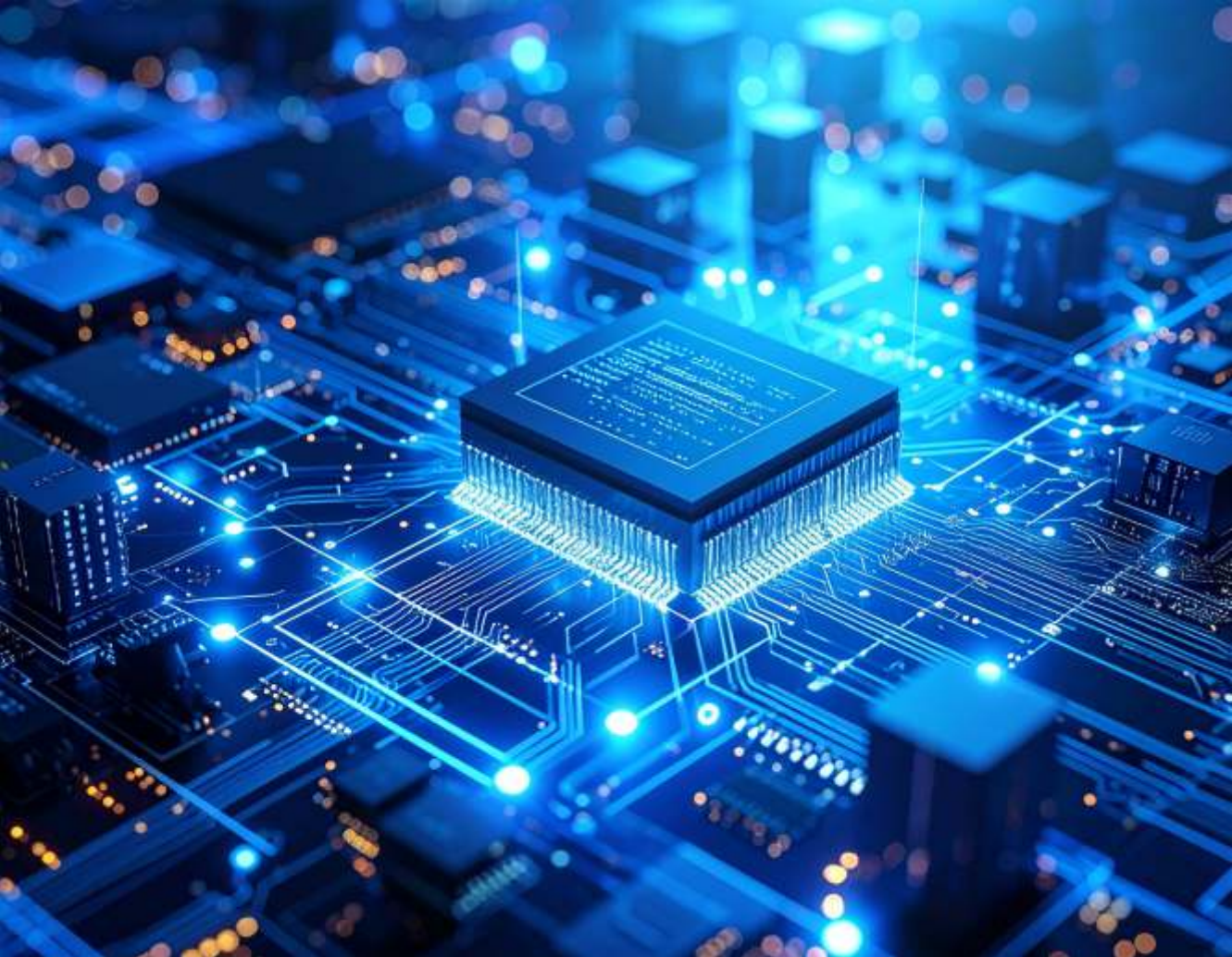




The Artificial Intelligence and Machine Learning Blueprint

Foundations, Frameworks, and Real-World Applications

Priyambada Swain



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Preface

In the current era of data-centric transformation, Artificial Intelligence (AI) and Machine Learning (ML) are influencing organizational strategies and operations. The AI and Machine Learning Blueprint serves as a guide connecting academic concepts with industry applications. It is intended for both students seeking basic knowledge and professionals interested in deploying scalable AI systems. The book covers core mathematical principles relevant to AI, including linear algebra, probability, statistics, and optimization, and provides an overview of classical machine learning algorithms, neural networks, and reinforcement learning. Concepts are illustrated with practical examples, Python code, and case studies from sectors such as healthcare, finance, cybersecurity, natural language processing, and computer vision. Operational considerations are also addressed, with chapters on MLOps, model deployment, explainable AI (XAI), and ethics. The text concludes with information on emerging topics including generative AI, federated learning, and artificial general intelligence (AGI). With a blend of theoretical depth and practical relevance, this book is an essential blueprint for mastering AI and ML in today's intelligent systems landscape.

Priyambada Swain

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