

P S L Narasimharao Davuluri

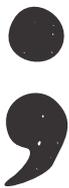
The Autonomous Data Enterprise

Engineering Real-Time
Intelligence with
Generative and Agentic
Artificial Intelligence

 DeepScience

The Autonomous Data Enterprise: Engineering Real-Time Intelligence with Generative and Agentic Artificial Intelligence

P S L Narasimharao Davuluri



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Preface

We stand at the threshold of a transformative era in data engineering, one where enterprises are no longer passive consumers of data but autonomous orchestrators of intelligence. The convergence of generative AI, agentic systems, and real-time analytics is fundamentally reshaping how organizations extract value from their data ecosystems.

This book emerges from years of hands-on experience architecting data platforms across healthcare, finance, and retail sectors, where the demand for instantaneous, intelligent decision-making has never been more critical. Traditional data pipelines, built on batch processing and human-dependent workflows, are giving way to self-optimizing systems that learn, adapt, and act with minimal intervention.

The "Autonomous Data Enterprise" represents more than technological advancement; it embodies a philosophical shift. It challenges the notion that data infrastructure must be laboriously managed and questions why intelligent systems cannot govern themselves. Through generative AI, we can now synthesize insights from unstructured chaos. Through agentic frameworks, we empower systems to make contextual decisions, trigger actions, and continuously improve without constant human oversight.

This book is structured to bridge theory and practice. We explore the foundational architecture of autonomous data systems, dissect real-world implementations on cloud platforms like GCP and AWS, and examine MLOps practices that enable continuous model deployment at scale. Each chapter builds upon the last, guiding you from conceptual frameworks to production-grade solutions that deliver measurable business impact.

Whether you're a data engineer seeking to modernize legacy systems, a machine learning practitioner aiming to operationalize models, or a technology leader driving digital transformation, this book provides the blueprint for building enterprises that think, learn, and evolve autonomously.

The future belongs to organizations that can transform data into action at the speed of thought. Let us begin that journey together.

P S L Narasimharao Davuluri

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