Hyperautomation with Generative AI

Learn how Hyperautomation and Generative AI can help you transform your business and create new value

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Dedicated to

Our parents, ***Late S. Ajmer Singh*** *and* ***Mrs. Sarbjeet Kaur,***
Mr. S. Balwinder Singh *and* ***Mrs. Kulwinder Kaur***

Our children ***Dilnawaz Kaur, Haralam Singh*** *and* ***Yuvaan***

And to all our team members at ***Xenonstack***

About the Authors

- **Navdeep Singh Gill** is a DeepTech Enthusiast, Author, TEDx Speaker, Angel Investor and Technophile. With More than 21 years of experience in Transformation and Data, he is now the Founder and Global CEO of Xenonstack, building a Real-Time Data and AI Company with focus on Automation, Analytics, and AI. As a Product Architect leading Akira.ai for the Generative AI Platform for LLMOps/FMOps, he has dedicated the past 11+ years building AI-first organizations defining enterprise data strategies and Building Local Community Chandigarh, AI for AI and Quantum. Navdeep has worked with renowned companies such as Ericsson, Reliance Communications Ltd., and HFCL Infotel.

  His expertise spans Network Transformation, Platform engineering, and Cloud Data Platforms for IoT and AI. Leading technical and cross-functional teams, Navdeep brings hands-on experience across all project phases, including strategy, conceptual design, proof of concept, and detailed architectural design. Under his guidance, Xenonstack is forming a robust team specializing in Progressive Delivery, Real-Time Analytics, Computer vision, Edge AI and observability. Navdeep also contributes in the journey towards becoming AI-first organizations and adopting Cloud-Native approaches through strategic application of Data Science, artificial intelligence, Platform Strategy, and Enterprise Data and AI Strategy.

- **Dr. Jagreet Kaur** is a distinguished author, Chief AI Officer and Research Scholar, leading research in responsible AI and Quantum at Xenonstack since 2016. Additionally, she leads the Akira.ai and QElixir for Generative AI and Quantum research. As a Research Scholar at Singapore University with over 17 years of experience in academics, industry and research, Dr. Kaur has made significant contributions to various domains, including database security, data warehousing, data science, and AI. She earned her BTech degree from Guru Nanak Dev Engineering College, Ludhiana, and her MTech degree from Punjab Engineering College, Chandigarh. Driven by her research topic on "Artificial Intelligence Based Analytical Platform for Predictive Analysis in Health Care," she successfully completed her Ph.D.

With a decade-long experience in Artificial Intelligence, Generative AI and Responsible AI, Dr. Kaur is focusing on ethical and responsible AI for Generative AI applications and Quantum Research for Akira.ai and QElixir.

- **Suryakant** is a Data Scientist by heart and a solution architect by designation with a strong background in cutting-edge technologies. With five years of valuable experience at Xenonstack, Suryakant has proven his expertise in Machine Learning, Deep Learning, and Artificial Intelligence. He holds MTech degree from NIT Delhi and BTech degree from IMS Engineering College, showcasing his dedication to continuous learning and academic excellence. Suryakant's passion lies in leveraging advanced analytics and AI techniques to extract valuable insights from complex datasets. With his diverse skill set and commitment to innovation, he plays a crucial role in driving data-driven solutions at Xenonstack.

  Currently, Suryakant is actively involved in pioneering Generative AI solutions. With his expertise in Machine Learning, Deep Learning, and Artificial Intelligence, he is at the forefront of exploring the potential of Generative AI in creating innovative and creative solutions. Suryakant's dedication to pushing the boundaries of AI technology and his passion for harnessing the power of data make him an invaluable asset in the field of Generative AI. Through his work, he aims to unlock new possibilities and drive advancements in this exciting and rapidly evolving domain.

About the Reviewer

Rahul Bansal's journey showcases a remarkable blend of technical expertise, management skills, and a passion for innovation. He has consistently demonstrated outstanding leadership qualities and a commitment to excellence, which has left a lasting impact on the organizations and communities he serves. He pursued a Bachelor's degree in computer science engineering from Guru Gobind Singh Indraprastha University, where he honed his technical acumen. Later, he further enhanced his knowledge and skills by completing a Post Graduation in Business Administration from the prestigious Indian Institute of Management, Lucknow, which provided him with a solid foundation in management principles.

With over 14 years of experience in the IT industry, Rahul has worked with reputable multinational companies such as Tata Consultancy Services, IBM, and EXL Services. Currently, he holds the position of heading the India delivery team for WonderBotz India Pvt. Ltd. His expertise lies in the field of Hyperautomation and intelligent automation, where he has implemented several projects for Fortune 500 companies. Rahul's proficiency extends across leading intelligent platforms such as UiPath, Blue Prism, Automation Hero, Microsoft Power Platform, and IDP platforms like ABBYY, Hyperscience, Rossum, and SS&C Chorus DA.

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Preface

The book introduces readers to the fundamental components of Hyperautomation and Generative AI. It outlines the initial steps an organization can take to establish the necessary talent, skill set, and IT infrastructure for streamlining routine business activities. It presents a wide range of use cases and examples that demonstrate the diverse applications of Hyperautomation in various industries, sectors, or specific departments within a company. The book also serves as a valuable resource for understanding different tools and platforms such as UiPath, Automation Anywhere, and IBM, assisting readers in selecting the most suitable technology for their exceptional digital transformation endeavors.

Moreover, the book highlights how organizations already utilizing AI (including Generative AI) and RPA technologies can leverage them effectively to expand automation across different business verticals rapidly. The book is divided into four sections, the first three sections covering specific aspects related to Hyperautomation and its implementation. The last section mainly focuses on Generative AI and its collaboration with Hyperautomation. By integrating Generative AI into Hyperautomation workflows, organizations can automate not only repetitive tasks but also leverage AI to generate new ideas, designs, and solutions. For example, in content creation, Generative AI can automatically generate personalized marketing content, product descriptions, or even entire articles.

Section I: Automation and Its Necessity

Chapter 1: The Realism of Hyperautomation - The preferred structure for a book would typically involve initially introducing the central subject, which in this case is Hyperautomation, and then delving deeper into the topic. However, there is a slight modification in the approach taken by this book. Chapter 1 begins by presenting an overview of Hyperautomation and exploring its emergence as the starting point. Subsequently, it focuses on outlining a comprehensive strategy for automating business processes through hyperautomation, which forms the most crucial aspect of the book, setting the tone for its entirety.

Chapter 2: Existence of Different Automations - The chapter provides an overview of various types of automation, particularly on Robotic Process Automation (RPA). It discusses the concept of RPA as a widely adopted form of automation in

various industries. The chapter covers the differences between robots, bots, and cobots, and explores the coexistence of humans and robots, highlighting why RPA is considered beneficial rather than detrimental. Additionally, it touches on the functionality of RPA, explaining the mechanics of how it works.

Chapter 3: Fundamentals of RPA Tools and Platforms - In this chapter, the focus is on providing an essential overview of the current tools used in Robotic Process Automation (RPA). The chapter primarily examines UiPath, Automation Anywhere (including IQ Bots), and Blue Prism, discussing their respective features and functionalities.

The specific topics covered in this chapter are:

1. **UiPath:** The chapter provides an overview of UiPath as an automation platform, highlighting its capabilities and functions.
2. **Automation Anywhere with IQ Bots:** This section delves into Automation Anywhere, emphasizing its integration with IQ Bots, which are intelligent automation components.
3. **Blue Prism and Intelligent Robotic Process Automation:** The chapter explores Blue Prism as a tool for Intelligent **Robotic Process Automation** (**RPA**), shedding light on its key features and benefits.

Chapter 4: Amalgam of Hyperautomation and RPA - In the fourth chapter of the book, the focus is on the importance of Hyperautomation and how it differs from its counterparts, namely Robotic Process Automation (RPA) and Intelligent Automation. The chapter explores why Hyperautomation is necessary for the current business landscape and highlights its distinct features compared to RPA and intelligent automation.

Section II: Evolution of Automation to Hyperautomation via RPA

Chapter 5: Devising Hyperautomation Solutions - In this chapter, the focus is on the process of developing **Hyperautomation** (**HyA**) solutions and identifying the types of problems that can be effectively solved through HyA. The chapter delves into the key components and ingredients required for successful HyA implementation and outlines the steps involved in developing such solutions. By understanding the potential of HyA and following the prescribed steps, organizations can leverage automation technologies to address complex challenges and streamline their operations for improved efficiency and productivity.

Chapter 6: Amalgam of Hyperautomation and Artificial Intelligence - Artificial Intelligence (**AI**) has become a prominent and trending topic in today's era of

cutting-edge technologies. In the context of Hyperautomation, this chapter explores AI from multiple perspectives. Firstly, it delves into AI as a concept, elucidating its fundamental principles and capabilities in mimicking human intelligence. Secondly, it highlights AI as a future, discussing its potential impact on various industries and society. Lastly, the chapter examines AI as a process, emphasizing the practical application of AI techniques and algorithms to automate complex tasks and enable intelligent decision-making. By comprehending AI from these angles, organizations can harness its power within Hyperautomation to drive innovation and achieve transformative outcomes.

Chapter 7: Bridging AI with Humans - The seventh chapter builds upon the previous chapters to provide a comprehensive exploration of the world of AI. This chapter takes a deep dive into the notion of preparing both AI and humans for the future. It addresses the current ethical issues surrounding AI, examining the challenges and dilemmas in its development and deployment. Furthermore, the chapter explores strategies to increase trust in AI, emphasizing the importance of transparency, accountability, and fairness. It also delves into making AI more responsible, considering ways to mitigate biases and ensure ethical decision-making. By tackling these crucial questions, chapter seven sheds light on the necessary considerations and actions required to navigate the evolving landscape of AI while ensuring its responsible and ethical use.

Chapter 8: Impact of Machine Learning with Hyperautomation - Machine Learning plays a pivotal role in AI and is an integral component of Hyperautomation. In this chapter, machine learning is thoroughly explored, highlighting its significance in the context of Hyperautomation. The chapter dives into the principles, algorithms, and techniques of machine learning, showcasing how it enables systems to learn from data and make intelligent predictions or decisions. By understanding the intricacies of machine learning and its integration within Hyperautomation, organizations can leverage their capabilities to develop sophisticated automation solutions that adapt, optimize, and continuously improve over time. This chapter serves as a comprehensive guide to harnessing the power of machine learning within the framework of Hyperautomation to drive innovation and achieve operational excellence.

Chapter 9: Operationalizing Hyperautomation - shifts the focus from conceptual discussions to the practical aspects of Hyperautomation by addressing the critical aspect of operationalizing the solution. It emphasizes that for any solution to be successful in a business context, scalability is of utmost importance. This

chapter delves into scalability in Hyperautomation, exploring the challenges and considerations in scaling up automation initiatives. It provides insights into the strategies, technologies, and best practices that can enable organizations to scale their Hyperautomation solutions effectively. By highlighting the significance of scalability, Chapter 9 equips readers with the knowledge and guidance necessary to ensure that their Hyperautomation efforts can be expanded and sustained to meet the evolving needs of their business operations.

Chapter 10: Successful Use Cases of Hyperautomation - In the final chapter, three compelling use case studies are presented, showcasing Hyperautomation as an industrial solution to address contemporary challenges. These case studies provide real-world examples of how organizations have successfully applied Hyperautomation to tackle problems in the current age. By examining these use cases, readers gain insights into the practical application of Hyperautomation across various industries, such as manufacturing, healthcare, or finance. The chapter delves into the specific problem domains, the tailored Hyperautomation solutions implemented, and the resulting benefits and outcomes. By presenting these use cases, the chapter highlights the versatility and efficacy of Hyperautomation as a powerful tool to drive innovation, enhance operational efficiency, and solve complex problems in the modern era.

Section III: Emergence of Generative AI and Its Collaboration with Hyperautomation

Chapter 11: Generative AI and Hyperautomation - This bonus chapter delves into the emerging field of Generative AI, highlighting its significance in the current era. The chapter begins with an introduction to Generative AI, providing an overview of its principles, methodologies, and applications. It then explores the collaborative potential of Generative AI and Hyperautomation, showcasing how these transformative technologies can synergistically work together to amplify their impact. Furthermore, a compelling case study is presented, demonstrating a practical solution that leverages both Generative AI and Hyperautomation. One case study also involved serves as a tangible example of how the combination of these technologies can drive innovation, improve processes, and deliver tangible outcomes in real-world scenarios. Overall, this bonus chapter provides valuable insights into the potential of Generative AI and its integration with Hyperautomation, paving the way for organizations to explore and harness the benefits of this cutting-edge technology.

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SECTION I

Automation and Its Necessity

This section delves into the concept of automation, tracing its history and exploring its significance in modern industries. It discusses the various types of automation prevalent today and lays the groundwork for the core subject of the book, Hyperautomation.

Chapter 1
The Realism of Hyperautomation

"Automation applied to an inefficient operation will magnify the inefficiency"

— Bill Gates

Introduction

Automation is a fascinating word that directly emphasizes targeting the manual process and reducing manual efforts. *Automation* as a term is not new in its existence. It has already existed in technical glossaries, since the 1950s. Automation originated from automatic, which was subjected to mechanical in its initial days.

Considering the current trends, automation is not limited to mechanical operations. The current trends suggest that the need for automation for digital processes is increasing significantly. The emergence of RPA and intelligent automation comes into the picture, further evolving into Hyperautomation; this journey from automation to Hyperautomation was arduous and event driven.

There are different types of automation that exist nowadays such as fixed automation, flexible automation and programmable automation (which will be discussed in the next chapter in detail).

The main purpose of this chapter is to cover not only the future of automation but also the past of automation. Let us start with automation and understand what automation is first.

Structure

In this chapter, we will cover the following topics:

- What is automation
- What is hyperautomation
- Journey of Hyperautomation
- High-level plan to automate business processes
- Important points about Hyperautomation
- Benefits of Hyperautomation

Objectives

The main objective of this chapter is to provide ideas on what Hyperautomation is and why it is becoming the following prime requirement in automation. We will also be studying various high-level plans to adopt Hyperautomation.

What is Automation

Automation is **the technique of making a process or a system that operates automatically**.

Before moving ahead, here are some questions: does everybody know about robots?

What are robots? What can be the role of robots? These are common questions that may be running in someone's mind now. In simple words, a robot is a machine. A machine? What is surprising about it?

Let us understand it with a brief discussion; it is an automated machine that can execute specific tasks without human intervention or sometimes a little intervention. Without human intervention surely sounds interesting. As it is a machine, it can work with speed and precision, which helps to increase efficiency and productivity.

Figure 1.1 features the journey of Automation:

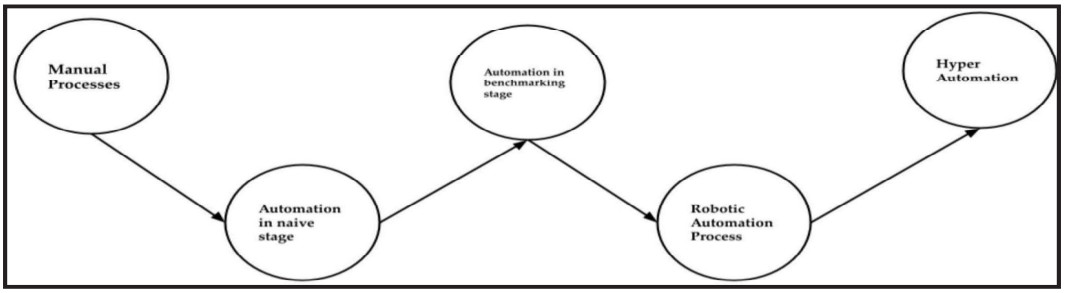

Figure 1.1: *Journey of Automation*

It can be stated that automation has existed throughout the history of humanity, and it will not be hyperbole, as, since the Stone Age, humans have tried to automate things in their senses.

After that, it took several industrial revolutions, many experiments, and inventions to reach the stage of Hyperautomation. The execution of Hyperautomation is entirely not dependent on the concept of automation. It also requires AI and Machine Learning to adapt to hyper-automate any business process.

Here are some facts about the journey of automation:

- In September 1898, *Nikola Tesla* demonstrated his experiment of a remote-control boat at Madison and surprised the world with the blink of automation.
- The industrial revolution started in the 19th century, and it was the point where automation directly impacted human lives.
- The pace of adapting Automation was slow till the end of the 19th century, and the emergence of AI, when the famous incident of defeating *Garry Kasparov* happened, was defeated by the artificial intelligence called Deep Blue.
- In the early 2000s, the focus shifted from automating physicality to digitality. The world started to understand the importance of AI and RPA.

This book leaps forward from here and discusses a cutting-edge technique which has the potential to become the future of Automation, that is, Hyperautomation. What is Hyperautomation? What are its ingredients? What is the necessity? All these sorts of questions have been answered in the book. It will be discussed in this book and the chapter.

What is Hyperautomation

According to the Gartner Glossary, "*Hyperautomation is a business-driven, disciplined approach that organizations use to rapidly identify, vet and automate as many business and IT processes as possible.*" Hyperautomation is the next level of automation. It is all about automating the automation. The Hyperautomation takes already running dynamic business processes and tries to automate them. *Figure 1.2* features the various ingredients of Hyperautomation: