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A Modern Approach To AI- Integrating Machine Learning With Agile Practices

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About the Editors

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Dr. Madhavi K born on June 19, 1979. is esteemed academic and Associate Professor in the Department of MBA at Acharya Institute of Graduate Studies (Acharya Institutions). With a robust educational background including an MBA, M.A, M.Phil, and a Ph.D. in Analytics, Dr. Kappaggantula has specialized in analytics, bringing a wealth of knowledge and expertise to her role. With over 20 years of teaching experience, beginning in February 2004, and an additional year in industry, she has significantly contributed to academia and research for a decade. Her scholarly work includes 3 publications in Scopus-indexed journals, 1 in the Web of Science, over 20 international publications, and 10 national publications. Dr. Kappaggantula has also authored 2 books and 2 book chapters, and holds 2 patents. Her dedication to professional development is reflected in her membership in 5 professional bodies. Dr. Kappaggantula's extensive experience and contributions have made her a respected figure in her field. She can be reached at madhavi2769@acharya.ac.in for academic and professional engagements.

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Dr. Bhargava N is a highly distinguished Associate Professor, enriching the MBA program at Acharya Institute of Graduate Studies, Bengaluru. With over 15 years of teaching experience, he brings a wealth of knowledge and practical insights to the classroom. Prior to joining Acharya, Dr. Bhargava honed his teaching skills at various esteemed institutions in Bangalore, fostering a well-rounded perspective on management education. Dr. Bhargava holds a Ph.D. in Management from REVA University, awarded in 2017, demonstrating his dedication to scholarly research. He earned his MBA from Sri Krishna Devaraya University in 2009 with First Class honors. His research interests delve into Marketing, Business Analytics, organizational behavior, strate-

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Dr. P Venkaiah Babu

Dr. P Venkaiah Babu born on May 8, 1984, is an esteemed academic and Associate Professor in the Department of MBA at Acharya Institute of Graduate Studies (Acharya Institutions). He is the son of Seshaiah and Ramanjamma. Dr. Venkaiah Babu holds an MBA, a PGDBFM, and a Ph.D. in Finance, specializing in this field. With a teaching career that commenced in August 2008, Dr. Venkaiah Babu brings over 17 years of teaching experience and 4 years of research experience to his role. He joined Acharya Institute of Graduate Studies on January 19, 2023. Throughout his career, Dr. Venkaiah Babu has made significant contributions to academia with a total of 3 publications in Scopus, 1 in Web of Science, 8 international publications, and 5 national publications. He has also authored 3 books, contributed to 3 book chapters, and holds 3 patents. Additionally, he is an active member of 7 professional bodies. Dr. P Venkaiah Babu continues to inspire and mentor students, leveraging his extensive knowledge and expertise in finance to foster academic excellence

Preface

In the ever-evolving landscape of technology, Artificial Intelligence (AI) has emerged as a pivotal force, driving innovation and transforming industries across the globe. Among the various branches of AI, Machine Learning (ML) stands out for its potential to revolutionize how we process information, make decisions, and solve complex problems. However, as powerful as ML is, its integration with established development methodologies remains a challenge for many organizations. This book, "A Modern Approach to AI: Integrating Machine Learning with Agile Practices," seeks to address this challenge by providing a comprehensive guide to merging these two dynamic fields. The genesis of this book lies in the recognition that while AI and ML have made significant strides, their practical application in real-world projects often faces hurdles. Traditional software development practices, which have been successful for decades, do not always align seamlessly with the iterative, data-driven nature of machine learning. This disconnect can lead to inefficiencies, prolonged development cycles, and suboptimal outcomes. It is here that Agile practices, known for their flexibility, iterative progress, and customer-centric approach, offer a promising solution. "A Modern Approach to AI" is crafted to serve as a bridge between the realms of machine learning and Agile methodologies. It aims to equip practitioners, researchers, and students with the knowledge and tools needed to harmonize these fields, fostering an environment where AI projects can thrive.

Through this integration, we envision a landscape where machine learning models are developed more efficiently, iteratively improved, and closely aligned with business objectives and user needs. The book is structured to guide the reader from foundational concepts to advanced practices, ensuring a thorough understanding of both machine learning and Agile frameworks. We begin with an overview of AI and ML, delving into their principles, techniques, and current state. Following this, we explore the core tenets of Agile practices, highlighting their benefits and the rationale behind their growing popularity in software development. As we progress, the focus shifts to practical strategies for integrating ML with Agile. This includes detailed discussions on adapting Agile practices to suit ML projects, managing data and model lifecycles, and fostering collaboration between cross-functional teams. Real-world case studies and examples are provided to illustrate the application of these concepts, offering valuable insights and lessons learned from successful integrations.

We believe that the intersection of machine learning and Agile practices represents a significant step forward in the pursuit of technological excellence. By embracing this integrated approach, organizations can not only enhance their AI capabilities but also drive innovation, improve efficiency, and deliver greater value to their customers. It is our hope that "A Modern Approach to AI: Integrating Machine Learning with Agile Practices" will serve as a valuable resource for anyone involved in the AI journey. Whether you are a seasoned professional seeking to optimize your ML projects or a newcomer eager to explore the potential of AI, this book aims to provide the guidance and inspiration needed to navigate this exciting and transformative field. Thank you for embarking on this journey with us. We look forward to exploring the future of AI and Agile together.

Dr. Madhavi K
Dr. Bhargava N
Dr. P Venkaiah Babu

Acknowledgement

We would like to express our sincere gratitude to all those who have contributed to the creation of this book, "A Modern Approach to AI - Integrating Machine Learning with Agile Practices." Firstly, we extend our heartfelt thanks to our families for their unwavering support and understanding throughout the process of writing and editing this book. Their patience and encouragement have been invaluable. We are deeply grateful to our colleagues and peers in the fields of artificial intelligence, machine learning, and agile practices. Their insightful feedback, discussions, and collaboration have significantly enriched the content and quality of this work. A special thanks to the institutions and organizations that provided us with the resources and platforms to conduct our research and share our findings. Your support has been instrumental in the successful completion of this project. We also wish to acknowledge the contributions of the technical reviewers and proofreaders whose meticulous attention to detail has ensured the accuracy and clarity of the content. Your expertise and diligence have greatly improved this book. Finally, we thank our publisher for their belief in this project and for providing us with the opportunity to share our knowledge and insights with a wider audience. Your professional guidance and support throughout the publishing process have been greatly appreciated. This book is the result of the collective efforts of many individuals, and we are deeply grateful to each one of you. We hope that our readers will find this book informative and inspiring as they explore the integration of machine learning with agile practices.

Dr. Madhavi K
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