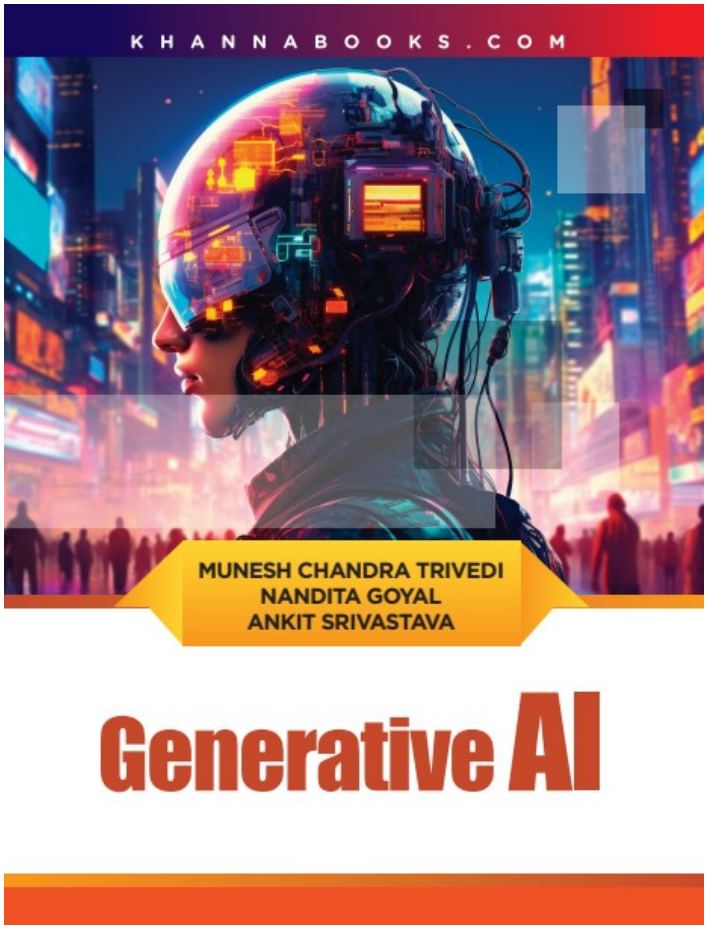

Generative AI

Author :	Munesh Chandra Trivedi
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Product Description

Generative AI: foundations, models, and Applications are a comprehensive guide that explores one of the most transformative areas of artificial intelligence—machines that create. This book offers an in-depth, yet accessible journey through the theoretical principles, algorithmic frameworks, and practical implementations that underpin generative models. Designed for students, researchers, and industry professionals alike, it bridges the gap between foundational understanding and real-world application. The book begins with a concise introduction to machine learning and deep learning, establishing the mathematical and conceptual foundation required to understand generative models. It the systematically introduces key architectures such as variation autoencoders (VAEs), Generative adversarial Networks (GANs), autoregressive models, diffusion models, and large-scale transformer-based systems such as GPT and DALL-E. Special attention is given to transformer architectures and multimodal generative models, which are reshaping fields such natural language processing, computer vision, digital art, and scientific discovery. Practical code examples and implementation guidance are provided using popular frameworks, empowering readers to build and experiment with their own models. This book also examines the broader impact of generative AI--- from ethical considerations and safety challenges to the societal implications of machine- generated content. It encourages critical thinking about issues like deep fakes, misinformation, algorithmic bias, and intellectual property in the age of AI-Generated media. Whether you are a student preparing for a career in AI, a software developer exploring new tools, or a researcher seeking a deeper understanding of generative technologies, this book serves as both a foundational text and a forward-looking reference. It combines clarity, depth, and practical relevance to help you master the art and science of Generative AI. SALIENT FEATURES OF THE BOOK

- The language is simple and easily understandable.
- Includes hands-on approach for learning the subject.
- Explores a wide spectrum of generative architectures including variational autoencoders (VAEs), Generative adversarial Networks (GANs), Transformer-based models (e.g., GPT), Diffusion models, and multimodal systems.
- Provides mathematical details without losing the reader in complexity.
- Includes exercises and examples.
- Includes in-depth discussions on cutting-edge advancements such as attention mechanisms, transformer architectures,

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Author

Munesh Chandra Trivedi Dr. Munesh Chandra Trivedi has more than 20 years of experience in the field of computer science & Engineering and has worked in Prestigious Institutions. He has more than 10 years' experience in various administrative responsibilities e.g., Dean (academics), Head of Department, TEQIP-111 Coordinator, PG coordinator, EDC cell Coordinator. Currently working Tripura, India, and Associate Professor and HoD (IT), Rajkiya Engineering College, Azamgarh, up (state Govt Institution of UP) with the additional responsibility of Dean Academics of the institute & Associate Dean UG Programs, Dr. APJ Abdul Kalam Technical University, Lucknow (State Technical University). He was also the Director (In-charge) at Rajkiya Engineering College, Azamgarh. He had successfully filed 81 patents (65 National and 16 International Patents (Germany, South Africa, and Australia)), out of which 40 patents were granted. He has published 12 textbooks and 168 research papers in different International Journals and proceedings of repute. He has also edited 38 books for springer Nature. He successfully supervised 14 PhD students and received numerous awards, including the Young scientist Visiting Fellowship, Albert Einstein Research scientist Award, Best senior Faculty Award, Outstanding Scientist, Dronacharya Award, Author of the Year, and vigyan Ratan award from different national, as well as international forums. He has organized more than 32 international conferences technically sponsored by IEEE, ACM, AND Springer. Nandita Goyal Dr. Nandita Goyal is currently working as an associate professor in Department of Information Technology, Ajay Kumar Garg Engineering College, Ghaziabad. She completed her Ph.D from AKTU, Lucknow, M.Tech in computer Science and Engineering from JIIT University, Noida. B.Tech in IT from UPTU, Lucknow. Dr. Nandita Goyal has more than 17 years' experience in Teaching and Research. Her areas of interest are Cloud Computing, Deep learning and Neural Networks. She has published many research papers in different reputed International Journals and Conferences. Ankit Srivastava

Mr. Ankit Srivastava is a dedicated academic and researcher with over six years of teaching experience in various engineering colleges and the National Institute of Electronics and Information Technology (NIT), Agartala, Tripura, India. His research primarily focuses on medical imaging and image processing, with an emphasis on leveraging artificial intelligence to contribute to technological advancements in healthcare. Mr. Srivastava has published six research papers in reputed SCI-E and Scopus-Indexed Journal, as well as in several national and international conferences. He also holds three national patents and is the author of a book titled "Introduction to AI and Machine Learning." His academic journey reflects a strong commitment to innovation, Knowledge dissemination, and research excellence in the field of artificial intelligence and its application in medical science.

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