QTanalytics®

INNOVATIONS AND TRENDS IN MODERN COMPUTER SCIENCE TECHNOLOGY OVERVIEW, CHALLENGES AND APPLICATIONS

EDITORS

S. Pandikumar

Manish Kumar Thakur

9 788198 064752

Innovations and Trends in Modern Computer Science Technology – Overview, Challenges and Applications

S. Pandikumar, Manish Kumar Thakur

QTanalytics® Publishing
Delhi, India
501 Rishabh Corporate Tower
Karkardooma Community Center, Delhi-110092

https://www.qtanalytics.in/
Information on this title: https://doi.org/10.48001/978-81-980647-5-2

Book title: Innovations and Trends in Modern Computer Science Technology – Overview, Challenges and Applications

ISBN: 978-81-980647-5-2

Editors: S. Pandikumar, Manish Kumar Thakur

Copy-editing & Typesetting: Shreya Chauhan, Isha Mittal and Sandra S

November 2024

About the Editors

Dr. S. Pandikumar

Dr. S. Pandikumar has 16 years of total work experience. His research areas encompass Data Analytics, Mobile Computing, and IoT. He has an impressive publication record with 9 papers in Scopus, 1 in WoS, 1 in Springer, and 19 in UGC Care with reasonable citations. Dr. Pandikumar's intellectual property portfolio includes 2 patent and 2 copyrights. He has been featured in 15 press and media outlets and has applied for funds for 2 Faculty Development Programs and 1 project. He has authored 6 technical books, 4 research books, and 5 general books. His extensive expertise and contributions make him a distinguished figure in his field. His ORCID Id :0000-0002-2535-3780 and SCOPUS id: 57210946132.

Dr. Manish Kumar Thakur

Dr. Manish Kumar Thakur, an accomplished academician and seasoned professional, holds a PhD in Computer Applications from Visvesvaraya Technological University. With a robust academic background, including an MCA from Visvesvaraya Technological University and an MTech in Information Technology from Karnataka State Open University, he has seamlessly blended theoretical knowledge with practical expertise. His research focuses on machine learning, data analytics, artificial intelligence, and cloud computing. His noteworthy contributions include the development of the "Alive" integrated LMS platform and significant work on image recognition and content evaluation using machine learning techniques. His publications in prestigious journals and presentations at international conferences reflect his commitment to advancing technology and education. His dedication to mentorship has earned him accolades, including the "Best Mentor Award" by IBM-India.

Preface

The 21st century stands as a testament to the transformative power of modern computer science, where groundbreaking innovations like Artificial Intelligence (AI), Quantum Computing, the Internet of Things (IoT), Blockchain, and 5G networks have redefined the boundaries of human potential. These technologies are not just theoretical constructs; they are actively shaping industries, revolutionizing economies, and reshaping how society interacts with the digital world. This book aims to provide readers with a comprehensive understanding of these pivotal advancements, delving into both their theoretical foundations and practical applications. Each chapter serves as a gateway to exploring the intricate nuances of these innovations, from AI's role in redefining healthcare to the influence of quantum computing on cybersecurity. Topics such as IoT and its role in creating smart cities, the integration of 5G in connected systems, and the ethical dilemmas posed by emerging technologies are examined with a balanced perspective. Our objective is threefold: to elucidate the concepts and advancements underpinning these technologies, to illustrate their transformative impact across industries such as finance, healthcare, and urban development, and to critically analyze the challenges associated with their adoption. Issues of scalability, security, energy efficiency, and ethics are addressed, along with potential solutions and future research directions. Furthermore, this book recognizes the imperative need for sustainable and ethical computing practices. As we traverse an era where technology increasingly influences every aspect of life, embracing green computing and addressing ethical considerations are vital to ensuring these innovations benefit humanity as a whole.

Whether you are a student, a researcher, or a professional, this book offers an insightful journey into the forefront of computer science. By blending theory with real-world applications, it provides the knowledge and inspiration to navigate the complexities and opportunities of our rapidly evolving technological landscape.

Dr.S Pandikumar
Dr.Manish Kumar Thakur

Contents