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Innovations in Medical Research

Through AI, ML, and IoT
Synergies



Innovations in Medical Research through AI, ML, and IoT Synergies

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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 8 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 FDPs 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. Dr. Thakur's 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 .



Ms. Pallavi M O

Ms. Pallavi M O She has published more than 10 papers, in national and International Conference such as IEEE, Springer etc. 3 papers have been accepted by SN Computer Science Q2 Journal. She has filed 11 patents out of which 6 have been published and 2 are wait for examination. 2 Copyrights are filed in the area of Computer Program, one is Registered and the other is in pipe line. Written and submitted an VGST FDP Proposal entitled “Clinical Intelligence: Exploring and Computation with AI tools” June 2024 and submitted an ATAL FDP Proposal entitled “Transforming Healthcare with AI: Advancements, Challenges, and Opportunities” in July 2024.

Preface

In recent years, the rapid advancements in Artificial Intelligence (AI), Machine Learning (ML), and the Internet of Things (IoT) have dramatically transformed numerous fields, including biotechnology and medical research. These cutting-edge technologies enable the processing and analysis of immense volumes of biological data, paving the way for groundbreaking discoveries and innovations. As we stand at the intersection of biology and technology, it is becoming increasingly evident that the integration of AI, ML, and IoT is unlocking unprecedented potential to solve complex biological and medical challenges. This book is dedicated to exploring the integration of AI, ML, and IoT within bioinformatics, and how they are offering innovative solutions to a myriad of healthcare and biotechnology challenges. By examining the foundations of these technologies, real-world case studies, and emerging trends, the content within this book aims to shed light on their transformative impact on healthcare.

The role of AI and ML in analyzing biological data is a key focus of this work. These technologies have the ability to process and interpret vast amounts of genomic, proteomic, and other biological datasets, leading to new insights and revolutionary discoveries. Moreover, the application of IoT in bioinformatics is explored in depth, demonstrating how interconnected devices and sensors contribute to real-time data collection, monitoring, and analysis in both medical research and patient care. Throughout the book, key themes and sub-themes are introduced, including the integration of deep learning for genomic data analysis, AI-driven protein structure prediction, machine learning in drug discovery, IoT architectures for bioinformatics, smart sensors in healthcare, and the ethical challenges posed by AI in bioinformatics.

In providing a comprehensive overview of how AI, ML, and IoT are revolutionizing bioinformatics, this book serves as a valuable resource for researchers, practitioners, and students. It not only examines the current state of these technologies but also anticipates future trends and their broader implications for healthcare and biotechnology. As we continue to witness the profound impact of these technologies on medicine and biology, this book seeks to be a guiding companion in understanding and navigating this rapidly evolving landscape.

Dr. S. Pandikumar
Dr. Manish Kumar Thakur
Ms. Pallavi M O

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