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Pallavi M O

Integrating AI, Machine Learning, and IoT in Bioinformatics

Innovations in Biotech and Medical Research

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About the Editors

Dr. Shilpa Sivashankar

Dr. Shilpa Sivashankar has more than 5 years of teaching experience with student projects dedicated to diagnostics and about 10 years of research experience in biomedical, biomaterials and microfluidic applications. She has developed strong interpersonal, management, leadership, collaboration and communication skills with about 16 years of service in the scientific community. She has completed more than 14 team projects, mentored and trained more than 10 Ph.D. students and staff. She has delivered project outcomes related to academia, industry, and the general public with more than 10 journal articles, and 26 odd scientific presentations. Dr. Shilpa has proactively contributed and provided leadership to professional organizations and public communities and conducted outreach activities to the scientific community. She has received funding's from KSCST and VTU for interdisciplinary projects. She has filed 1 copyright and 1 patent application. Her h-index and i10-index is 12. She has organised 2 international conferences, 1 national conference, 2 FDPs and about 8 skill development programs.

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.

Ms. Pallavi M O

Ms. Pallavi M O 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 a 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

The convergence of Artificial Intelligence (AI), Machine Learning (ML), and the Internet of Things (IoT) is revolutionizing the field of bioinformatics, opening new frontiers in biotechnology and healthcare. These emerging technologies have enabled the analysis of vast biological datasets and the development of personalized, data-driven medical solutions. This book presents an in-depth exploration of the synergy between AI, ML, and IoT in bioinformatics, providing readers with a comprehensive understanding of how these advancements are reshaping the future of medical research and biotechnology. It is structured into two key tracks: AI and Machine Learning in Bioinformatics and IoT and Cloud Computing in Bioinformatics. Each track delves into foundational concepts and specific applications, illustrating how these technologies are applied to real-world problems. From AI-driven genomic analysis to IoT-enabled remote patient monitoring, this book covers a broad spectrum of innovations that are driving the digital transformation of healthcare. Through a detailed examination of case studies, practical applications, and emerging trends, readers will gain valuable insights into the ways AI, ML, and IoT are impacting personalized medicine, drug discovery, healthcare monitoring, and more. We also highlight the ethical considerations and challenges, such as bias in AI algorithms and the need for robust data protection mechanisms, ensuring a balanced and thoughtful perspective on these transformative technologies. This book is intended for researchers, students, professionals, and enthusiasts seeking to understand the intersection of biotechnology and digital technologies. Whether you are new to the field or an expert exploring advanced applications, the chapters within offer something for everyone.

Dr. Shilpa Sivashankar
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