

ADVANCES IN SCIENCE, ENGINEERING AND TECHNOLOGY: A PATH TO THE FUTURE

Edited by

Tasneem Ahmed, Shrish Bajpai, Mohammad Faisal and Suman Lata Tripathi

Advances in Science, Engineering and Technology: A Path to the Future

Proceedings of the International Conference on Advances in Science, Engineering and Technology (ICASET - 2024), Organized by Department of Computer Application, Integral University, Lucknow, India

First edition published 2025
by CRC Press
4 Park Square, Milton Park, Abingdon, Oxon, OX14 4RN

and by CRC Press
2385 NW Executive Center Drive, Suite 320, Boca Raton FL 33431

© 2025 selection and editorial matter, Tasneem Ahmed, Shrish Bajpai, Mohammad Faisal, Suman Lata Tripathi; individual chapters, the contributors

CRC Press is an imprint of Informa UK Limited

The right of Tasneem Ahmed, Shrish Bajpai, Mohammad Faisal, Suman Lata Tripathi to be identified as the authors of the editorial material, and of the authors for their individual chapters, has been asserted in accordance with sections 77 and 78 of the Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

For permission to photocopy or use material electronically from this work, access www.copyright.com or contact the Copyright Clearance Center, Inc. (CCC), 222 Rosewood Drive, Danvers, MA 01923, 978-750-8400. For works that are not available on CCC please contact mpkbookspermissions@tandf.co.uk

Trademark notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library

ISBN: 9781041076476 (hbk)

ISBN: 9781041076483 (pbk)

ISBN: 9781003641544 (ebk)

DOI: 10.1201/9781003641544

Font in Sabon LT Std
Typeset by Ozone Publishing Services

Advances in Science, Engineering and Technology: A Path to the Future

Proceedings of the International Conference on Advances in Science, Engineering and Technology (ICASET - 2024), Organized by Department of Computer Application, Integral University, Lucknow, India

Edited By:

Dr. Tasneem Ahmed
Dr. Shrish Bajpai
Dr. Mohammad Faisal
Dr. Suman Lata Tripathi



CRC Press

Taylor & Francis Group
Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an **informa** business



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Contents

<i>List of Figures</i>	<i>xiii</i>
<i>List of Tables</i>	<i>xxi</i>
<i>About the Editors</i>	<i>xxix</i>
<i>Advances in Science, Engineering and Technology: A Path to the Future</i>	<i>xxxix</i>
<i>Introduction</i>	<i>xxxiii</i>
<i>Committees of ICASET 2024</i>	<i>xxxv</i>
<i>Acknowledgement</i>	<i>xxxvii</i>
1. Textile-integrated rectangular patch antenna enhanced by segmented steps for wireless communication in the C and X bands	1
<i>Ikroop Verma, Vinod Kumar Singh and Virendra Sharma</i>	
2. Two-stage peer selection in hybrid CDN-P2P video-on-demand system	6
<i>Deepali Tatyrao Biradar and Sudhir N. Dhage</i>	
3. A hybrid cryptographic scheme for secure communication	13
<i>Salman Ali and Faisal Anwer</i>	
4. Implementation of low cost ADS-B receiver using software defined radio and GNU radio	18
<i>Navanita Gupta and Pooja Mishra</i>	
5. A novel approach with one modulo three super mean labeling for enhancing communication efficiency in smart irrigation	23
<i>Baskar SriRanjani and Shanmugam Buwaneswari</i>	
6. A review on optimal placement of unified power flow controller (UPFC) in a fuel cell-wind integrated deregulated power system	28
<i>Mitul Ranjan Chakraborty, Pradip Kumar Saha, Subhojit Dawn and Jayanta Bhusan Basu</i>	
7. Neighborhood puzzle technique for greater power extraction from solar arrays under varying irradiations	34
<i>Vijay Laxmi Mishra, Yogesh K. Chauhan and K.S. Verma</i>	
8. Design of fiber Bragg grating as vibration sensor for laboratory test train	40
<i>Sheeba Kumari, Preeta Sharan and Saara K</i>	
9. Design of fiber Bragg grating sensor for the measurement of strain and temperature	45
<i>Chethana K, Rajini V Honnungar, Manjunath S, Bhuvan A Kamath, Rohit Y S and Vignesh V</i>	
10. Smart ramp metering techniques: an overview	50
<i>Mohd Sadat, Syed Aqeel Ahmad, Mohd Danish, Jamia Hasan, Ahmad Hamza Kazmain and Mohammad Amir</i>	
11. Microscopic modelling of uncontrolled on-ramp at urban expressway under mixed traffic conditions	55
<i>Mohd Sadat, Syed Aqeel Ahmad and Mehmet Ali Silgu</i>	

12. Enhancing disaster management: A scientific exploration of artificial intelligence's impact on preparedness, response, and recovery <i>Neha Mumtaz, Tabish Izhar and Syed Aqeel Ahmad</i>	60
13. A comparative evaluation of single-cell integration methods <i>Shahid Ahmad Wani and SMK Quadri</i>	65
14. Comprehensive review of approaches for reliable data dissemination in Vehicular Ad hoc Networks (VANETs) <i>Nazish Siddiqui and Sheeba Praveen</i>	72
15. Concerns and difficulties regarding VANET security <i>Anupama Verma and Gulista Khan</i>	79
16. Exploring application of AI in big data analytics for network optimization <i>Mohd Khalid, Deepak Kumar Singh, Riya Manchanda, Ramandeep Sharma, and Md. Adil Imroz</i>	85
17. Harmonizing the future: AI's transformative influence on art and music - A bibliometric analysis <i>Deepak Kumar Singh and Ranjan Kumar Mallik</i>	90
18. Towards sustainable futures: AI framework for ESG performance enhancement <i>Imran Ahmad and Tasneem Ahmed</i>	95
19. Mayo Clinic Strip AI: Differentiating Acute Ischemic Stroke Ethology Subtypes using whole slide Digital Pathology Images <i>Vedansh Sharma, Ashish Kumar, Shruti Gupta and Ankit Tomar</i>	99
20. Exploration of IHRL principles in AI domains within the Indian landscape <i>Zohaib Hasan Khan, Piyush Charan, Maharaj K. Koul and Varun Yadav</i>	105
21. Empowering inclusive education: Leveraging artificial intelligence within the framework of NEP 2020 <i>Shruti Kirti Rastogi Sarita Bajpai and Harishankar Singh</i>	111
22. UniParseAI: An unified approach to advanced SQL and NoSQL query parsing and manipulation boosted by AI capabilities <i>Aun Mohammad Kidwai, Mohd. Amaan, Shariq Shareef and Huda Khan</i>	114
23. Sustainable planet: Leveraging artificial intelligence for environmental conservation and social well-being <i>Anuj Kumar, Rin Rai, Satish Kumar, Shubham Kumar and Alka Agrawal</i>	121
24. Brain tumour detection using MRI images in CNN <i>G. Swapna, K. Sreenivasulu, M. Deepika, K.K. Baseer, Vikram Neerugatti and G Viswanath</i>	127
25. Technology aided framework for dealing with students' mental health <i>Jacintha Menezes, Nadeesha Hemachandra, Kate Isidro and Mohammed Siddique</i>	133
26. First order low noise voltage mode OTA-C low power high pass filter for biomedical applications <i>Ashish Dixit, Syed Shamroz Arshad, Sachchida Nand Shukla, Anil Kumar and Geetika Srivastava</i>	142
27. Recommendation system for skin cancer severity <i>Rishi Agrawal, Rishabh Tiwari, Archie Gaur, Sudeep Jain and Pradhumn Agrawal</i>	148
28. Improving anti-tumour immunity by combining brain immunology and immunotherapy in brain Tumours <i>Saumya Singh, Sumit Yadav, Motashim Rasool, Uvais Ahmad, Fiza Afreen and Fareen</i>	152

29.	Enhancing photovoltaic system stability under varying weather conditions and unknown load scenarios: An analytical study	157
	<i>Naveen Kumar Bind and Anil Kumar</i>	
30.	High definition thermal imager range modelling and analysis for aerial targets	163
	<i>Prerna Sahu</i>	
31.	Satellite based information sharing for person's safety	170
	<i>Aman Yadav, Anubhav Kumar Prasad, Kshitij and Shivam Pandey</i>	
32.	An approach to estimate the instability, growth rate and decomposition analysis of mango crop productivity through Landsat-8 satellite images	175
	<i>Harish Chandra Verma and Tasneem Ahmed</i>	
33.	An analysis of classification algorithms for the identification of urban area by using satellite images	182
	<i>Pooja Sharma and Ankush Agarwal</i>	
34.	Role of image processing and machine learning techniques in detection of crop stress and crop diseases: An overview	187
	<i>Gausiya Yasmeen, Nidhi Pandey and Tasneem Ahmed</i>	
35.	Enhanced crop diversity assessment using hyperspectral data: A spectrum characteristics method	193
	<i>Ashish Kumar and R. D. Garg</i>	
36.	A comprehensive overview of digital image processing techniques in precision agriculture	198
	<i>Gausiya Yasmeen, Tasneem Ahmed and Nayyar Ali Usmani</i>	
37.	Classification of health status for sugarcane image using machine learning	204
	<i>Somya Singh, Rajendra Prasad Pandey, Rakesh Kumar Dwivedi and Shambhu Bharadwaj</i>	
38.	Landslide detection: A semantic segmentation approach	209
	<i>Juhi Shekokar, Sanjana Gadagi, Himadri Vaidya, Aishwarya Gavandi, Shradha Kolhe and Suraj Sawant</i>	
39.	Maize disease detection through CNN using leaf images: A review	214
	<i>Bhupendra Kumar, Shalini Zanzote Ninoria and Vibhor Kumar Vishnoi</i>	
40.	An approach to detect the nitrogen deficiency of paddy crop on agriculture farm using digital image processing	219
	<i>Mohammad Arif Ali Usmani and Ausaf Ahmad</i>	
41.	Fine tuning the pre-trained convolutional neural network models for plant disease detection using transfer learning	224
	<i>Vibhor Kumar Vishnoi, Krishan Kumar, Brajesh Kumar and Karamjit Bhatia</i>	
42.	Text classification using large language model	229
	<i>Aavantika, Rakesh Kumar Dwivedi and Vivek Kumar</i>	
43.	Word Net-enriched text classification with compressed distance based word networks	233
	<i>Aarish Shah Mohsin, Mohammed Tayyab Ilyas Khan and Nadeem Akhtar</i>	
44.	Prediction of stock price: Comparative study between moving average and long short-term memory (LSTM) model	238
	<i>Bhagwan Jagwani and Udai Bhan Trivedi</i>	

45. Predictive modelling and customer accommodation strategies in ride-hailing services: A data analysis approach <i>Yogesh Pal, Anu Sayal and Shweta Dwivedi</i>	243
46. Customer lifetime value prediction using machine learning techniques and its impact on FinTech <i>Rajarshi Roy, Prasenjit Banerjee, Sujan Das, Namrata Datta, Soumit Roy, Murshed Al Amin and Mahamudul Hasan</i>	248
47. An efficient enhancement for robust and reversible watermarking method <i>Lalitesh Chaudhary, Santosh Rani, Santosh Kumar Nitesh Singh Bhati and Deeksha Kumari</i>	254
48. Summarizing across modes: Integration of asynchronous images and text <i>Hira Javed, Nadeem Akhtar and MM Sufyan Beg</i>	260
49. Impact of inclusion of smart board technology in classroom: An experimental study <i>Prince Walter and Kiran Tiwari</i>	266
50. Transitioning from Industry 4.0 to Industry 5.0: Exploring the potential and implications <i>Akash Chaurasia, Amitesh Yadav, Dipanshu Mishra Satish Kumar, Vishal Agarwal, Pawan and Kumar Chaurasia</i>	270
51. Inclination of science teachers towards use of technology: An instrument for revolutionizing science teaching <i>Geetika Nidhi and Shagufta Parween</i>	277
52. An in-depth analysis of the impact of microfinance on agricultural revenue in Uttar Pradesh, India <i>Divesh Dutt and Moiz Akhtar</i>	281
53. Inclusion of ICT in Madarsa education for technological empowerment of Muslims in India <i>Shagufta Parveen and Geetika Nidhi</i>	288
54. Comparing the collection development of digital content analysis of Indian library websites from IISER and NITTTR <i>Priyanka Tripathi, Praveen Babel, Preetika Tripathi and Noman Mansoori</i>	292
55. Empowering women socioeconomic upliftment through self-help groups: The role of Information Technology <i>Moiz Akhtar and Uzmi Anjum</i>	297
56. A comprehensive review: Anomaly detection techniques on social networking and its applications <i>Sarfaraz Alam and Mohammad Faisal</i>	303
57. Utilization of academic social networking sites by the academic community at Integral University in India: An investigation <i>Noman Mansoori and Priyanka Tripathi</i>	310
58. Augmented node features for graph convolutional networks: Applications of deep learning-based graph embeddings <i>Mohammad Ubaidullah Bokhari, Imran Khan, Basil Hanafi, Shahnawaz Afzal and Md Zeyauddin</i>	315
59. An intellectual copy-move forgery detection system using deep learning with discrete cosine transform and block-based features <i>Deeksha Kumari, Upasna Joshi, Priya Sharma, Santosh Kumar and Nitesh Singh Bhati</i>	320

-
60. Face recognition of faces with and without mask using CNN 327
Shaik Mahamad Shakeer, S. Madhu, M. Jayasunitha, Reece Rodrigues, Vikram Neerugatti and K.K. Baseer
61. Multimodal medical image supervised fusion using CNN with HOD 333
Satish Chaurasiya and Neelu Nihalani
62. Leveraging machine learning for emerging trends in Information Technology: A review 338
Shweta Dwivedi, Syed Adnan Afaq, Saurabh Srivastava, Uma Gupta Garg and Saman Uzma
63. Optimizing diabetic retinopathy detection with machine learning techniques 343
Megha Agarwal
64. Detection of multiple attacks using machine learning approach 347
Neha Srivastava, Sachin Gupta and R K Singh
65. Enhancing explainability and interpretability in deep learning models **for critical decision-making in healthcare** 351
Sagar Gaur and Supriya Raheja
66. Advanced blockchain-enabled deep quantum computing model for secured machine-to-machine communication 357
Rajeev Kumar Arora, Aniruddh Tiwari and Mohd. Muqem
67. Prediction of ground water fluoride effect on dental health using machine learning: Review 363
Gaurav Saxena, Priyank Singhal and Vipin Khattri
68. Leveraging deep neural networks for early recognize lumpy illness in animals 369
Akanksha Yadav and Prateek Raj Gautam
69. Improving cardiovascular forecasting precision with blended machine learning methods 375
Parisha, Gaurav Kumar Srivastava and Santosh Kumar
70. Advanced deep learning techniques for enhanced retinal disease detection and diagnosis 380
Vaishnavi Yadav and Prateek Raj Gautam
71. Classification of breast cancer with hybrid feature selection and extraction using machine learning classifiers 386
Vaishnawi Priyadarshni and Sanjay Kumar Sharma
72. Designing an effective real-time fraud detection system with machine learning techniques 392
Muhammad Farhan, Huzefa Sarwar, Nazir Ahmad, Sufiyan Mirza, Syed Hauider Abbas, Zoha Fatma and Mohammad Mugish
73. Mobile-based diabetic retinopathy detection and classification using TinyML 398
Satish Chaurasiya, Nikita Singh and Aman Singh
74. A survey of sentiment analysis and opinion mining using supervised machine learning 405
Nadiya Parveen, Mohd Waris Khan and Fiza Afreen
75. Data mining techniques for type 2 diabetes prediction: A literature review 410
Rizwan Akhtar and Muhammad Kalamuddin Ahamad

76. Text mining and sentiment analysis through support vector machine of online contents posting	416
<i>Sandeep Kumar Singh, Santosh Kumar, Shweta Dwivedi and Nitesh Singh Bhati</i>	
77. Unlocking healthcare: A critical examination of access to India's public health system	419
<i>Aakansha Verma and Naseem Ahmad</i>	
78. Prediction of alzheimer's disease using data mining techniques: A comprehensive review	424
<i>Shameem Ahmad Ansari and Muhammad Kalamuddin Ahmad</i>	
79. Feature extraction and classification of ECG signals for stress detection	429
<i>Safia Sadrudin, Vaishali D. Khairnar and Deepali R. Vora</i>	
80. Tracing the digital threads: A bibliometric analysis of cultural heritage digitization efforts	435
<i>Pradeep Kumar, Ramandeep Sharma, Deepak Kumar Singh and Pamil Arora</i>	
81. A comprehensive assessment of the existing literatures on the challenges and solutions related to cyber security in smart cities	440
<i>Rizwan Ahmed Khan, Mohd Faizan Farooqui and Mohd Waris Khan</i>	
82. Cyber-aggression: A comprehensive study on cyberbullying recognition and intervention in social media context	445
<i>Nashra Javed, Tasneem Ahmed and Mohammad Faisal</i>	
83. Develop an energy conservation model for cloud energy resources	451
<i>Ravishu Jain, Ashendra Kumar Saxena and Sukrati Jain</i>	
84. Sustainable cloud: An in-depth systematic review of energy-efficient strategies in cloud-based systems	457
<i>Malik Shahzad Ahmed Iqbal and Mohammad Haroon</i>	
85. Prevention from zombie attacks under cloud environment by mutual authentication method	463
<i>Himanshu Shukla, Ajay Pratap and Harsh Dev</i>	
86. Data intensive workflow scheduling mechanism under precedence constraint using maximum flow network heuristic in cloud computing	468
<i>Priyanka Mishra and Ranjit Rajak</i>	
87. A hybrid approach using deep reinforcement learning and particle swarm optimization for cloud task scheduling	474
<i>Ram Pratap, Shaba Irram, Alok Kumar Singh and Gayettri Devi</i>	
88. Identification scheme for zombie attacks in cloud environment	482
<i>Himanshu Shukla, Ajay Pratap and Harsh Dev</i>	
89. Machine learning technique for performance prediction of scientific workflow scheduling in cloud computing environment	488
<i>Kanchan Namdev and Ranjit Rajak</i>	
90. Comprehensive overview of latency reduction techniques in low latency in device to device communications	499
<i>Deven Makhija, Rabindranath Bera and Sourav Dhar</i>	
91. Reducing latency for the better resource utilization in edge computing	505
<i>Mazhar Siraj, Namit Gupta and Vipin Khattri</i>	

92. Dynamic task scheduling algorithms for NoC based multicore systems: A comprehensive review	510
<i>Aasim Zafar, Mohd Farooq and Abdus Samad</i>	
93. A comparative study of task offloading techniques in Mobile Edge Computing (MEC)	515
<i>Ruchi Jain and Ranjit Rajak</i>	
94. Developing a comprehensive security framework for detecting and mitigating IoT device attack	524
<i>Rajeev Kumar Arora, Mohd. Muqeem and Manish Saxena</i>	
95. Development of a bike speed regulator for enhancement of rider's safety using IoT	530
<i>Vaishali Savale, Shubham Pathak, Shankar Rakh, Pranay Kuhite and Shubham Patil</i>	
96. Street light automatic intensity controller using Arduino-UNO	535
<i>Naveen Kumar Bind, Bhagyashree, Akanksha Singh, Pravin Kumar and Abhishek Rana</i>	
97. Bharat charge alliance: Essential to India's electric vehicle transition	539
<i>Jitendra Musale, Pranjali More, Varad Dahale, Sanika Whaval, Siddhi Shinde and Sujal Yadav</i>	
98. Precision in tracking: The role of RFID in asset visibility	545
<i>Mariya Hasnat, Farha Zia and Shweta Dwivedi</i>	
99. IoT enabled smart EV charging infrastructure	550
<i>Rahul Pachori, Yash, Rajdeep Singh and Mohammad Rizwan</i>	
100. IoT and machine learning: Further research axes from industry 4.0 to 5.0	555
<i>Kumar Saurabh, Manish Madhava Tripathi and Satyasundara Mahapatra</i>	

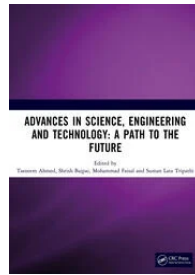


Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Chapter




Towards sustainable futures

AI framework for ESG performance enhancement

By Imran Ahmad ([/search?contributorName=Imran Ahmad&contributorRole=author&redirectFromPDP=true&context=ubx](/search?contributorName=Imran%20Ahmad&contributorRole=author&redirectFromPDP=true&context=ubx)), Tasneem Ahmed ([/search?contributorName=Tasneem Ahmed&contributorRole=author&redirectFromPDP=true&context=ubx](/search?contributorName=Tasneem%20Ahmed&contributorRole=author&redirectFromPDP=true&context=ubx))

Book [Advances in Science, Engineering and Technology \(<https://www.taylorfrancis.com/books/mono/10.1201/9781003641544/advances-science-engineering-technology?refId=439b8f36-6f5a-457b-9946-0633a0825e4a&context=ubx>\)](https://www.taylorfrancis.com/books/mono/10.1201/9781003641544/advances-science-engineering-technology?refId=439b8f36-6f5a-457b-9946-0633a0825e4a&context=ubx)

Edition	1st Edition
First Published	2025
Imprint	CRC Press
Pages	4

 Share

ABSTRACT

< [Previous Chapter \(chapters/edit/10.1201/9781003641544-17/harmonizing-future-deepak-kumar-singh-ranjan-kumar-mallik?context=ubx\)](chapters/edit/10.1201/9781003641544-17/harmonizing-future-deepak-kumar-singh-ranjan-kumar-mallik?context=ubx)

[Next Chapter > \(chapters/edit/10.1201/9781003641544-19/mayo-clinic-strip-ai-vedansh-sharma-ashish-kumar-shruti-gupta-anvit-tomar?context=ubx\)](chapters/edit/10.1201/9781003641544-19/mayo-clinic-strip-ai-vedansh-sharma-ashish-kumar-shruti-gupta-anvit-tomar?context=ubx)



(<https://www.taylorfrancis.com>)

Journals



Corporate



Help & Contact



Connect with us



(<https://www.linkedin.com/company/taylor-&-francis-group/>)



(<https://twitter.com/tandfnewsroom?lang=en>)



(<https://www.facebook.com/TaylorandFrancisGroup/>)



(<https://www.youtube.com/user/TaylorandFrancisGroup>)

Registered in England & Wales No. 3099067
5 Howick Place | London | SW1P 1WG

© 2026 Informa UK Limited