



Certification by Head of Institution

Certified that the below listed books and chapters per teachers in edited volumes/books published and papers published in national/ international conference proceedings during last five years

S. No	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Name of the conference	Calendar Year of publication	ISBN number of the proceeding	Name of the publisher
1	SAKSHI GUPTA	Book: Artificial Intelligence in Healthcare Trends, Applications, and Future Directions	-	Apple Academic press	-	2023	ISBN: 9781998511068	Apple Academic press
2	JAMILUR RAHMAN ANSARI	Book: Metallic Nanoparticles for Health and the Environment	-	-	-	2023	eBook ISBN9781003317319	Taylor and Francis Group
3	SUKRATI CHATURVEDI	Book: Deep Learning: Theory, Architectures and Applications in Speech, Image and Language Processing / Chapter: The Value Alignment Problem: Building	-	-	-	2023	ISBN: 978-981-5079-22-7	Bentham Books

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		Ethically Aligned Machines						
4	SEEMA	Book Series Lecture Notes in Networks and Systems	Performance Analysis of Hetero-Dielectric Buried Oxide Double Gate Vertical TFET	Proceedings of 7th ASRES International Conference on Intelligent Technologies	-	2023	Print ISBN 978-981-99-1911-6	Springer
5	PARVEEN KUMARI	Book: National Education Policy 2020: Understanding & Way Forward / Chapter: Transforming Education Through Digitization & ICT Optimization	-	-	-	2023	ISBN 979-8-88833-662-5	Notionpress
6	SANDEEP RAJ	Book: Advanced Internet of Things (AIoT)	-	-	-	2023	ISBN No. 978-9394384-87-3	Saddle Publisher
7	Mrs. MONIKA RANI	-	Synthesis and catalytic activity of Cu (II) complex with 4-phenyl 2, 6-di (thiazol-2-yl) pyridine in the oxidation of para-aminophenol	Current Chemistry Letter	-	2023	ISSN 0140-6736 EISSN 1474-547X	SCI Scopus

8	PARVEEN KUMARI	-	Sentiment analysis on online social networking data for the identification of depression using several AI techniques: A literature review	-	2023 International Conference on Communication, Security and Artificial Intelligence (ICCSAI)	2023	Electronic ISBN:979-8-3503-0541-8	IEEE
9	PARVEEN KUMARI	-	SMART ENERGY GUARDIANS: NEURAL NETWORK EMPOWERED ROUTING IN WIRELESS SENSOR NETWORKS FOR IOT	-	In 2023 Second International Conference On Smart Technologies For Smart Nation (SmartTechCon) (pp. 1019-1024).	2023	ISSN-2349-7688	IEEE
10	RITU PAHWA	-	Revolutionizing Data Security: Synergizing Artificial Intelligence and Biometrics for Robust Face Spoofing Detection	-	Artificial Intelligence and Nanobots ", International Journal of Advance Computational Engineering and Networking (IJACEN)	2023	ISSN NO. (Print) : 2320-2106, (Online): 2321-2063	Google Scholar
11	KUNAL ARORA	-	Magnetorheological finishing process for improved performance of	Materials and Manufacturing Processes	-	2023	ISSN: 15266125	Taylor & Francis

			polymer gears					
12	VIMMI MALHOTRA	-	A Review on the Capability and Smart Contract Potential of Block chain Technology	-	3rd International Conference on Smart Data Intelligence (ICSMDI)	2023	Electronic ISBN:978-1-6654-6487-1	IEEE
13	SUKRATI CHATURVEDI	-	AI Value Alignment Problem: The Clear and Present Danger	-	6th International Conference on Information Systems and Computer Networks (ISCON)	2023	Electronic ISSN: 283 2-143X Print on Demand(PoD) ISSN: 238 1-7550	IEEE
14	ANUPAM DALAL	-	Investigation of Brain Tumors Detection using Automatic Segmentation Techniques	-	2022 4th International Conference on Artificial Intelligence and Speech Technology (AIST)	2023	E ISBN:978-1-6654-9902-6	IEEE
15	ISHA MALHOTRA	Book: 3D Printing of Sensors, Actuators, and Antennas for Low-Cost Product Manufacturing / Chapter: Polymer-Based 3D Printed Sensors, Actuators, and Antennas for Low-Cost Product Manufacturing	-	-	-	2022	eBook ISBN9781 00319422 4	Taylor and Francis Group

16	KUNAL ARORA	Book: Additive Manufacturing in Industry 4.0 / Chapter : Study of mechanical and microstructural properties of titanium chips fabricated by large strain machining process	-	-	-	2022	eBook ISBN 97810033 60001	CRC Press
17	JAMILUR RAHMAN ANSARI	Book : LOW DIMENSIONAL HALIDE PEROVSKITES (Structure, Synthesis, and Applications) / Chapter : Recycling of halide perovskites	-	-	-	2022	ISBN 978-0-323-88522-5	Elsevier
18	SURENDER DHAKA	Book: Atmospheric Remote Sensing / Chapter: Composition and thermal structure of the earth's atmosphere	-	-	-	2022	ISBN 978-0-323-99262-6	Elsevier
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20	JAMILUR RAHMAN ANSARI	Book: Handbook of Green and Sustainable Nanotechnology / Chapter: Sustainable Nanotorus for Biosensing and Therapeutical Applications	-	-	-	2022	Print ISBN 978-3- 030- 69023-6	Springer, Cham
21	JAMILUR RAHMAN ANSARI	Book: Advanced Bioscience and Biosystems for Detection and Management of Diabetes / Chapter: SPR Assisted Diabetes Detection	-	-	-	2022	Online ISBN978- 3-030- 99728-1	Springer, Cham
22	ISHA MALHOTRA	Book: Medical Information Processing and Security: Techniques and applications / Chapter: Terahertz imaging in healthcare	-	-	-	2022	ISBN-13: 978-1- 83953- 525-3	IET Publication
23	SUKRATI CHATURVEDI	Book: Research Anthology on Applied Linguistics and Language Practices / Chapter: Multilayer Neural Network Technique for Parsing the Natural Language Sentences	-	-	-	2022	ISBN13: 97816684 56828	IGI Global



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25	JAMILUR RAHMAN ANSARI	Book : Nanotechnology / Chapter : Carbon Allotropes- Based Nanodevices	-	-	-	2022	eBook ISBN 97810032 20350	Taylor and Francis Group
26	JAMILUR RAHMAN ANSARI	Book: Nanomaterials in the Battle Against Pathogens and Disease Vectors / Chapter : Synthesis Approaches for Higher Yields of Nanoparticles	-	-	-	2022	ISBN 97810031 26256	Taylor and Francis Group
27	JAMILUR RAHMAN ANSARI	Book: Nanomaterials in the Battle Against Pathogens and Disease Vectors / Chapter: Multifaced Applications of Nanoparticles in Biological Science	-	-	-	2022	ISBN 97810031 26256	Taylor and Francis Group
28	RADHAKRISH NAN DHEIVANAI	-	Unmanned Aerial Vehicle for disaster response and relief operations : helping hands from air	-	2022 International Conference on Power, Energy, Control and Transmission Systems (ICPECTS)	2022	Electronic ISBN:978- 1-6654- 6275-4	IEEE

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30	KUNAL ARORA	-	Magnetorheological Fine Finishing of Tungsten Carbide Mold Material	-	ASME International Mechanical Engineering Congress and Exposition	2022	ISBN: 978-0-7918-8663-2	American Society of Mechanical Engineers
31	KUNAL ARORA	-	Methodology for designing and fabricating a novel SEABIN used in the marine industries	-	10th International Conference on Advancements in Engineering and Technology (ICAET-2022)	2022	ISBN No: 978-81-924893-7-7	IEEE
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36	SAKSHI GUPTA	Book: Soft Computing: Theories and Applications / Chapter: Validation and Analysis of Metabolic Pathways Using Petri Nets	-	Proceedings of SoCTA 2020	-	2021	eBook ISBN978- 981-16- 1740-9	Springer Singapore


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37	ISHA MALHOTRA	Book: Terahertz Antenna Technology for Imaging and Sensing Applications	-	-	-	2021	ISBN: 978-3-030-68960-5	Springer, Cham
38	ANCHAL BHUTANI	R.K. Narayan - A Concept Storyteller/Literary Herald	-	Literary Herald	-	2021	ISSN2454-3365	Literary Herald
39	EKTA THAKUR	-	Review On Application Of Drone Systems In Agriculture	-	6th International Conference on Signal Processing, Computing and Control (ISPCC)	2021	Electronic ISSN: 2643-8615 Print on Demand (PoD) ISSN: 2376-5461	IEEE
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41	ARPIT SHRIVASTAVA	-	Investigation about machining issues in turning process of EN-31 steel	Materials Today: Proceedings	-	2021	ISSN 2214-7853	Elsevier

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43	KUNAL ARORA	-	Investigati ng The Effect of Surface Finishing On Performan ce of Designed Aerostatic Bearing For Its Improved Precision Applicatio ns	Research Square	-	2021	ISSN 2693- 5015	Google Scholar
44	KUNAL ARORA	-	Modeling of surface roughness in a novel magnetor heological gear profile finishing process	Proceedin gs of the Institution of Mechanic al Engineers, Part C: Journal of Mechanic al Engineerin g Science	-	2021	ISSN: 0954- 4062 Online ISSN: 2041- 2983	SAGE Publication s


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46	ANCHAL BHUTANI	-	Ruskin Bond - A Man of Imagination	Contemporary Literary Review India	-	2021	Online ISSN 2394-6075	CLRI
47	NEHA VERMA	-	A technical review on application oriented comparative study of IoT, IoNT, and IoBNT	-	2021 6th International Conference on Communication and Electronics Systems (ICCES)	2021	ISBN:978-1-6654-1182-0	IEEE
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51	ISHA MALHOTRA	-	A Review on Smartwatch for Paralytic and Critically	-	International Conference on Communication and Electronics	2021	Electronic ISBN:978-1-6654-3587-1 Print on Demand(PoD)	IEEE

			Aged Persons		Systems (ICCES)		ISBN:978-1-6654-1182-0	
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53	ISHA MALHOTRA	-	Monthly Averaged All Sky Solar Irradiance Prediction Using Artificial Neural Networks for Chandigarh Region	Advances in Systems Engineering	-	2021	ISBN 978-981-15-8025-3	Springer
54	ISHA MALHOTRA	-	A technical review on application oriented comparative study of IoT, IoNT, and IoBNT	-	2021 6th International Conference on Communication and Electronics Systems (ICCES)	2021	ISBN:978-1-6654-1182-0	IEEE
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57	EKTA THAKUR	Book: Antennas: Theory And Design / Chapter: ADVANCES IN PATCH ANTENNA DESIGN USING EBG STRUCTURES	-	-	-	2020	eBook ISBN :9780367 420451	Taylor & Francis Group
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61	SANDEEP BANSAL	-	Cavitation erosion behavior of microwave-processed Ni-40Cr3C2 composite clads: A parametric investigation using ultrasonic apparatus	Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications	-	2020	ISSN No. 1464-4207	Sage Publications
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64	SANDEEP BANSAL	-	Investigation of Microwave Processing Parameters on Development of Ni- 40Cr3C2 Composite Clad and Their Characterization	Metallurgical and Materials Transactions A	-	2020	ISSN No. 10735623 , 15431940	SCOPUS

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69	MONIKA RANI	Book: AI Techniques for Reliability Prediction for Electronic Components / Chapter: Artificial Intelligence for Interface Management in Wireless Heterogeneous Networks	-	-	-	2019	ISBN13: 9781799814641	IGI Global
70	ASHIMA MEHTA	Book : Communication and Computing Systems / Chapter: Empowering IoT with cloud technology	-	Proceedings of the 2nd International Conference on Communication and Computing Systems (ICCCS 2018)	-	2019	ISBN:9-780-4294-4427-2	Taylor & Francis Group
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93	SAKSHI GUPTA	Book: Advances in Computing and Data Sciences / Chapter: Fuzzy Petri Net Representation of Fuzzy Production Propositions of a Rule Based System			International Conference on Advances in Computing and Data Sciences	2019	Print ISBN978- 981-13- 9938-1	Springer
94	NEHA SINGLA	Book: Web Services: Concepts, Methodologies , Tools, and Applications Chapter: Evolution of Cloud in Big Data With Hadoop on Docker Platform				2019	EISBN13: 97815225 24878	IGI Global
95	NEHA SINGLA	Book: Handbook of IoT and Big Data / Chapter: Learner to Advanced: Big Data Journey				2019	ISBN: 97- 8042- 9053-290	CRC Taylor & Francis Group USA
96	RITU PAHWA		Dynamic ECG Classificati on Using Shift- Invariant DTCWT and Discrimina nt Analysis		Proceedings of ICETIT 2019 Lecture Notes in Electrical Engineering	2019	ISBN978- 3-030- 30579-6	Scopus

97	SANDEEP BANSAL		On Metallurgi cal and Mechanic al Characteri zation of Ni/Cr3C2 Cladding Developed Through Microwav e Heating		1st International Conference on Smart and Sustainable Developments in Materials, Manufacturing and Energy (SME-19)	2019	ISBN:0954 40622094 0348	SCOPUS
98	SALONI BHATIA		Cellular radiations effect on human health	Proceedin gs of First Internatio nal Conferenc e on Informatio n and Communic ation Technolog y for Intelligent System		2019	ISBN3381 49170	Springer Internation al Publishing Switzerlan d



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Chapter 1

Introduction

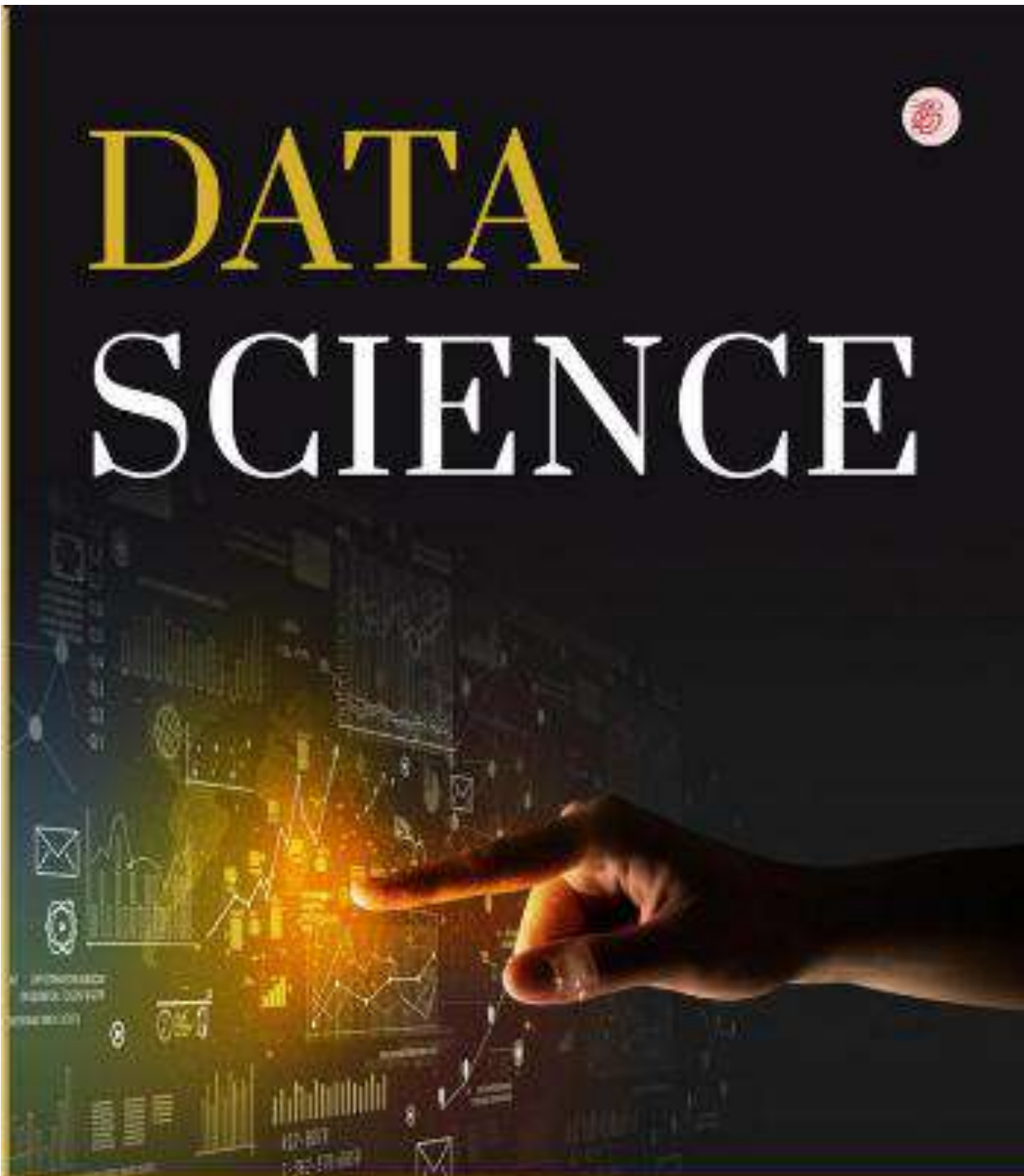


1.1 Introduction

Over the past two decades, the terahertz (THz) technology has been witnessing significant advancements on the scientific front. THz technology is an emerging field that has potentials to improve applications ranging from passenger scanning at airports to huge digital data transfers. THz radiation is located between the frequency bands of microwaves and infrared radiation, and is capable of easily penetrating into various materials, including biological tissue. The energy carried by THz radiation is low enough to pose no risk to any object under investigation. Technological advancements have enabled the THz frequency band to be accessible for imaging systems. Many manufacturers are currently focused on developing new devices that can send and receive radiation in the THz frequency range. The THz technology has found several applications in various fields such as spectroscopy, imaging, and communication systems, over the years. Additionally, the growing application of THz technology in a number of industries for quality check and process control monitoring is expected to enable THz components and systems to register a remarkable rise in the coming years.

Moreover, an increasing adoption of THz technology in industries, such as aerospace and defense and homeland security across regions, is thereby driving the market for THz technology over the forecast period. In addition, some of the prominent drivers for THz technology market are factors such as increasing investments in R&D activities, growing penetration of THz technology in biology and medical science sectors, and increasing applications of high-end THz devices in research laboratory and process control monitoring processes. On the other hand, factors such as the lack of awareness of THz technology can result in a slow adoption rate and concerns regarding accuracy and reliability issues may act as a major restraint for the THz technology market.

THz technology market can be segmented on the basis of component, system, application, vertical, and regions. On the basis of component, the THz technology



DATA SCIENCE

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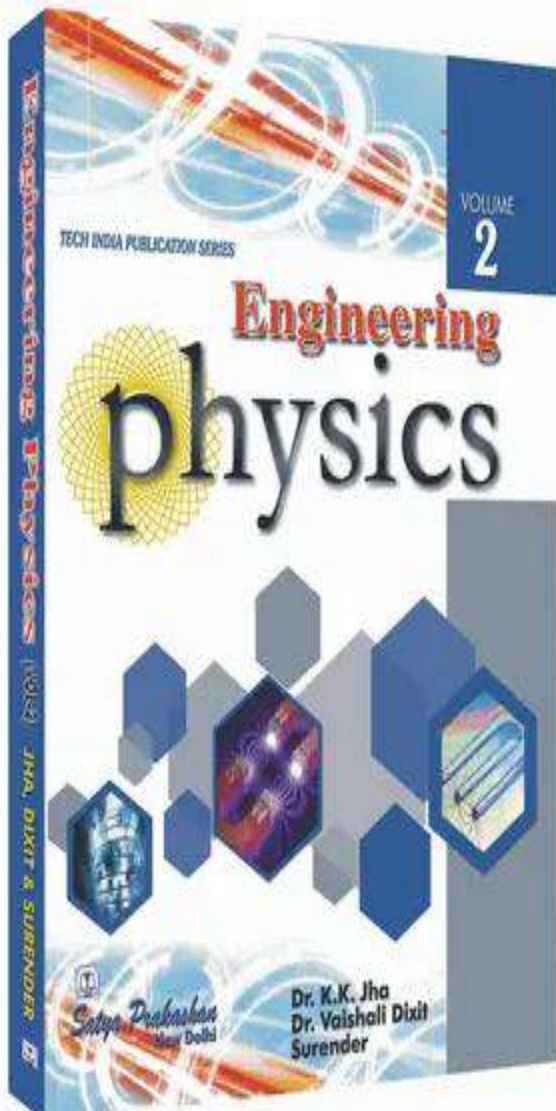

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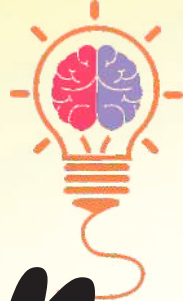

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Communication and Computing Systems

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ABSTRACT

The International Conference on Communication and Computing Systems (ICCCS 2018) provides a high-level international forum for researchers and recent advances in the field of electronic devices, computing, big data analytics, cyber security, quantum computing, biocomputing, telecommunication, etc. The aim of the conference was to bridge the gap between the technological advancements in the industry and the academic research.

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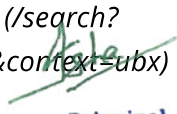
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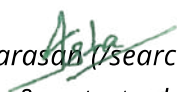
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Passive fault-tolerant control system design with tracking control against major system faults: Application to a canonical tank level system (/chapters/edit/10.1201/9780429444272-15/passive-fault-tolerant-control-system-design-tracking-control-major-system-faults-application-canonical-tank-level-system-patel-shah?context=ubx&refId=1d381f65-07db-45d0-b348-7033e1ea41c2)

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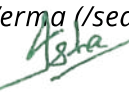
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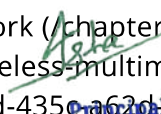
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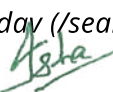
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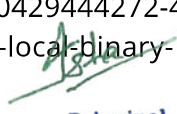
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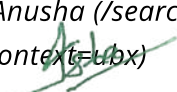
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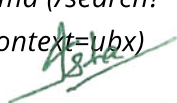
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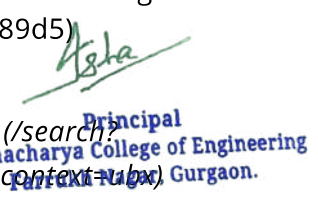
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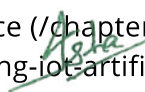
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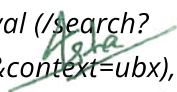
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The Internet of Things (IoT) is a concept of interconnected of various devices, a vehicle to the internet. IoT contain actuators and sensors for transferring data to and from the devices. This technology is developed for better efficiency and accuracy and minimizing human interaction with the devices. Idea of smart farming system based on IoT is to automate the farming. India ranks second in Farm output. Farmers are not well trained in our country so that sometimes because of their lack of knowledge in maintenance and nurturing the plant they face difficulties. To remove this problem, we are going to design this Smart farming system. First, we have to study the characteristic of the plant. Here we will cover requirement of water, requirement of fertilizer, requirement of sunlight confined to this specific plant. It is a system that can detect the presence of sunlight and water. When the quantity of these two things goes beyond the minimum defined limit, then the LED glows. It also gives an alert if it requires water and sunlight. Then we will use water level sensor and based on that sensor output we will drive our motor to supply water to the plant. Now to adjust the amount of Sunlight a rotating motor is connected to a vertical semi slide. Now our idea can be elaborated by driving the motors with solar energy. In smart farming system based on IoT, the farmers getting live data of temperature, soil moisture and smoke detection on their mobile for better environment monitoring which will enable them to do smart farming and increase the overall quality of products.

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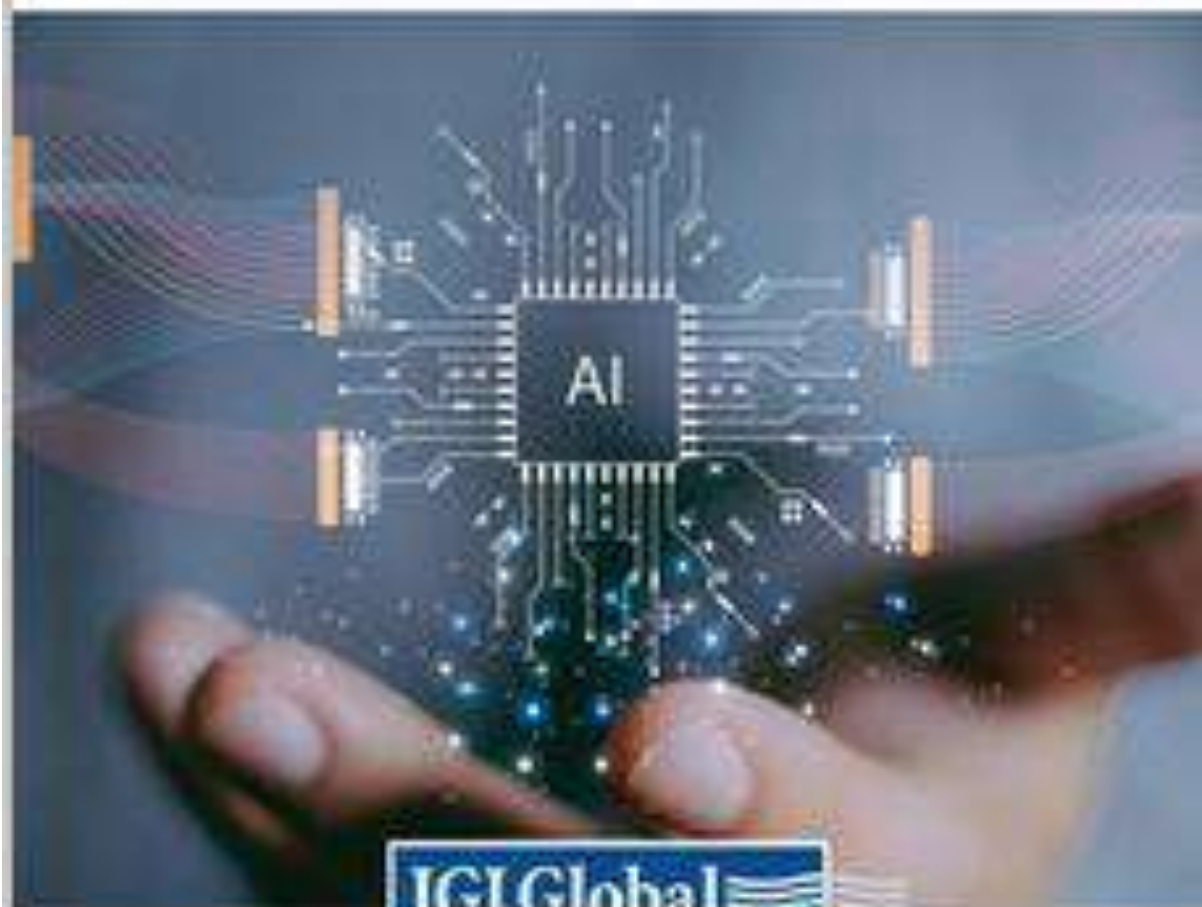
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A handwritten signature in green ink, appearing to read 'Aisha', with a horizontal line underneath it.

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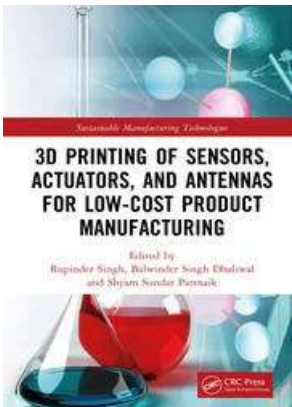
This paper provides a comprehensive review of the ethical considerations and technological advancements associated with artificial intelligence (AI) in both healthcare and engineering domains. It examines the role of blockchain technology in enhancing data privacy and cybersecurity, and explores the impact of AI on knowledge management and innovation processes in engineering. In the healthcare sector, the integration of AI raises critical ethical questions regarding data privacy and security, necessitating robust solutions to safeguard sensitive information. Blockchain technology offers a promising framework for secure data sharing and management, addressing concerns related to cybersecurity and compliance with legal standards such as ISO 27001 and general data protection regulations. In parallel, AI's influence on knowledge management and innovation in engineering is significant, transforming how information is managed and utilized to drive technological progress.

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Book



3D Printing of Sensors, Actuators, and Antennas for Low-Cost Product Manufacturing

Edited By Rupinder Singh (/search?contributorName=Rupinder Singh&contributorRole=editor&redirectFromPDP=true&context=ubx), Balwinder Singh Dhaliwal (/search?contributorName=Balwinder Singh Dhaliwal&contributorRole=editor&redirectFromPDP=true&context=ubx), Shyam Sundar Pattnaik (/search?contributorName=Shyam Sundar Pattnaik&contributorRole=editor&redirectFromPDP=true&context=ubx)

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ABSTRACT

This book discusses the 3D printing of sensors, actuators, and antennas and illustrates how manufacturers can create smart materials that can be effectively used to prepare low-cost products. The book also includes how to select the appropriate process for your manufacturing needs.

3D Printing of Sensors, Actuators, and Antennas for Low-Cost Product Manufacturing offers the most recent developments in 3D printing of sensors, actuators, and antennas for low-cost product manufacturing; the book highlights some of the commercially available low-cost 3D printing processes that have higher efficiency and accuracy. Fundamental principles and working methodologies are presented with a critical review of the past work involved and current trends with future predictions. It covers composite and polymeric materials widely used and specifically focuses on low-cost elements. Recent breakthroughs and advantages in product manufacturing when printing smart materials are also discussed.

Manufacturing engineers, product designers, manufacturing industries, as well as graduate students, and research scholars will find this book very useful for their work and studies.

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NATIONAL EDUCATION POLICY 2020: UNDERSTANDING & WAY FORWARD

Edited by

**DR. PRIYANKA KUMARI
DR. PRATIBHA KUMARI SINGH**



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Transforming Education Through Digitization & ICT Optimization

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SYNERGY OF AI AND FINTECH IN THE DIGITAL GIG ECONOMY



Edited By Alex Khang, Babasaheb Jadhav,
Vugar Abdullayev Hajimahmud,
and Ipseeta Satpathy



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22 A Localized Manpower Service App for On-Demand Labor

Bridging Gaps in Accessibility and Efficiency

Ankit Sharma, Vinay Malhotra, and Ashima Mehta

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22.1 INTRODUCTION

The evolution of technology has undeniably transformed the way we work and seek services. In this dynamic landscape, on-demand staffing apps have emerged as key players, connecting businesses with the workforce they need at the touch of a button. However, the existing on-demand staffing solutions often fall short when it comes to addressing the unique challenges associated with sourcing on-demand labor within local communities.

In the modern era, the gig economy and the rise of freelance work have reshaped traditional employment models. On-demand staffing apps have become synonymous with convenience, providing businesses and individuals with immediate access to a pool of diverse talent. Whether it's hiring a handyman, a driver, or a graphic designer, these platforms have streamlined the process, offering a level of flexibility and efficiency previously unseen.

However, as the gig economy continues to thrive, the limitations of existing on-demand staffing apps have become increasingly apparent, particularly when it comes to catering to the specific needs of local communities. The one-size-fits-all approach that works well on a national or global scale often lacks the granularity needed to address the nuanced challenges of localized tasks.

One of the critical shortcomings is the lack of focused localization. Many existing platforms operate on a broad scale, connecting users with service providers across regions, but struggle to provide services tailored to the unique demands of individual communities. The localized nature of certain tasks, such as home repairs, plumbing, or even event staffing, requires a more intimate understanding of local dynamics and preferences.

Moreover, the disruption in project continuity poses a significant challenge for businesses relying on on-demand labor. Workforce gaps can occur unexpectedly, leading to project delays and financial implications. Existing apps, designed for broader markets, often face difficulties in providing immediate replacements to address these disruptions, impacting project timelines and overall productivity (Khang & Alotaibi, 2024).

22.2 CHALLENGES IN EXISTING LABOR MARKETS

Local projects, whether large-scale construction endeavors or minor household repairs, often face disruptions due to sudden workforce gaps. These gaps can arise from unforeseen circumstances such as a worker falling ill, unexpected resignations, or the need for additional hands during peak project periods. The fluid and unpredictable nature of labor demands in local projects underscores the importance of having a reliable and efficient system to address immediate staffing needs.

The existing on-demand staffing apps, while proficient in offering general solutions across various industries, lack the specificity required to cater to the immediate needs of local communities. These platforms, designed for broader markets, often struggle to provide targeted and timely replacements for specific tasks. The absence of a localized focus hinders their ability to understand the unique dynamics of local projects, leading to delays and disruptions that can have cascading effects on project timelines and budgets. The need for a solution that can seamlessly integrate with the intricacies of local labor demands becomes evident in the face of these challenges (Khang & Hayatmandi, 2024).

22.3 INSPIRATION FROM SUCCESS STORIES

Inspired by the success of platforms like UrbanClap, which have demonstrated the potential for technology to connect individuals with skilled local service providers, this research delves into the development and implementation of a groundbreaking localized manpower service app. The objective is not merely to create another on-demand staffing platform but to design a tool tailored to the intricacies of local labor markets (Khang & Alotaibi, 2024a, 2024b).

22.4 COMPARING EXISTING ON-DEMAND STAFFING APPS

Before delving into the technical and socioeconomic aspects of the proposed app, it is crucial to contextualize its unique features by comparing them with existing on-demand staffing apps. Platforms such as Justwork, Hiver, Upwork, Taskribbit, and Thumbtack offer versatile solutions in various industries, demonstrating the scalability of on-demand staffing. However, a key distinction lies in the localized focus of the proposed app, aiming to serve the immediate needs of specific communities.

- **Focus Area:**
 - Existing On-Demand Staffing Apps: General on-demand staffing across industries.
 - Proposed Localized Manpower Service App: Localized on-demand labor within specific communities.
- **Primary Industries Served:**
 - Existing On-Demand Staffing Apps: Hospitality, warehousing, sales, admin, creative, etc.
 - Proposed Localized Manpower Service App: Various tasks within local communities.
- **Geographical Presence:**
 - Existing On-Demand Staffing Apps: 40+ markets across the USA and Canada.
 - Proposed Localized Manpower Service App: Specific focus on local communities.
- **Worker Screening Process:**
 - Existing On-Demand Staffing Apps: Rigorous screening process for reliability.
 - Proposed Localized Manpower Service App: Not specified, but emphasis on skilled local workers.
- **Types of Tasks Covered:**
 - Existing On-Demand Staffing Apps: Varied, depending on the app (e.g., home services, IT).
 - Proposed Localized Manpower Service App: Replacement labor for ongoing projects, individual tasks.
- **Platform Scalability:**
 - Existing On-Demand Staffing Apps: Designed for scalability across different industries.
 - Proposed Localized Manpower Service App: Emphasis on localized scalability and efficiency.
- **Worker Wage Approach:**
 - Existing On-Demand Staffing Apps: Not specified.



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ADVANCES IN AI FOR BIOMEDICAL INSTRUMENTATION, ELECTRONICS AND COMPUTING

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Vibhav Sachan, Shahid Malik, Ruchita Gautam
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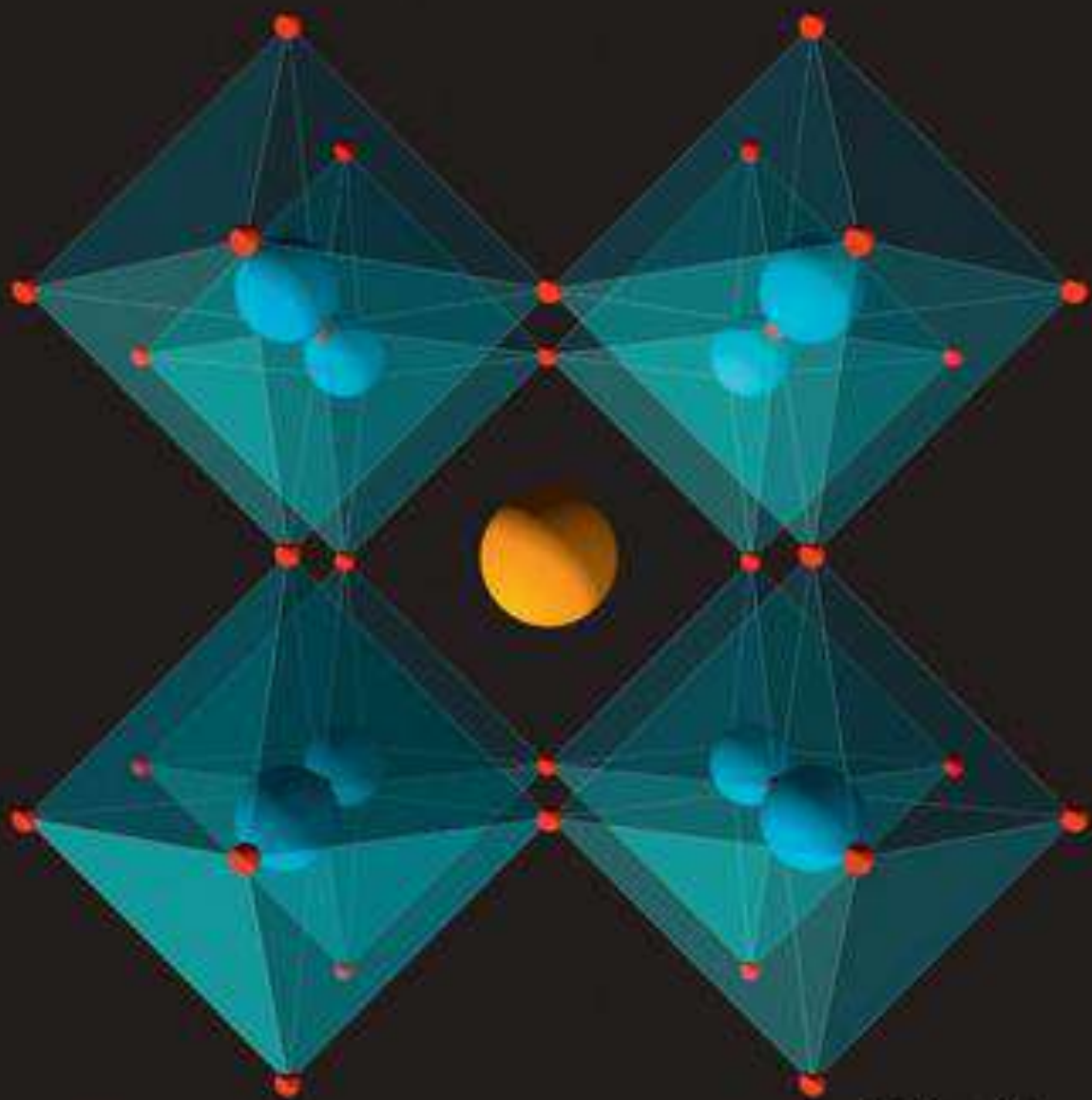
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Low-Dimensional Halide Perovskites

Structure, Synthesis, and Applications



Edited by
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A fuzzy logic design for self-driving vehicle to avoid obstacles

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1 Introduction

A self-driving vehicle (SDV) is capable of observing its surroundings and steering without taking input from human effort. On the basis of observed data, the vehicle mimics human nature to avoid obstacle. However, to avoid obstacle successfully, a SDV gathers the data of its surroundings through cameras and sensors, thereby combining the collected data, setup an environment model to instruct command for decision making and therefore perceive obstacle avoidance [1]. In general, the obstacle avoidance plan for SDV has been implemented in Fig. 1. This includes surrounding environment, detecting obstacle, lane planning, and vehicle control execution.

SDV consists of in-built hardware to identify the obstacles around it, gather the information such as corresponding distance, obstacle images as well as angular positions from obstacles and process the obtained information to take the decision in real-time scenario. Finally, it is instructed to the vehicle to modify the vehicle speed including direction to avoid obstacles.

The main task of the SDV is to make sure that to avoid an obstacle or to overtake moving obstacle carefully. To avoid collision, SDV has to keep a nominal distance from the obstacle from the front, left, and right sides which changes based on the speed of SDV. Because of the nominal distance, SDV has enough time to make decision either to stop or to modify steering angle to avoid obstacle. SDV could overtake safely if any obstacle suddenly stops in front of it [2]. One more task is that obstacles are of different sizes, and it is very challenging to discover before overtaking. The proposed technique is sufficiently powerful that SDV goes near the obstacle, change the lane if required, and get back to the lane after the obstacle is crossed.

In this chapter, a trained convolutional neural network (CNN) is used. Initially, a deep neural network trained a prototype to steer automatically. Based on the trained CNN, images are clipped and road signs are recognized.

Furthermore, the fuzzy logic controller has been used to become capable to mimic human decision based on available data. The fuzzy inference system makes decisions

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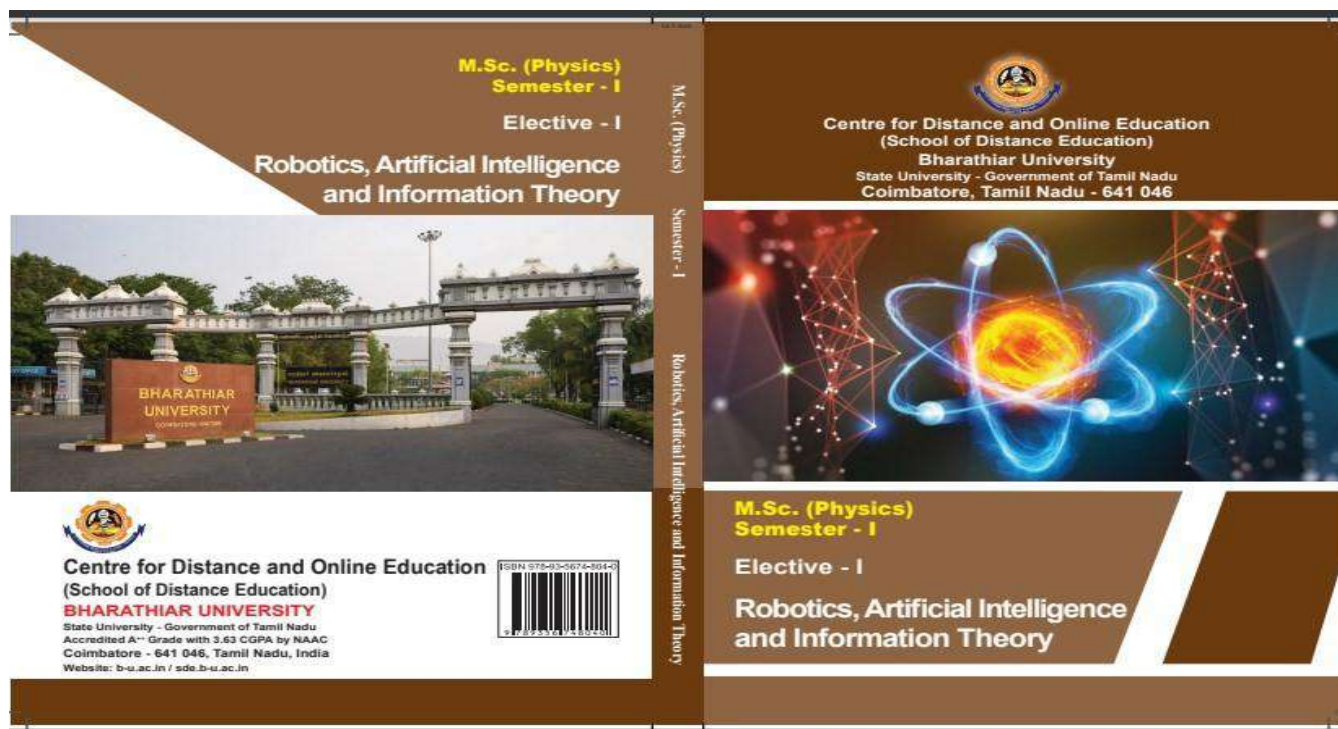
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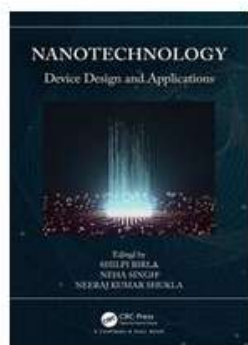
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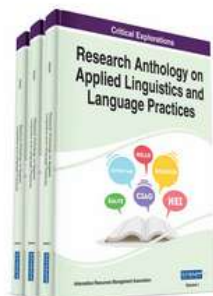
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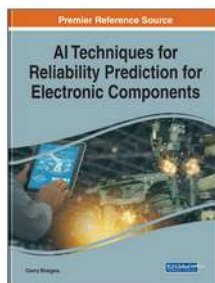
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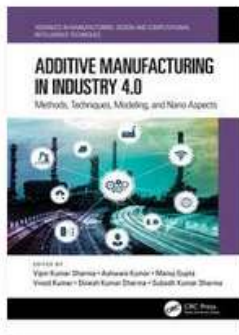
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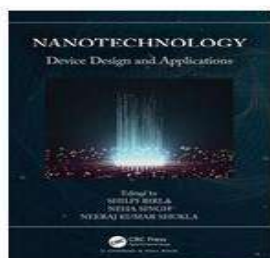
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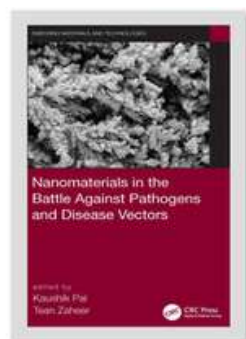
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Jamilur R. Ansari¹, Sara Mohamed Hegazy², Mohammad Talal Houkan^{2,3},
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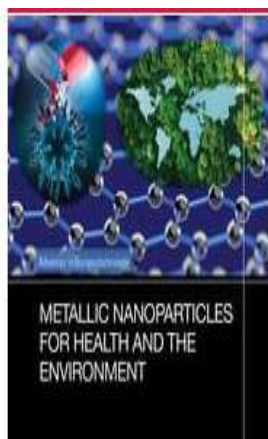
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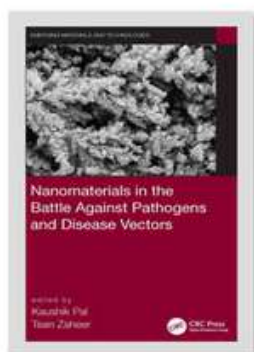
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