



Embracing Industry 4.0

Dr. Sandeep Kumar
Dr. Ajay Kumar
Dr. Pushpa Rani

Embracing Industry 4.0

Dr. Sandeep Kumar
Dr. Ajay Kumar
Dr. Pushpa Rani



Paramount Book Distributors
Delhi Visakhapatnam

PARAMOUNT BOOK DISTRIBUTORS

B-61/E-1, Gali No. 14, Jagatpuri Ext.

Shahdara, Delhi-110093

Ph.: 9868320502, 8247897557

09030046333,

E-mail: Pbookdistributors@Gmail.com

Branch Office:

Office # 28-8-3, 1st Floor

Opp : Sri Venkateswara Theatre Out Gate

Suryabagh, Visakhapatnam - 20

Embracing Industry 4.0

© Authors

First Edition 2024

ISBN 978-81-980386-7-8

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by means, electronic, mechanical, photo copying, recording or otherwise, without the prior permission of the publisher.

PRINTED IN INDIA

Published by Paramount Book Distributors and Printed at
Global Printers, Delhi.

Contents

<i>Preface</i>	<i>v</i>
1. Revolutionizing Pet Care: The Evolution and Impact of Smart Pet Feeders	1
<i>Dr. Ajay Kumar</i>	
2. Revolutionizing Water Safety with Advanced Quality Monitoring Systems	7
<i>Dr. Sandeep Kumar</i>	
3. Advancing Mobility with Safety Monitoring Systems for Manual Wheelchairs	13
<i>Dr. Pushpa Rani</i>	
4. Innovating Home Control with Gesture-Controlled Contactless Switches	19
<i>Ms. Rajni Bansal</i>	
5. Innovating Emotional Self-Care with Automatic Emotion Journals	25
<i>Ms. Shruti Sharma & Mr. Bal Krishna Mishra</i>	
6. Revolutionizing Crypto Trading with Crypto Currency Alert Systems	31
<i>Dr. Preeti Jindal</i>	
7. The Rise of Night Patrol Robots in Modern Security	37
<i>Ms. Sonia Batra</i>	
8. The Emergence of Smart Banking Systems	43
<i>Dr. Bharat Kumar & Ms. Chesta Agarwal</i>	
9. Innovations in Prison Security: The Role of Monitoring and Alerting Systems	49
<i>Dr. Nagaraja Murthy Hl & Ms. Vandana</i>	
10. The Evolution and Impact of Customized Gaming Controllers	55
<i>Ms. Vaishali Prasad & Dr. Sanjeev Manchanda</i>	

11. **Virtual Reality: Transforming Architecture through Immersive Design** 61
Ms. Neha Jain & Dr. Deepak Sonker
12. **Navigating the Realms of Escapism and Virtual Reality: Opportunities and Challenges** 65
Ms. Payal Aggarwal & Dr. Vishal Khatri
13. **Strategic Analysis of Developing a New Rating System for Virtual Reality Gaming** 70
Ms Anisha
14. **The Dual Edges of Virtual Reality: Benefits and Risks** 75
Mr. Abhishek Kr. Upadhyay & Ms. Priyanka Prajapat
15. **Exploring Real and Virtual Relationships through Mobile Augmented Reality Applications** 81
Dr. Pushpa & Dr. Suhail Ahtesham
16. **Can Virtual Reality Kill? Examining the Potential Risks and Consequences** 87
Dr. Manish Jain & Mr. Kapil Bhardwaj
17. **Cognitive Psychology and Virtual Reality Systems: Bridging Minds and Machines** 92
Ms. Alka Batra & Dr. Jyoti Jain
18. **Computer Science and Virtual Reality: Convergence of Technology and Innovation** 97
Ms. Bharti Aggarwal & Dr. Nupur Chaturvedi
19. **Development of Virtual Reality Technology in the Aspect of Educational Applications** 103
Ms. Arpita Tripathi & Mr. Deepak Sharma
20. **Distinguishing Augmented Reality from Virtual Reality: A Comparative Analysis** 109
Dr. Anshu Arora & Dr. Ram Garg
21. **Enhancing Learning through Virtual Reality: A New Frontier in Education** 115
Dr. Garima Jain & Dr. Arti Bajaj
22. **Navigating the Digital Frontier: Humanity's Journey with Virtual Reality** 120
Dr. Manish Sharma & Dr. Jitender Rai

23. **Smart VR: Transforming Mathematics Education through Virtual Reality** 124
Ms. Geeta Rani & Dr. Princi Gupta
24. **Integrating Simulation and Virtual Reality into Sport Management Education** 128
Ms. Mansi Jaiswal & Ms. Bhawana Rathore
25. **Enhancing Sports Management Education: Integrating Virtual Reality and Traditional Simulation** 132
Dr. Nupur Chaturvedi & Dr. Nidhi Arora
26. **SWOT Analysis of LEGO's Product Integration with Virtual Reality** 136
Dr. Manisha Sharma & Ms. Amarpreet Kaur
27. **Integrating Robotics and Artificial Intelligence in Organizations** 140
Prof. Renu Pareek & Dr. Shambhu Sharan Gupta
28. **Forecasting Augmented Reality and Virtual Reality Markets: Opportunities and Trends in the U.S.** 145
Dr. Usha Chauhan & Dr. Chetan Sharma
29. **Leveraging Virtual Reality to Create Educational Games for Middle School Science Classrooms** 149
Dr. Sheena Kumari & Ms. Hema Singh
30. **The Impact of Robotics on Employment: Will Robots Replace Human Jobs?** 153
Dr. Joohi Chaturvedi & Ms. Anisa
31. **Robots and Artificial Intelligence: Convergence and Impact** 157
Prof. Ruchi Goyal & Ms. Manisha Sharma
32. **The Future of Work: How Robots and AI Are Shaping Human Roles** 161
Ms. Neelima Choudhary & Ms. Monika Agrawal
33. **Robots in Daily Life: Transforming Everyday Tasks** 165
Ms. Shreya Chauhan
34. **Robots' Impact on Employment: Opportunities and Challenges for the Future** 169
Ms. Shraddha Jain & Ms. Vandana Dabass

35. **Characteristics of Robotics: Understanding the Core Attributes** 173
Ms. Priya Anwesha
36. **The Role of Robots in Advancing Computer Science** 177
Dr. Sweta Bakshi & Ms. Geetika
37. **Robots and their Influence on Unemployment Trends** 181
Dr. Sandhya Bindal
38. **Navigating Humanity's Role in a Robotic Future** 185
Dr. Garima Singh & Dr. Prem Singh
39. **The Robot Revolution: Transformations in Contemporary Society** 189
Dr. Nivedita & Dr. Israr Husain
40. **Evaluating the Impact of Robotics Development: Benefits and Challenges** 194
Dr. Amit Kumar & Dr. Neeraj Kumar
41. **Imagineering Myths about Virtual Reality** 199
Ms. Geetanshi
42. **Virtual Reality Industry Analysis** 204
Dr. Vinesh Kumar & Dr. Vinay Kumar Nasa
43. **Virtual Reality in Construction** 210
Dr. Rajeshwar Ram & Dr. Ashutosh Bajpai
44. **Virtual Reality's Benefits and Usages in Concurrent Engineering** 215
Dr. Jaipal Gangwar & Ms. Aparna Vats
45. **Virtual Reality and Its Potential to Become the Greatest Technological Advancement** 221
Dr. Brijesh Kumar Agarwal & Ms. Divya Gautam
46. **Lucid Dreams as the First Virtual Reality** 227
Prof. Krishan Avatar Goyal & Dr. Anmol Arora
47. **Virtual Reality Technology and Society** 230
Dr. Shalini Devi & Dr. Nidhi Aggarwal
48. **Virtual Reality in Marketing: Definition, Theory and Practice** 235
Dr. Rajeev Kaur & Dr. Shalini Gupta
49. **Applying Virtual Reality in Tourism** 241
Dr. Nitu Rana & Ms. Anjali Jindal

50. **Augmented Reality & Virtual Reality Industry Forecast and Analysis 2030** 247
Dr. Ritesh Gupta & Dr. Sachin Sabharwal
51. **Components Driving Virtual Reality Today and Beyond** 253
Dr. Sunil Gupta & Mr. Mohit Tiwari
52. **Data Correlation-Aware Resource Management in Wireless Virtual Reality (VR)** 258
Dr. Deepak Kumar & Dr. Rahul Sharma
53. **Gaming to Health Care: Using Virtual Reality in Physical Rehabilitation** 264
Dr. Anil Kumar Mittal & Ms Jyoti Gupta
54. **Smartphones and Virtual Reality in 10 Years** 270
Ms Anushree Yadav & Dr. Rubeena Bano
55. **The Evolution of Art in Virtual Reality** 276
Dr. Jyoti Meratwal & Mr. Mayank Arora
56. **Virtual Reality: The Real-Life Implications of Raising a Virtual Child** 280
Mr. Ubaid Ur Rahman & Ms. Esha Rana
57. **Virtual Reality: Social Media Shaping the Government-Citizen Relation** 284
Mr. Shashi Kumar & Ms. Shalini Guliani
58. **IoT & Smart Traffic Control Systems** 288
Dr. Ritu Dixit & Mr. Nitin Yadav
59. **IoT & Human Face Detection Systems** 293
Dr. Poonam Rajharia & Mr. Aashish Kumar
60. **IoT & Control of Pest and Disease in Plants** 298
Mr. Lokesh Tilwani & Dr. Vandana Raghava
61. **Agricultural Crop Yield Prediction** 304
Ms. Sonali Prajapati & Ms. Aastha
62. **IoT & Pollution Monitoring System** 309
Dr. Pallavi Mathur & Mr. Rahul Tripathi
63. **IoT & Intelligent Home Automation Systems** 314
Prof. Sandeep Naga & Ms. Ekta Gupta

64. **Virtual Reality Ever Be Implemented in Routine Clinical Settings** 320
Lijy Iijit Idicula & Mr. Anuj Nanda
65. **Virtual Reality or Augmented Reality: What is More Attractive?** 323
Dr. Nimesh Gupta & Mr. Amit Sharma
66. **Virtual Reality: How it Works** 327
Mr. Abhishek Upadhyay
67. **Is Virtual Reality Dangerous?** 331
Dr. Sweta Bakshi & Dr. Anamika
68. **The Risks of Virtual Reality** 335
Dr. Monika Pawar
69. **Future of Virtual Reality in Education** 339
Ms. Saina & Ms. Karishma
70. **Virtual Reality Devices Will Change Our World** 344
Dr. Nitu Agarwal
71. **Can Virtual Reality Optimize Education?** 349
Ms. Aashima Sharma & Dr. Arun Bhatia
72. **How Virtual Reality Affects Our Lives** 353
Dr. Chaitali Bhattacharya
73. **Will Virtual Reality Eventually Replace Our Real Reality?** 357
Dr. Devesh Kumar & Dr. Manali Takkar
74. **Full-Sensory Virtual Reality** 361
Dr. Sweta Bakshi & Ms Komal Gangi
75. **The Need to Develop Virtual Reality Games** 365
Dr. Sandhya Bindal
76. **Medical Applications of Virtual Reality** 370
Dr. Ajay Kumar & Dr. Kirti Miglani
77. **Coding Languages Required for Virtual Reality** 375
Dr. Kanika Gupta
78. **Pros and Cons of Virtual Reality** 379
Dr. Niranjana Kumar
79. **Virtual Reality Changing Advertising** 383
Dr. Shivendu Kumar Rai

80. **Mobile Robots: Impact on Supply Chain Management** 388
(xii)
Dr. Madhavendra Nath Jha
81. **Drawing 3D Objects with Use of Robotic Arm** 391
Dr. Archana Dixit
82. **Robotic Process Automation Implementation** 395
Dr. Surbhi Jain
83. **Exploring the Capabilities and Potential of Soft Robotics** 398
Dr. Ritwik Sahai Bisariya & Mr. Ketan Kumar Kataria
84. **Robotics Can Transform Our Daily Lives** 401
Dr. Monisha
85. **Robotic Skill Acquisition via Instruction Augmentation with Vision-Language Models** 405
Dr. Pooja Sharma
86. **CLARA - Classifying and Disambiguating User Commands for Reliable Interactive Robotic Agents** 409
Dr. Sheenu Arora & Dr. Jagriti Basera
87. **Robotics and Automation** 413
Ms. Arnima Pathak & Dr. Rajnesh Kumar Pandey
88. **Disseminating Collaborative Robotics and Artificial Intelligence** 418
Mr. Mayank Arora & Dr. Shaheen Bano
89. **Enhancing Student Learning in Artificial Intelligence Using Robotics** 421
Dr. Sandeep Kumar & Dr. Bhoopendra Bharti
90. **The Dual Edge of Virtual Reality** 425
Ms. Sania
91. **The Link Between Industry 4.0 and Lean Manufacturing** 429
Mr. Piyush Kumar Jha & Ms. Monika Agrawal
92. **Virtual Reality Will Change Our World** 435
Ms. Meenakshi Azad
93. **Sensing Smart and Sustainable Product Development** 440
Dr. Sandeep Kumar & Dr. Urviza

ABOUT THE AUTHOR

Dr. Sandeep Kumar at present is Professor in Deptt. of Management at Tecnia Institute of Advanced Studies, Delhi. He has 27 years of teaching and industrial experience at various levels. He has authored a number of papers published in different National and International Journals and also presented papers at various Conferences. He has authored 25 books in management and allied subject. He is associated with I.C.MAI, I.C.S.I. & I.C.A.I. His area of interest is Marketing Management, Operations Research, Business Statistics, Human Resource Management and Research Methodology.

Dr. Ajay Kumar at present is Director at Tecnia Institute of Advanced Studies, affiliated to GGSIP University, Delhi. He has 28 Years of teaching and industrial experience at various levels including Head of Institution at MRDAV IMS Rohtak and IMT Faridabad of MDU Rohtak. He has conceptualized and convened more than 35 National and 12 International Conferences, 25 seminars, 30 workshops and 11 FDP's. He has contributed couple of papers published in National and International Journals. He actively involved in supervising of Ph.D. researchers. His areas of interest are Strategic Management, Consumer Behaviour and Advertising Management.

Dr. Pushpa Rani, at present working as HoD, Commerce Deptt. in Tecnia institute of Advanced Studies. She has Ph.D. in Management, MBA in Finance and Human Resource Management and M.com. She has more than 12 years of Professional experience in educational institutes. She has expertise in Financial Management, HRM, Marketing & Project Management. She has attended various conference and workshop of national/international repute. She has published 20 research papers in reputed national and international journals & Conference Proceeding.



Paramount Book Distributors

B-61/E-1, Gali No. 14, Jagatpuri Ext.
Shahdara, Delhi-110093

Ph.: 0891-6639247/6654633,

09030046333, 8247897557

E-mail: pbookdistributors@gmail.com

Branch Office:

Office # 28-8-3, 1st Floor

Opp : Sri Venkateswara Theatre Out Gate

Suryabagh, Visakhapatnam - 20

₹1995/-

ISBN 978-81-980386-7-8



9 788198 038678