

|                         |   |
|-------------------------|---|
| 1. Record Nr.           | UNINA9910676561303321   |
| Titolo                  | The smart cyber ecosystem for sustainable development // edited by Pardeep Kumar, Vishal Jain, Vasaki Ponnusamy   |
| Pubbl/distr/stampa      | Hoboken, NJ : , : John Wiley & Sons, Inc., , [2021]<br>©2021  |
| ISBN                    | 1-119-76166-2<br>1-119-76165-4<br>1-119-76167-0   |
| Descrizione fisica      | 1 online resource (480 pages)   |
| Disciplina              | 006.3   |
| Soggetti                | Artificial intelligence<br>Internet of things<br>Computer networks - Social aspects   |
| Lingua di pubblicazione | Inglese   |
| Formato                 | Materiale a stampa  |
| Livello bibliografico   | Monografia  |
| Nota di contenuto       | Cover -- Half-Title Page -- Series Page -- Title Page -- Copyright Page -- Contents -- Preface -- Part 1: INTERNET OF THINGS -- 1 Voyage of Internet of Things in the Ocean of Technology -- 1.1 Introduction -- 1.1.1 Characteristics of IoT -- 1.1.2 IoT Architecture -- 1.1.3 Merits and Demerits of IoT -- 1.2 Technological Evolution Toward IoT -- 1.3 IoT-Associated Technology -- 1.4 Interoperability in IoT -- 1.5 Programming Technologies in IoT -- 1.5.1 Arduino -- 1.5.2 Raspberry Pi -- 1.5.3 Python -- 1.6 IoT Applications -- Conclusion -- References<br>2 AI for Wireless Network Optimization: Challenges and Opportunities -- 2.1 Introduction to AI -- 2.2 Self-Organizing Networks -- 2.2.1 Operation Principle of Self-Organizing Networks -- 2.2.2 Self-Configuration -- 2.2.3 Self-Optimization -- 2.2.4 Self-Healing -- 2.2.5 Key Performance Indicators -- 2.2.6 SON Functions -- 2.3 Cognitive Networks -- 2.4 Introduction to Machine Learning -- 2.4.1 ML Types -- 2.4.2 Components of ML Algorithms -- 2.4.3 How do Machines Learn? -- 2.4.4 ML and Wireless Networks -- 2.5 Software-Defined Networks -- 2.5.1 SDN Architecture -- 2.5.2 The OpenFlow Protocol 2.5.3 SDN and ML -- 2.6 Cognitive Radio Networks -- 2.6.1 Sensing |

Methods -- 2.7 ML for Wireless Networks: Challenges and Solution Approaches -- 2.7.1 Cellular Networks -- 2.7.2 Wireless Local Area Networks -- 2.7.3 Cognitive Radio Networks -- References -- 3 An Overview on Internet of Things (IoT) Segments and Technologies -- 3.1 Introduction -- 3.2 Features of IoT -- 3.3 IoT Sensor Devices -- 3.4 IoT Architecture -- 3.5 Challenges and Issues in IoT -- 3.6 Future Opportunities in IoT -- 3.7 Discussion -- 3.8 Conclusion -- References -- 4 The Technological Shift: AI in Big Data and IoT  
4.1 Introduction -- 4.2 Artificial Intelligence -- 4.2.1 Machine Learning -- 4.2.2 Further Development in the Domain of Artificial Intelligence -- 4.2.3 Programming Languages for Artificial Intelligence -- 4.2.4 Outcomes of Artificial Intelligence -- 4.3 Big Data -- 4.3.1 Artificial Intelligence Methods for Big Data -- 4.3.2 Industry Perspective of Big Data -- 4.4 Internet of Things -- 4.4.1 Interconnection of IoT With AoT -- 4.4.2 Difference Between IIoT and IoT -- 4.4.3 Industrial Approach for IoT -- 4.5 Technical Shift in AI, Big Data, and IoT  
4.5.1 Industries Shifting to AI-Enabled Big Data Analytics -- 4.5.2 Industries Shifting to AI-Powered IoT Devices -- 4.5.3 Statistical Data of These Shifts -- 4.6 Conclusion -- References -- 5 IoT's Data Processing Using Spark -- 5.1 Introduction -- 5.2 Introduction to Apache Spark -- 5.2.1 Advantages of Apache Spark -- 5.2.2 Apache Spark's Components -- 5.3 Apache Hadoop MapReduce -- 5.3.1 Limitations of MapReduce -- 5.4 Resilient Distributed Dataset (RDD) -- 5.4.1 Features and Limitations of RDDs -- 5.5 DataFrames -- 5.6 Datasets -- 5.7 Introduction to Spark SQL -- 5.7.1 Spark SQL Architecture

---

## Sommario/riassunto

The Smart Cyber Ecosystem for Sustainable Development As the entire ecosystem is moving towards a sustainable goal, technology driven smart cyber system is the enabling factor to make this a success, and the current book documents how this can be attained. The cyber ecosystem consists of a huge number of different entities that work and interact with each other in a highly diversified manner. In this era, when the world is surrounded by many unseen challenges and when its population is increasing and resources are decreasing, scientists, researchers, academicians, industrialists, government agencies and other stakeholders are looking toward smart and intelligent cyber systems that can guarantee sustainable development for a better and healthier ecosystem. The main actors of this cyber ecosystem include the Internet of Things (IoT), artificial intelligence (AI), and the mechanisms providing cybersecurity. This book attempts to collect and publish innovative ideas, emerging trends, implementation experiences, and pertinent user cases for the purpose of serving mankind and societies with sustainable societal development. The 22 chapters of the book are divided into three sections: Section I deals with the Internet of Things, Section II focuses on artificial intelligence and especially its applications in healthcare, whereas Section III investigates the different cyber security mechanisms. Audience This book will attract researchers and graduate students working in the areas of artificial intelligence, blockchain, Internet of Things, information technology, as well as industrialists, practitioners, technology developers, entrepreneurs, and professionals who are interested in exploring, designing and implementing these technologies.

---