

1. Record Nr.	UNISA996549470303316
Titolo	Intelligent healthcare : infrastructure, algorithms and management // edited by Chinmay Chakraborty, Mohammad R. Khosravi
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2022] ©2022
ISBN	981-16-8150-3 981-16-8149-X
Descrizione fisica	1 online resource (493 pages)
Disciplina	060
Soggetti	Artificial intelligence - Medical applications Intel·ligència artificial en medicina Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Intro -- Preface -- Contents -- About the Editors -- Part I: Data Science in Intelligent Healthcare -- Chapter 1: Distributed and Big Health Data Processing for Remote and Ubiquitous Healthcare Services Using Blind Statistical Co... -- 1.1 Introduction -- 1.2 Blind and Content-Aware Adaptive Computing: Statistical Optimization of Image Reconstruction Filters -- 1.3 Statistical Directions on Unsupervised Medical Diagnosis -- 1.4 Conclusions -- References -- Chapter 2: Computer Techniques for Medical Image Classification: A Review -- 2.1 Introduction -- 2.1.1 Chapter Contribution -- 2.1.2 Organization of the Chapter -- 2.2 Image Modality -- 2.3 Image Preprocessing -- 2.3.1 Feature Extraction -- 2.3.2 Feature Selection -- 2.4 Image Segmentation -- 2.5 Image Classification Techniques -- 2.6 Conclusion and Future Direction -- References -- Chapter 3: Optimal Feature Selection for Computer-Aided Characterization of Tissues: Case Study of Mammograms -- 3.1 Introduction -- 3.2 Literature Review -- 3.2.1 ROI Extraction Techniques -- 3.2.2 Optimization Algorithms -- 3.2.3 Feature Extraction -- 3.2.4 Evaluation of CAD System -- 3.3 Methodology -- 3.4 Results and Discussions -- 3.5 Conclusion -- References -- Chapter 4: Breast Cancer Detection Using Particle Swarm

Optimization and Decision Tree Machine Learning Technique -- 4.1  
Introduction -- 4.2 Related Works -- 4.3 Methods and Materials --  
4.3.1 Dataset Description -- 4.3.2 Training and Testing Phase -- 4.3.3  
Feature Selection -- 4.3.4 PSO Feature Selection -- 4.3.5 Particle  
Swarm Optimization -- 4.3.6 Decision Tree -- 4.3.6.1 How Does the  
Decision Tree Work? -- 4.3.6.2 Proposed System -- 4.3.7 Performance  
Evaluation -- 4.4 Results and Discussion -- 4.4.1 Results -- 4.5  
Conclusion -- References -- Part II: AI in Healthcare.  
Chapter 5: Accountable, Responsible, Transparent Artificial Intelligence  
in Ambient Intelligence Systems for Healthcare -- 5.1 Introduction to  
Ambient Intelligence -- 5.1.1 What Is Aml? -- 5.1.2 Why Is Aml  
Important? -- 5.2 Applications of Aml in Healthcare -- 5.2.1 State-of-  
the-Art: A Case Study -- 5.3 Challenges and Opportunities -- 5.4  
Importance of Accountability, Reliability and Transparency (ART)of AI in  
Aml -- 5.4.1 Ethics and Accountability -- 5.4.2 Transparency -- 5.4.3  
Regulation and Control -- 5.4.4 Socioeconomic Impact -- 5.4.5 Design  
-- 5.4.6 Responsibility -- 5.4.7 ART and Aml -- 5.5 Advancements in  
ART Aml -- 5.6 Conclusion and Future Work -- References -- Chapter  
6: Intelligent Elderly People Fall Detection Based on Modified Deep  
Learning Deep Transfer Learning and IoT Using Ther... -- 6.1  
Introduction -- 6.2 Related Work -- 6.3 Proposed Methodology --  
6.3.1 Tracking -- 6.3.2 ShuffleNet -- 6.3.3 IoT Design -- 6.4  
Experimental Results -- 6.5 Conclusion -- References -- Chapter 7: An  
Analytic Approach to Diagnose Heart Stroke Using Supervised Machine  
Learning Techniques -- 7.1 Introduction -- 7.2 Literature Survey -- 7.3  
Machine Learning and It's Algorithms -- 7.3.1 Regression -- 7.3.2  
Classification -- 7.4 Generation of Machine Learning Models for a Given  
Dataset to Predict Heart Attack and a Comparative Analysis to Find  
which... -- 7.5 Dataset Collection -- 7.6 Data Pre-Processing -- 7.6.1  
Barplot (Figs. 7.9 and 7.10): -- 7.6.2 Heatmap -- 7.7 Comparative  
Analysis of the Model Responses -- 7.7.1 Comparative Analysis of  
Accuracy of all the Six Models -- 7.7.2 ROC Curve -- 7.8 Conclusion --  
References -- Chapter 8: A Predictive Analysis for Diagnosis of COVID-  
19, Pneumonia and Lung Cancer Using Deep Learning -- 8.1  
Introduction -- 8.2 Literature Survey -- 8.3 AI in Health Care Systems  
-- 8.4 Neural Networks.  
8.4.1 Convolutional Neural Networks (CNN) -- 8.4.1.1 Advance  
Architecture -- 8.4.2 VGG-16 -- 8.4.3 VGG-19 -- 8.4.4 VGG-16 vs  
VGG-19 -- 8.5 Result Analysis -- 8.5.1 Dataset Characteristics and  
Analysis -- 8.5.1.1 Dataset -- 8.5.1.2 Image Pre-processing -- 8.5.1.3  
Train-Test Split -- 8.5.1.4 Image Augmentation -- 8.5.2 Model  
Building and Analysis -- 8.5.2.1 Creating the Classifier Model Using  
VGG-16 -- 8.5.2.2 Fine Tuning -- 8.5.2.3 Evaluating the Model --  
8.5.3 Classification Report -- 8.5.3.1 F1 Score -- 8.5.3.2 Support --  
8.5.3.3 Confusion Matrix -- 8.5.3.4 Classification Accuracy -- 8.5.3.5  
Misclassification Rate -- 8.5.3.6 Precision -- 8.5.3.7 Recall -- 8.5.3.8  
F-Measure -- 8.5.4 Creating the Classifier Model Using VGG-19 --  
8.5.4.1 Fine Tuning -- 8.5.4.2 Evaluating the Model -- 8.5.4.3  
Classification Matrix -- 8.5.4.4 Confusion Matrix -- 8.6 Conclusion --  
References -- Part III: Privacy and Security in Healthcare -- Chapter 9:  
Internet of Things in the Healthcare Applications: Overview of Security  
and Privacy Issues -- 9.1 Introduction -- 9.1.1 The Security Attacks in  
IoT-Based Healthcare Applications -- 9.2 Security Requirements in IoT-  
Based Healthcare Applications -- 9.3 Security Solutions in IoT-Based  
Healthcare Applications -- 9.3.1 Fog Computing-Based Solutions --  
9.3.2 Software Defined Networking-Based Solutions -- 9.3.3  
Blockchain-Based Solutions -- 9.3.4 Lightweight Cryptography-Based  
Solutions -- 9.3.5 Artificial Intelligence-Based Solutions -- 9.3.6

Homomorphic and Searchable Encryption-Based Solutions -- 9.4  
Conclusion -- References -- Chapter 10: Secure and Privacy-Aware  
Intelligent Healthcare Systems: A Review -- 10.1 Introduction -- 10.1.1  
Objectives -- 10.1.2 Related Works -- 10.1.3 Contributions -- 10.2  
IoMT Communications -- 10.2.1 Body Area Network (BAN) -- 10.2.2  
IoMT Devices and Protocols -- 10.3 Various Concerns in IoMT.  
10.3.1 Security-Based Risks -- 10.3.2 Privacy-Based Risks -- 10.3.3  
Trust-Based Risks -- 10.3.4 Accuracy-Based Risks -- 10.4 Challenges  
in IoMT -- 10.4.1 Risks in IoMT -- 10.4.2 Various Attacks against IoMT  
-- 10.4.3 Features of Attacks -- 10.4.4 Various Challenges in IoMT --  
10.4.4.1 Privacy Attacks -- 10.4.4.2 Sociology Attacks -- 10.4.4.3  
Malicious Attacks -- 10.4.4.4 Hardware Attacks -- 10.5 Counter  
Measures of IoMT -- 10.5.1 Increasing Awareness -- 10.5.2  
Conducting Security Awareness Program -- 10.5.3 Organizing  
Technical Training -- 10.5.4 Increasing the Level of Education -- 10.6  
Establishing Procedures -- 10.6.1 Software Update -- 10.6.2 Setting  
Strong Enforcement Rules of Personal Device Regulations -- 10.6.3  
Training Consideration -- 10.7 Techniques to Guarantee IoMT Data and  
Systems Security -- 10.7.1 Facial Recognition -- 10.7.2 Retina Scan --  
10.7.3 Iris Identification -- 10.7.4 Authentication with Many Factors --  
10.7.5 To Reduce Vulnerability, Take the Following Counter Measures  
-- 10.7.6 Recommended Counter Measures to Guard Against Attacks  
-- 10.7.7 CSRF for Healthcare Domain Internet of Things (IoT) Devices  
-- 10.7.8 Management of Authentication and Identity -- 10.7.9  
Profiling and Access Control -- 10.7.10 Location of Storage -- 10.7.11  
Encryption -- 10.7.12 Intelligent Healthcare System -- 10.8 Conclusion  
and Future Scope -- References -- Chapter 11: Secure Data Transfer  
and Provenance for Distributed Healthcare -- 11.1 IoT and Distributed  
Healthcare Systems -- 11.2 Trustworthiness in Healthcare Systems --  
11.3 Challenges and Opportunities -- 11.3.1 Security -- 11.3.2 Privacy  
-- 11.3.3 Network Infrastructure -- 11.3.4 Edge Computing -- 11.3.5  
Federated Learning -- 11.4 Advances in Secure Data Transfer and  
Provenance for Distributed Healthcare -- 11.4.1 Exemplar State-of-  
the-Art IoMT -- 11.4.2 Analysis on Security.  
11.4.3 Analysis on Provenance -- 11.5 Discussion -- 11.6 Conclusion  
and Future Work -- References -- Chapter 12: Blockchain Technology  
in Healthcare: Use Cases Study -- 12.1 Introduction -- 12.2  
Fundamentals of Blockchain Technology -- 12.2.1 Blockchain  
Operations and Classifications -- 12.2.2 Smart Contracts and Ethereum  
Platform -- 12.2.3 Blockchain Applications -- 12.3 Blockchain for  
Smart Healthcare -- 12.4 Discussion and Solutions -- 12.5 Conclusion  
-- References -- Chapter 13: Integrating Artificial Intelligence and  
Blockchain for Enabling a Trusted Ecosystem for Healthcare Sector --  
13.1 Introduction -- 13.2 Background and Related Literature -- 13.2.1  
Artificial Intelligence in Healthcare -- 13.2.2 Blockchain in Healthcare  
-- 13.3 Artificial Intelligence and Blockchain for Building a Trusted  
Ecosystem for Healthcare -- 13.4 Experiments and Discussions -- 13.5  
Conclusions and Future Work -- References -- Part IV: Intelligent  
Healthcare Infrastructures -- Chapter 14: Internet of Medical Things  
(IoMT): Applications, Challenges, and Prospects in a Data-Driven  
Technology -- 14.1 Introduction -- 14.1.1 Chapter Contribution --  
14.1.2 Chapter Organization -- 14.2 Data-Driven for Internet of  
Medical Things Technology -- 14.3 The Internet of Medical Things  
Applications -- 14.4 Challenges of Internet of Medical Things -- 14.4.1  
Issues of Standardization -- 14.4.2 Challenges of Regulation -- 14.4.3  
Cost of Infrastructures -- 14.4.4 Security Vulnerabilities Issue --  
14.4.5 Existing Networks Strain -- 14.5 Prospects of Internet of  
Medical Things -- 14.6 Conclusion and Future Direction -- 14.6.1

Future Direction -- References -- Chapter 15: Healthcare Infrastructure  
in Future Smart Cities -- 15.1 Introduction -- 15.2 Major Challenges in  
Healthcare Systems -- 15.2.1 Future Smart Cities and Role of  
Healthcare -- 15.3 Technology and Healthcare System.  
15.4 Case Studies.

---