1. Record Nr. UNINA9910495239103321

Titolo	Impact of AI and data science in response to coronavirus pandemic / / edited by Sushruta Mishra [and four others]
Pubbl/distr/stampa	Singapore : , : Springer, , [2021] ©2021
ISBN	981-16-2786-X
Descrizione fisica	1 online resource (331 pages)
Collana	Algorithms for Intelligent Systems
Disciplina	006.31
Soggetti	Machine learning COVID-19 Pandemic, 2020- - Data processing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- Preface -- Contents -- Editors and Contributors -- 1 An Overview of Significant Role of Data Science and Its Associated Methodologies in COVID-19 Handling -- 1 Introduction -- 1.1 Purpose of the Study -- 1.2 Technologies Used -- 2 Role of AI to Identify, Track, and Forecast Coronavirus Outbreaks -- 2.1 Tracking -- 2.2 Forecast -- 3 Data Science Technologies in Diagnosis of Corona Virus -- 4 Potential Use of Robots and Drones to Sterilize, Food Delivery, and Perform Emergency Tasks -- 4.1 Used as a Disinfectant -- 4.2 Remote Delivery -- 4.3 Maintain Order -- 5 Drug Discovery and Pattern Matching of Protein Structure Using Machine Learning -- 6 Deep Neural Networks in Screening and Tracking of Coronavirus Affected Individuals -- 6.1 Case Study -- 7 Use of Chatbot to Share Information -- 7.1 How Does the Chatbot Works? -- 8 Symptom Analysis Using Machine Learning Approach -- 8.1 Case Study -- 9 Futuristic AI-Based Treatment Methods -- 10 Computer Vision to Detect Coronavirus Infection -- 10.1 CT Scans -- 10.2 X-Ray Imagery -- 10.3 Temperature Check -- 10.4 AI Models to Detect Mask-Wearing Detection to Developers -- 11 Using AI to Screen COVID-19 Patients -- 12 Opinion Mining and Sentimental Analysis for COVID Information Tracking -- 12.1 Case Study -- 13 Image Processing of COVID-19 Pictorial Samples -- 13.1 Case Study -- 14 Data Science Norms and Guidelines -- 15 Intelligent Predictive Frameworks for COVID-19 Diagnosis -- 15.1 Case

Study -- 16 Application for Big Data in Coronavirus Analysis -- 17 Integration of IOT and Cloud Computing in COVID-19 Detection and Diagnosis -- 17.1 Case Study -- 18 Limitations of Data Science Technologies -- 19 Conclusion -- References -- 2 Role of Artificial Intelligence in Forecast Analysis of COVID-19 Outbreak -- 1 Introduction -- 2 A Survey of AI Against COVID-19.
3 Role of Artificial Intelligence (AI) in Handling Pandemic -- 4 Artificial Intelligence in Identifying the COVID-19 Patients -- 5 AI in Tracking the Spread of the Virus -- 6 AI in Forecasting COVID-19 Cases -- 7 AI in Treatment COVID-19 Cases -- 8 Conclusion -- References -- 3 Application of Artificial Intelligence (AI) for the Effective Screening of COVID-19 -- 1 Introduction -- 2 AI-Based Recent Works for COVID-19 Screening -- 3 AI-Based System or Tools for COVID-19 Detection and Monitoring -- 3.1 AI-Based Screening Using Computerized Tomography (CT) Scans -- 3.2 AI-Based Screening Using Chest X-Rays -- 3.3 Case Study-Analyzing COVID-19 Cases with AI (It is a Case Extracted from Lunit Website [21]) -- 4 Other AI-Based Methods/Tools for COVID-19 Screening -- 4.1 AI-Powered Loss of Smell (Anosmia) and Loss of Taste (Ageusia) Tests -- 4.2 AI-Enabled Electrocardiogram (ECG) for COVID-19 -- 4.3 COVID-19 Screening Using Voice Samples with AI -- 4.4 COVID-19 Screening from Cough Sounds with AI -- 5 Summary -- References -- 4 Machine Learning Approach for Analyzing Symptoms Associated with COVID-19 Risk Factors -- 1 Introduction -- 2 Associated Symptoms with COVID-19 -- 3 Sample Background Study -- 4 Preprocessing Using Machine Learning -- 5 Classifiers -- 6 Use of Feature Engineering -- 6.1 Building the Optimal Model Using Backward Elimination Method -- 6.1.1 When all the 13 Symptoms were Present -- 6.1.2 When all 12 Symptoms are Present -- 6.1.3 When all 11 Symptoms are Present -- 6.1.4 When All 10 Symptoms are Present -- 7 Environmental Variables Utilization: -- 8 Performance Evaluation and Analysis -- 8.1 Precision -- 8.2 Recall -- 8.3 F1 Score -- 9 Analysis of Machine Learning Models After Implementation of the Algorithms -- 10 Conclusion -- References -- 5 Detection of COVID-19 Using Textual Clinical Data: A Machine Learning Approach.
1 Introduction to Corona Virus COVID-19 -- 2 Introduction to Machine Learning (ML) -- 3 Machine Learning and Disease Detection -- 4 How ML Can Be Used in Disease Detection -- 4.1 Data Collection -- 4.2 Data-Set Used -- 4.3 Data Preprocessing -- 4.4 Feature Selection -- 5 Machine Learning Algorithms -- 6 Traditional Machine Learning Algorithms -- 6.1 Logistic Regression -- 6.2 Multinomial Naive Bayes -- 6.3 Support Vector Machine -- 6.4 Decision Tree -- 7 Ensemble Machine Learning Algorithms -- 7.1 Bagging -- 7.2 Ada-Boost -- 7.3 Random Forest Classifier -- 7.4 Stochastic Gradient Boosting Algorithm -- 8 Classification of Textual Reports Using ML -- 9 Conclusion -- References -- 6 Application of Machine Learning Algorithms for Effective Determination of COVID-19 Clusters -- 1 Introduction -- 2 Characteristics of COVID-19 Infection -- 2.1 Asymptomatic Infection -- 2.2 Symptomatic Infection -- 3 Machine Learning -- 3.1 Decision Tree Classifier -- 3.2 Logistic Regression -- 3.3 Clustering -- 4 Conclusion -- References -- 7 A Deep Learning Application for Prediction of COVID-19 -- 1 Introduction -- 2 Proposed Model -- 2.1 Pre-processing -- 2.1.1 Normalization of Datasets -- 2.2 Handling of Imbalance Dataset -- 2.3 Analysis of Accident Dataset and Feature Extraction -- 2.3.1 XGBoost -- 2.3.2 Sparse Autoencoder -- 3 Performance and Result Analysis -- 4 Conclusion -- References -- 8 Application of Big Data in Analysis and Management of Coronavirus (COVID-19) -- 1 Introduction -- 2 Objective of the Paper -- 3 Motivation -- 4 Role of Big Data in Handling COVID-19 Crisis -- 5

Sources of Big Data -- 5.1 Social Data -- 5.2 Machine Data -- 5.3 Transactional Data -- 6 Examples of Successful Applications of Big Data in the Domain of Handling COVID-19 Crisis -- 6.1 Blue Dot -- 6.2 Geographic Information Systems (GIS).
7 Analysis of the Severity in Outbreak of Covid-19 in a Region -- 7.1 Infection Fatality Rate (IFR) -- 7.2 Case Fatality Rate (CFR) -- 8 Real-Time Scenario Considering the Outbreak -- 8.1 Methodology -- 8.1.1 Collection of Data -- 8.1.2 Statistical Analysis -- 8.2 Discussion -- 8.3 Results -- 8.3.1 General Characteristics of Asymptomatic Patients with Confirmed SARSCoV-2 Infection -- 8.3.2 Clinical Characteristics -- 8.4 Summary -- 9 Conclusion -- References -- 9 Sentiment Analysis of Twitter Data Related to COVID-19 -- 1 Introduction -- 2 Existing Work on Sentiment Analysis and also Application of Sentiment Analysis to Handle COVID-19 Crisis -- 2.1 Classification Methods -- 2.1.1 Linear Regression Model -- 2.1.2 Naive Bayes Classifier -- 2.1.3 Maximum Entropy -- 2.1.4 Support Vector Machine -- 2.1.5 Logistic Regression -- 2.1.6 K-Nearest Neighbor -- 3 Proposed Methodology and Description of Model -- 3.1 Data Collection -- 3.2 Data Collection Implementation -- 3.3 Data Pre-processing -- 3.3.1 Data Cleaning -- 3.3.2 Stemming -- 3.3.3 Lemmatization -- 3.3.4 Removal of Stop Words -- 3.3.5 Emotion -- 3.3.6 Sentiment Identification -- 3.3.7 Sentiment Analysis of COVID-19 Tweets Using Supervised Machine Learning Approaches -- 3.3.8 Sentiment Analysis of COVID-19 Tweets Using Ensemble Approaches -- 3.3.9 Sentiment Analysis of COVID-19 Tweets Using Lexicon-Based Approaches -- 4 Result and Analysis -- 5 Conclusion and Future Work -- References -- 10 IoT for COVID-19: A Descriptive Viewpoint -- 1 Introduction -- 2 Monitoring of COVID-19 -- 2.1 Personal Proximity Monitoring -- 2.2 My Space Monitoring -- 2.3 Quarantine Monitoring -- 3 Use of IoT in Face Mask Detection -- 3.1 Airport -- 3.2 Hospital -- 3.3 Office -- 4 COVID-19 Diagnosis Using IoT-Based Smart Glasses -- 5 IoT-Based Drones -- 6 Other Use Cases of IoT -- 7 Conclusion -- References.
11 Smart Technology Application for COVID-19 Detection, Control, Prediction and Analysis -- 1 Introduction -- 2 Some Technologies Used During COVID-19 -- 2.1 Wearable Devices -- 2.1.1 Oura Rings -- 2.1.2 WHOOP Bands -- 3 Remote Patient Monitoring Devices -- 3.1 Remote Devices for Patient Use -- 3.2 Babyscripts -- 3.3 Biofourmis -- 4 Ventilators -- 4.1 3D Printing Ventilators -- 4.2 Ventilators for Critical Care -- 5 Role of Robots for Fighting COVID -- 5.1 Violet, the Robot -- 5.2 Nuanced Care Robots -- 5.3 Nurse Robots -- 5.4 Chatbots -- 6 Using AI to Detect Coronavirus -- 6.1 BlueDot AI Technology -- 6.2 Using Artificial Intelligence(AI), CT Scan and X-Ray -- 7 Contactless Hand Sanitizers -- 8 Aarogya Setu Application -- 9 Proposed Methodology -- 10 Discussion and Future Work -- 11 Conclusion -- References -- 12 Impact of Artificial Intelligence and Internet of Things in Effective Handling of Coronavirus Crisis -- 1 AI in the Time of Coronavirus -- 2 AI Applications for COVID-19 -- 2.1 Early Detection and Diagnosis of the Infection -- 2.2 Monitoring of Treatment -- 2.3 Contact Tracing of the Individuals -- 2.4 Projection of Cases and Mortality -- 2.5 Drug and Vaccine Development -- 2.6 Reducing the Burden on Health Workers -- 2.7 Prevention from the Disease -- 2.8 Medical Claim Processing -- 2.9 Delivery of Medical Supplies Using Drones -- 2.9.1 Robots Sterilize, Deliver Food and Supplies and Perform Other Tasks -- 2.9.2 Protection Using Modern Fabric -- 3 AI-Enabled Rapid Diagnosis of Patients with COVID-19 -- 4 Coronavirus Drones and Robots -- 5 IoT in the Time of Coronavirus -- 6 IoT Applications to Fight COVID-19 -- 7 Internet of Things Powered Diagnosis and Treatment of COVID-19 -- 8 Detection and Diagnosis

System Using IoT-Based Smart Helmet -- References -- 13 Fight Against COVID-19 Pandemic Using Chat-Bots -- 1 Introduction. 2 Literature Survey.