

1. Record Nr.	UNINA9910735392003321
Titolo	3D imaging, multidimensional signal processing and deep learning : 3D images, graphics and information technologies. Volume 1 / / editors: Lakhmi C. Jain, [and three others]
Pubbl/distr/stampa	Singapore : , : Springer, , [2022] ©2022
ISBN	981-19-2448-1
Descrizione fisica	1 online resource (262 pages)
Collana	Smart innovation, systems, and technologies ; ; Volume 297
Disciplina	006.693
Soggetti	Three-dimensional imaging Deep learning (Machine learning) Signal processing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Intro -- Preface -- Contents -- About the Editors -- 1 Color Restoration of RGB-NIR Images in Low-Light Environment Using CycleGAN -- 1.1 Introduction -- 1.2 CycleGAN Structure -- 1.2.1 The Overall Structure -- 1.3 Objective Function -- 1.3.1 The Basic Objective Function of GANs -- 1.3.2 Objective Function of Cyclic Transformation Consistency -- 1.3.3 Total Objective Function of CycleGAN -- 1.4 Experiment and Evaluation -- 1.4.1 Image Data Set in Low-Light Environment -- 1.4.2 Training Method -- 1.5 Quantitative and Qualitative Evaluation -- 1.6 Conclusion and Discussion -- References -- 2 Dynamic Grey Wolf Optimization Algorithm Based on Quasi-Opposition Learning -- 2.1 Introduction -- 2.2 Grey Wolf Optimization Algorithm -- 2.3 Improved Grey Wolf Algorithm -- 2.3.1 Opposition-Based Learning (OBL) -- 2.3.2 Dynamic Search Strategy -- 2.3.3 Improved the Grey Wolf Algorithm to Optimize the Process -- 2.4 Numerical Experiment and Result Analysis -- 2.4.1 Influence of Improved Strategy on GWO -- 2.4.2 Compared with Other Swarm Intelligence Optimization Algorithms -- 2.5 Conclusion -- References -- 3 Image Recognition Methods Based on Deep Learning -- 3.1 Introduction -- 3.1.1 Overview of Image Recognition -- 3.1.2 Preprocessing in Image Recognition -- 3.1.3 Feature Extraction

in Image Recognition -- 3.2 Deep Learning Model for Image Recognition -- 3.2.1 Feedforward Neural Network (FNN) -- 3.2.2 Convolutional Neural Network (CNN) -- 3.2.3 Recursive Neural Network (RNN) -- 3.2.4 U-Net Convolutional Neural Network -- 3.2.5 Long Short-Term Memory Network -- 3.2.6 Auto-Encoder Neural Network -- 3.2.7 Generative Adversarial Network (GAN) -- 3.2.8 Deep Belief Network (DBN) -- 3.3 The Application of Deep Learning in Image Recognition -- 3.3.1 Face Recognition -- 3.3.2 Traffic Image Recognition -- 3.3.3 Medical Image Recognition.

3.4 Train a Convolutional Neural Network from a Small Data Set -- 3.4.1 Data Sorting and Network Building -- 3.4.2 Data Processing and Reading -- 3.4.3 Image Processing -- 3.5 Conclusion -- References -- 4 Longitudinal Structure Analysis and Segmentation Algorithm of Dongba Document -- 4.1 Overview of Dongba Hieroglyphics -- 4.2 Structure of Dongba Document Image -- 4.3 Preprocessing of Dongba Documents -- 4.4 Automatic Segmentation and Recognition of Columns -- 4.5 Experiment -- 4.6 Conclusion -- References -- 5 Overview of SAR Image Change Detection Based on Segmentation -- 5.1 Introduction -- 5.2 Traditional Image Change Detection Methods -- 5.2.1 Image Difference Method -- 5.2.2 Image Ratio Method -- 5.2.3 Correlation Coefficient Method -- 5.2.4 Image Regression Method -- 5.3 SAR Image Change Detection Method Based on Segmentation -- 5.4 Simulation Results -- 5.5 Summary and Expectation -- References -- 6 Full-Focus Imaging Detection of Ship Ultrasonic-Phased Array Based on Directivity Function -- 6.1 Introduction -- 6.2 Method -- 6.2.1 Principle Analysis -- 6.2.2 Full-Focusing Algorithm in Frequency-Wave Number Domain -- 6.3 Result Analysis -- 6.3.1 System Introduction -- 6.3.2 Test Experiment -- 6.4 Conclusion -- References -- 7 A Novel Space Division Rough Set Model for Feature Selection -- 7.1 Introduction -- 7.2 Related Work -- 7.3 Our Approach -- 7.4 Experiments -- 7.5 Conclusion -- References -- 8 Development of Mobile Food Recognition System Based on Deep Convolutional Network -- 8.1 Introduction -- 8.2 Related Work -- 8.2.1 Food Recognition Models -- 8.2.2 Mobile Food Recognition System -- 8.3 Methods -- 8.3.1 Deep Convolutional Neural Network -- 8.3.2 Training Food Recognition Models -- 8.3.3 Deploying the Recognition Application on Android Side -- 8.4 Experiment Results -- 8.4.1 "ChineseFood80" Dataset.

8.4.2 Train and Select Food Recognition Models -- 8.4.3 Food Recognition Application on Android Device -- 8.5 Conclusion -- References -- 9 Water Environmental Quality Assessment and Effect Prediction Based on Artificial Neural Network -- 9.1 Introduction of Artificial Neural Network Model for Water Environmental Quality Assessment -- 9.2 Prediction Model Based on Levenberg-Marquardt Optimization Algorithm -- 9.2.1 Time Series -- 9.2.2 Algorithm of Prediction Model -- 9.2.3 Defining the Grid Structure -- 9.2.4 Sample Selection and Training Methods -- 9.3 Predictive Analysis -- 9.4 Conclusion -- References -- 10 Network Intrusion Detection Based on Apriori-Kmeans Algorithm -- 10.1 Introduction -- 10.2 Research Status -- 10.3 Apriori-Kmeans Algorithm -- 10.4 Intrusion Detection Model Based on Apriori-Kmeans Algorithm -- 10.5 Simulation Experiment -- 10.6 Summary -- References -- 11 A Fast Heuristic k-means Algorithm Based on Nearest Neighbor Information -- 11.1 Introduction -- 11.1.1 Optimization of the Selection of Initial Centroids -- 11.1.2 Accelerate Approximate K-means -- 11.1.3 Accelerate Exact K-means -- 11.1.4 Our Contribution -- 11.2 A Heuristic K-means Algorithm -- 11.2.1 Narrow the Search Space of Sample Points -- 11.2.2 Reduce the Number of Sample Points for Reallocation -- 11.2.3

Algorithm Flow Chart -- 11.3 Experiments -- 11.4 Conclusion -- References -- 12 Global Analysis of Discrete SIR and SIS Systems -- 12.1 Introduction -- 12.2 Continuous Model -- 12.3 Discretization of Continuous Models -- 12.4 The Second Discrete Model -- 12.5 Stability Analysis -- 12.6 Globally Asymptotically Stable -- 12.7 Conclusion -- References -- 13 Image-Based Physics Rendering for 3D Surface Reconstruction: A Survey -- 13.1 Introduction -- 13.2 Research Status of 3D Reconstruction Based on Image -- 13.3 Image-Based 3D Surface Reconstruction.
13.3.1 Laser Scanning Method -- 13.3.2 Time-Of-Flight Method -- 13.3.3 Structured Light Method -- 13.3.4 Shape from Shading Method -- 13.3.5 Shape from Silhouettes Method -- 13.3.6 Shape-from-Motion Method -- 13.3.7 Shape-from-Texture Method -- 13.3.8 Shape-from-Focus Method -- 13.3.9 Photometric Stereo -- 13.4 Summary -- References -- 14 Insulator Detection Study Based on Improved Faster-RCNN -- 14.1 Introduction -- 14.2 Sample Expansion -- 14.3 Insulator Identification and Positioning -- 14.3.1 Faster RCNN Detection Principle -- 14.3.2 Improved RPN -- 14.3.3 Residual Networks (ResNet) -- 14.3.4 Multi-Scale Training -- 14.3.5 Comparison of Different Detection Methods -- 14.4 Detection of Defective Insulators -- 14.5 Improved Faster-RCNN -- 14.6 Experimental Verifications -- 14.6.1 Conduct a Comparative Experiment -- 14.6.2 Compare Experimental Results -- 14.7 Summary -- References -- 15 Citrus Positioning Method Based on Camera and Lidar Data Fusion -- 15.1 Introduction -- 15.2 Method -- 15.2.1 The Citrus Positioning Algorithm -- 15.2.2 Preliminary Positioning of Pixel Coordinates of Citrus -- 15.2.3 Camera and Lidar Joint Calibration -- 15.2.4 Camera and Lidar Data Fusion -- 15.2.5 Conversion of Citrus Pixel Coordinates to Three-Dimensional Space Coordinates -- 15.3 Experiments -- 15.3.1 Environment of System -- 15.3.2 Detection Effects of Citrus -- 15.3.3 The Results of Camera Internal Parameter Calibration -- 15.3.4 The Results of Camera and Lidar Joint Calibration -- 15.3.5 The Results of Citrus Positioning -- 15.4 Conclusion -- References -- 16 Comparative Analysis of Automatic Poetry Generation Systems Based on Different Recurrent Neural Networks -- 16.1 Introduction -- 16.2 Problem Formation -- 16.3 The Invariant Testbed -- 16.4 The Internal Logic of RNN Modules -- 16.5 Results -- 16.6 Analysis and Expectation -- References.
17 Grid False Data Intrusion Detection Method Based on Edge Computing and Federated Learning -- 17.1 Introduction -- 17.2 Research Status -- 17.3 Principles of False Data Injection Attacks -- 17.4 Design of Intrusion Detection Model Based on Edge Computing and Federated Learning -- 17.4.1 Edge Computing -- 17.4.2 Federated Learning -- 17.4.3 Framework Based on Edge Computing and Federated Learning -- 17.4.4 CNN-LSTM Joint Detection Model -- 17.5 Case Analysis -- 17.6 Summary -- References -- 18 Innovative Design of Traditional Arts and Crafts Based on 3D Digital Technology -- 18.1 Introduction -- 18.2 Application Steps -- 18.2.1 Preparation Period -- 18.2.2 Design Period -- 18.2.3 Optimization Period -- 18.3 Application Direction -- 18.3.1 Ceramic -- 18.4 Conclusion -- References -- 19 Research on the Simulation of Informationized Psychological Sand Table Based on 3D Scene -- 19.1 Introduction -- 19.2 Method -- 19.2.1 Design and Application -- 19.2.2 Hardware Design -- 19.2.3 Infrared Scanning Design -- 19.2.4 Software Design -- 19.3 Result Analysis -- 19.4 Conclusion -- References -- 20 Research on Graphic Design of Digital Media Art Based on Computer Aided Algorithm -- 20.1 Introduction -- 20.2 Method -- 20.2.1 Digital Media Art Graphic Design Content -- 20.2.2 Shape Interpolation --

20.3 Result Analysis -- 20.4 Conclusion -- References -- 21 Research on Visual Communication of Graphic Design Based on Machine Vision -- 21.1 Introduction -- 21.2 Method -- 21.2.1 Design Process -- 21.2.2 Visual Analysis -- 21.3 Result Analysis -- 21.4 Conclusion -- References -- 22 Research on the Adaptive Matching Mechanism of Graphic Design Elements Based on Visual Communication Technology -- 22.1 Introduction -- 22.2 Method -- 22.2.1 Hardware Design -- 22.2.2 Software Design -- 22.3 Result Analysis -- 22.4 Conclusion -- References.
23 Design of Intelligent Recognition English Translation Model Based on Improved Machine Translation Algorithm.
