

1. Record Nr.	UNISA996464443803316
Titolo	Biomedical engineering systems and technologies : 13th International Joint Conference, BIOSTEC 2020, Valletta, Malta, February 24-26, 2020, Revised selected papers / / Xuesong Ye [and six others], editors
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2021] ©2021
ISBN	3-030-72379-8
Descrizione fisica	1 online resource (xxiv, 612 pages) : illustrations
Collana	Communications in computer and information science ; ; 1400
Disciplina	610.28
Soggetti	Biomedical engineering Bioinformatics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Intro -- Preface -- Organization -- Contents -- Biomedical Electronics and Devices -- Uncertainty Modeling and Deep Learning Applied to Food Image Analysis -- 1 Introduction -- 2 Related Work -- 2.1 Food Recognition -- 2.2 Generative Adversarial Network -- 2.3 Uncertainty Modeling -- 3 Uncertainty-Aware GAN-Augmented Food Recognition -- 3.1 Hard Sample Discovery -- 3.2 Image Generation -- 3.3 Final Training -- 4 Validation -- 4.1 Dataset -- 4.2 Metric -- 4.3 Experimental Setup -- 4.4 Results -- 5 Conclusions -- References -- Novel Compact Robotic Flow Control Valve for Bioinspired Exosuit and Other Applications -- Abstract -- 1 Introduction -- 2 Previous Research -- 2.1 Humanoid Walking Robot: Modelling and Mechanics -- 2.2 HWR: Experiment -- 2.3 HWR: Results -- 2.4 Previous Research: Discussion -- 3 CRFC Valve -- 3.1 CRFC Valve: Methods -- 3.2 CRFC Valve: Experiments -- 3.3 CRFC Valve: Results -- 3.4 CRFC Valve: Similar Works -- 3.5 CRFC Valve: Discussion -- 4 Current Development for CRFC Valve Applications -- 4.1 Wearable Exosuit: Objectives -- 4.2 Oxygen Concentrators and Ventilators: Demand Due to Recent Events -- 5 Conclusions -- References -- Towards the Development and Validation of a Smartphone-Based Pupilometer for Neuro-Ophthalmological Diseases Screening -- 1 Introduction -- 2 Methods -- 2.1 Study Participants -- 2.2 Pupilometry System -- 2.3 Data

Processing -- 2.4 Chromatic Pupilometry Protocol and Preliminary Experiments -- 3 Results and Discussion -- 3.1 Study Participants -- 3.2 Data Processing Results and Discussion -- 3.3 Preliminary Pupilometry Results -- 4 Conclusion -- References -- Optical Spectroscopy Methods to Monitor Cells and Bacteria Concentrations and to Detect Contamination During Cell Culture: Application to the Fabrication of ATMPs -- Abstract -- 1 Introduction -- 2 Materials and Methods.

2.1 Lymphocytes and E. Coli Preparation -- 2.2 Experimental Set-Up -- 2.3 Color Based Analysis of Transmission Spectra -- 2.4 Analysis of Absorption Spectra -- 3 Experimental Results -- 3.1 Measuring Concentrations of Both Species with Colorimetric Description of Transmission Spectra -- 3.2 Measuring Concentrations with the Shapes of the Absorption Spectra -- 3.3 Monitoring Cell Concentrations and Detecting Contaminations: A New Approach -- 4 Discussion -- 4.1 Technical Aspects -- 4.2 Socio-Economic Impacts -- 5 Conclusion -- Acknowledgements -- References -- Non-invasive Optical Methods in Quantitative Minimal Erythema Dose Assessment in Vivo: Comparison of Preclinical and Clinical Data -- Abstract -- 1 Introduction -- 2 Materials and Methods -- 2.1 Animals and Ultraviolet Irradiation -- 2.2 Volunteers and Ultraviolet Irradiation -- 2.3 Optical Measurements and Data Processing -- 2.4 Morphology and Staining -- 2.5 Statistical Analysis -- 3 Results and Discussion -- 3.1 Preclinical Study -- 3.2 Clinical Study -- 4 Conclusions -- References -- Bioimaging -- Deep Learning for the Automated Feature Labelling of 3-Dimensional Imaged Placenta -- Abstract -- 1 Introduction -- 2 3-D Imaging of Placentae -- 2.1 Placenta -- 2.2 3-D Imaging -- 3 Deep Learning -- 3.1 ConvNets -- 3.2 U-Nets -- 4 Method -- 5 Single Cell Labelling -- 5.1 Fibroblast -- 5.2 Pericyte -- 6 Multi-cellular Structures -- 6.1 Endothelial Cells -- 6.2 Labelling the Unseen -- 7 Conclusion -- References -- Estimating the False Positive Prediction Rate in Automated Volumetric Measurements of Malignant Pleural Mesothelioma -- 1 Introduction -- 1.1 Tumour Measurement -- 1.2 Overview of Existing Measurement Tools -- 2 Method -- 2.1 Data -- 2.2 Cross-Validation -- 2.3 Algorithm -- 2.4 False Positive Rate Estimation -- 2.5 Experiments -- 3 Results -- 3.1 Inter-slice Consistency Processing.

3.2 Volumetric Agreement -- 3.3 Region Overlap (Dice Score) -- 3.4 False Positive Rate Estimation -- 4 Discussion -- 4.1 Critical Analysis -- 4.2 Future Work -- 5 Conclusion -- References -- Combining Registration Errors and Supervoxel Classification for Unsupervised Brain Anomaly Detection -- 1 Introduction -- 2 Iterative Spanning Forest (ISF) -- 2.1 Theoretical Background -- 2.2 The ISF Algorithm -- 3 Description of BADRESC -- 3.1 3D Image Preprocessing and Registration -- 3.2 Registration Error Computation -- 3.3 Supervoxel Segmentation -- 3.4 Feature Extraction and Classification -- 4 Experiments -- 4.1 Datasets -- 4.2 Baselines -- 4.3 Quality Metrics -- 5 Evaluation Results -- 6 Conclusion -- A Appendix -- References -- A Framework Based on Metabolic Networks and Biomedical Images Data to Discriminate Glioma Grades -- 1 Introduction -- 2 Evaluation Framework -- 2.1 Feature Sorting Methods -- 2.2 Selection of the Optimal NoF -- 2.3 Classifier Models -- 3 Experimental Results -- 3.1 Data -- 3.2 Performance Measures -- 3.3 Performance Results in SetU -- 3.4 Comparisons with Existing Classification Methods -- 3.5 Performance Results in Set2 -- 3.6 Analysis of the Selected Features -- 4 Discussion and Conclusion -- References -- Bioinformatics Models, Methods and Algorithms -- Efficient Algorithms for Co-folding of Multiple RNAs -- 1 Introduction -- 2 Inside Recursion -- 3 Outside

Recursion -- 4 Computing Qk,l in Cubic Time -- 5 Implementation -- 6
Benchmarking -- 7 Concentration Dependence -- 8 Spliceosomale
RNAs: A Showcase Applications -- 9 Concluding Remarks and Future
Challenges -- References -- Classification of Biochemical Pathway
Robustness with Neural Networks for Graphs -- 1 Introduction -- 2
Background -- 2.1 Petri Nets Modeling of Biochemical Pathways -- 2.2
Concentration Robustness -- 2.3 Deep Graph Networks -- 3 Methods.
3.1 Graph Preprocessing -- 3.2 Data Set -- 3.3 Model -- 4
Experiments -- 4.1 Deep Neural Network Implementation -- 4.2
Performance Evaluation -- 4.3 Results -- 4.4 Case Studies -- 5
Conclusions -- References -- Bio-inspired Systems and Signal
Processing -- The Extended i-NSS: An Intelligent EEG Tool for
Diagnosing and Managing Epilepsy -- 1 Introduction -- 2 The i-NSS
Project -- 3 Architectural Overview of the Extended i-NSS -- 3.1
Classification Branch -- 3.2 Compression Branch -- 4 Results and
Discussions -- 4.1 Dataset -- 4.2 Performance Metrics -- 4.3
Experiments on Classification -- 4.4 Experiments on Compression and
Summarization -- 5 Discussion and Future Prospects -- 6 Conclusion
-- References -- Idle State Detection with an Autoregressive Multiple
Model Probabilistic Framework in SSVEP-Based Brain-Computer
Interfaces -- 1 Introduction -- 2 Literature Review on Idle State
Detection in SSVEP-based BCIs -- 3 Methodology -- 3.1 Autoregressive
Multiple Modelling (AR-MM) Probabilistic Framework -- 3.2
Comparative Methods -- 4 Materials -- 5 Results -- 6 Discussion -- 7
Conclusion -- References -- Exploring Inertial Sensor Fusion Methods
for Direct Ergonomic Assessments -- 1 Introduction -- 2 Related Work
-- 3 Upper-Body Motion Tracker -- 3.1 Inertial Acquisition -- 3.2 Pre-
processing -- 3.3 Orientation Estimation -- 4 Experimental Overview
-- 5 Results -- 6 Conclusion -- References -- PDC-MI Method for EEG
Functional Connectivity Analysis -- 1 Introduction -- 2 Theory -- 2.1
Mutual Information -- 2.2 Partial Directed Coherence -- 2.3 Surrogate
for Hypothesis Test -- 3 Methodology -- 3.1 Applied Methodology --
3.2 Database for Study Case -- 4 Results -- 5 Discussion -- 6
Conclusions -- A Appendix -- References -- Comparison of Medical
Image Evaluations in Magnetic Resonance Cholangiopancreatography
Through Image J -- Abstract -- 1 Introduction.
2 Materials and Methods -- 2.1 MRCP Technique -- 2.2 Analysis of
Images -- 3 Results -- 4 Discussion -- 5 Conclusions --
Acknowledgements -- References -- Health Informatics -- Evaluating a
Comparing Deep Learning Architectures for Blood Glucose Prediction --
Abstract -- 1 Introduction -- 2 Background -- 2.1 MSF Strategies --
2.2 LSTM -- 2.3 CNNs -- 3 Related Work -- 4 Experimental Design --
4.1 Dataset, Performance Measurement and Statistical Tests -- 4.2
Experimental Process -- 5 Results and Discussion -- 5.1 Construction
of the CNN and LSTM Models -- 5.2 Evaluation of MSF Strategies for
the CNN and LSTM Models -- 5.3 Comparing the CNN and LSTM Models
-- 5.4 Discussion -- 6 Threats to Validity -- 6.1 Internal Validity -- 6.2
External Validity -- 6.3 Construct Validity -- 6.4 Statistical Validity -- 7
Conclusion and Future Work -- References -- Cognitive Internet of
Medical Things Architecture for Decision Support Tool to Detect Early
Sepsis Using Deep Learning -- 1 Introduction -- 2 Cognitive IoMT
Architecture for Early Sepsis Detection -- 3 EHR Data -- 3.1 Data
Selection -- 3.2 Sepsis Definition -- 3.3 Care Episode Representation
-- 3.4 Feature Selection -- 4 Methods -- 4.1 Generative Adversarial
Imputation Nets (GAIN) -- 4.2 RNN-LSTM Model -- 4.3 Experimental
Setup -- 4.4 Experiments -- 5 Results -- 5.1 Temporal Analysis -- 5.2
Earliness -- 5.3 Episode Sequence Length -- 6 Discussion -- 7
Conclusions -- References -- Interoperability Evaluation in Building

Automation and Health Smart Homes Using Tag-Based Semantic Frameworks -- 1 Introduction -- 2 Background and State of the Art -- 2.1 Engineering of Building Automation Systems and Health Smart Homes -- 2.2 Component and System Information Models -- 2.3 Tag-Based Semantic Frameworks -- 3 Semantic Annotation Framework -- 3.1 Semantic Data Models in HSH Context. 3.2 Summary of Initial Semantic Annotation Framework.
