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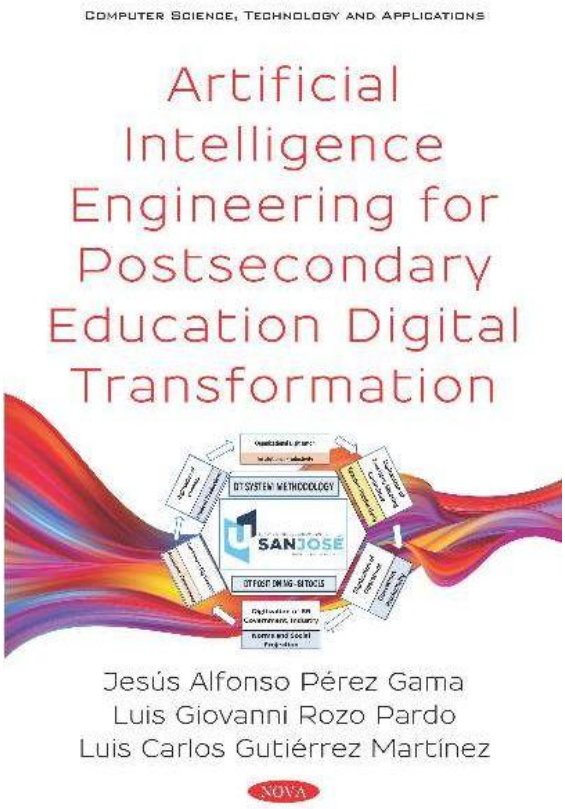
COMPUTER SCIENCE & TECHNOLOGY



TITLES PUBLISHED BY NOVA SCIENCE

· Computational Mathematics & Analysis · Computer Science, Technology & Applications
· Horizons in Computer Science · Physics Research & Technology

Contents

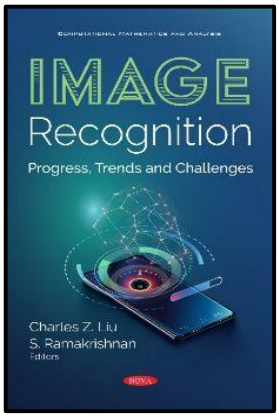


Image Recognition
Progress, Trends and Challenges

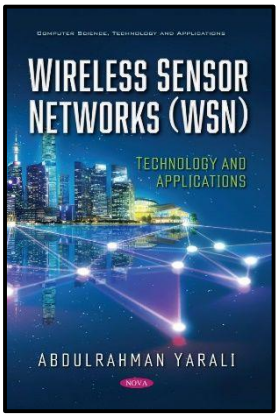
Edited by Charles Z. Liu

This book focuses on research trends in image processing and recognition and corresponding developments. Among them, the book focuses on recent research, especially in the field of advanced human-computer interaction and intelligent computing. Given the existing interaction and recognition of the station, some novel topics are proposed, including how to establish a cognitive model in human-computer interaction and how to express and transfer human knowledge into human-machine image recognition. In an interactive implementation, how to implement user experience through image recognition during machine interaction.

The main contents of this book are arranged as follows. Chapter 1 introduces the research background, research questions, goals, research questions and overviews of this book. Chapter 2 focuses on image calculation methods based on principal component analysis (PCA) and related extensions. Chapter 3 presents an image processing scheme that takes into account the user experience and the optimal balance between QoE and QoS management. Chapter 4 focuses on the performance analysis of methods for classifying image textures based on local binary patterns. Chapter 5 introduces the generation of the anti-network (GAN) and its methods. Chapter 6 mainly discusses the recognition of the interest target as the visual consciousness of the image computing system and proposes a fuzzy target-based interest target differentiation system, which is applied to the extinction enhancement as a display.

Chapter 7 focuses on the implementation and application of PCA image processing and its application in computer vision in the fields of image compression, visual tracking, image recognition, and super-resolution image reconstruction. Chapter 8 introduces various applications of feature extraction and classification techniques in seizures. Chapter 9 introduces some typical image processing based on GAN, involving multiple fields. Chapter 10 introduces an agent-based collaborative information processing framework with stereo vision applications. Chapter 11 introduces the MR application system as a synthesis of the methods and algorithms in each of the above chapters and discusses system design and implementation in terms of functions, modules, and workflows. Chapter 12 evaluates the book, draws conclusions, and proposes advances in image recognition and its advances in image recognition, limitations, and future work, and applies them to intelligent HCI in system design. Objects, human knowledge and user experience, QoE-QoS management, system management, and confidentiality and security.

HB 9781536172584 £211.99 April 2020 Nova Science Publishers 370 pages



Wireless Sensor Networks (WSN) Technology and Applications

Abdulrahman Yarali

The current world of technology faces massive advancements that influence different sectors such as transport, health care system, and education, amongst others. The telecommunication and information industry has become significant over time and has experienced considerable development. This trend is likely to extend into the future, both in terms of hardware and software. The industry plans to make modern advancements in the next five years to change their current modes of operation. Some of the significant changes that are forecast for the industry include technological advances such as 5G, Artificial Intelligence (AI), Machine Learning (ML), IoT, wireless sensor networks, and cross-industry alliances. 5G mobile connectivity is expected to bring advanced technical improvements helping employment as well as growth in GDP.

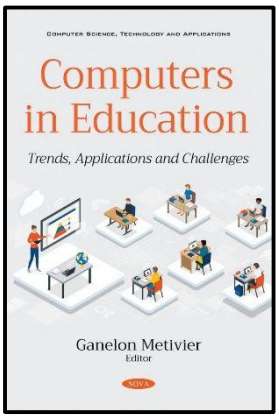
In the fusion of these technologies, the potential of IoT and *Wireless Sensor Networks (WSN)* would be witnessed through various applications such as connected consumer, home monitoring system, predictive maintenance, factory monitoring, and so on. A Wireless Sensor Network (WSN) is a term used for a network of devices that can gather information and then communicate it through any wireless link. The data collected is then transferred using different nodes and multiple gateways. With the evolution of technology, some new criteria have been introduced to check and balance the environmental conditions for reliable and fast response operations for a quick response and service under different scenarios and situations. There has been an increased use of smart wireless sensor objects in the current world by various organizations. The growth of the Internet of Things (IoT), industrial IoT, and wireless sensor networks have shaped different technologies and enables faster, reliable, and sufficient production of goods and services.

Although there are limitations and challenges such as storage capacity, processing power, communication range, and battery life, WSN significantly affects IoT technology development. Learning about the standards and specifications of WSNs is vital to understanding their general functionality and how they are in close interaction with the Internet of Things, with many massive billions of device connectivity. Future developments should focus on building a self-adaptive spectrum management middleware for the wireless sensor networks.

The telecom industry will continue to face regulatory challenges it faces currently. Various new regulations are likely to come up soon, and these will also have financial implications for the companies. The need to ensure consumer privacy is a critical issue that will be of prime concern to the telecoms in the next few years. Various aspects, such as the standards and the architectures, need to be considered to ensure the security and operational consistency of these wireless sensor networks; therefore, industry players should keep up with the changing trends and adapt accordingly.

In this book there are twelve chapters which cover wireless networking sensors evolution and technologies advancement. We are very pleased that the technology, academic, and industry communities are discussing this important and fast growing industry and we are certain that the content of this book will shed some light on this subject. The chapters presented in this book discuss technologies, design, implementation and applications of various short and long range wireless sensors networking. The challenges and issues faced in providing applications and services to meet user experiences ubiquitously and securely are presented.

HB 9781536187267 £211.99 October 2020 Nova Science Publishers 386 pages



Computers in Education
Trends, Applications and Challenges

Edited by Ganelon Metivier

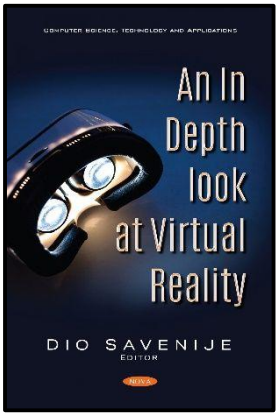
Computers in Education: Trends, Applications and Challenges summarizes various reactions to school closure due to COVID-19, particularly focusing on the digitalization of education, government, schools, and the private sector.

The authors aim to demonstrate connections that exist between the notion of technology immune-technology enabled mathematics problem-solving pedagogy and the theory of instrumental genesis. This theory has been used by educational researchers to demonstrate the modern-day pedagogical appropriation of an artifact as a material object.

The development, implementation and evaluation of a mixed-mode delivery method involving a well-designed user interface and mobile learning applications is discussed.

The concluding study presents some implementations of Newton-Cotes integration methods to nonlinear 2D integrals with a new calculator: TWOD_integral_calculator designed with the help of Matlab Graphical User Interface.

PB 9781536186123 £75.99 October 2020 Nova Science Publishers 119 pages



An In Depth Look at Virtual Reality

Edited by Dio Savenije

An In Depth Look at Virtual Reality summarizes research findings relating to virtual reality implementation for pain assessment and treatment, reviewing the literature in pediatric and adult pain care for acute and chronic conditions across several pain populations.

The authors provide detailed information about the effect mechanisms of virtual reality for Parkinson's disease, and the virtual reality interventions for rehabilitation of Parkinson's disease in terms of assessment and treatment.

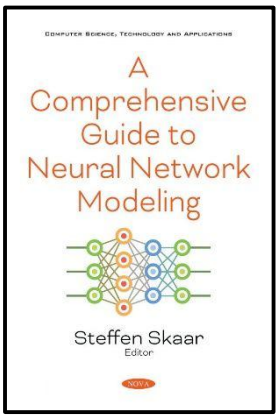
Anxiety disorders, such as specific phobia, post-traumatic stress disorder, and social anxiety disorder have garnered the greatest therapeutic attention due to the advantages that applying exposure therapy techniques in a virtual reality environment has over many real-life exposure situations.

Later, in order to further improve the intelligence level of a fully mechanized coal mining face and construct a stable and reliable monitoring system of hydraulic support, a monitoring method of hydraulic support in a virtual environment is proposed.

In order to further improve the intelligence level of fully mechanized coal mining face and construct a stable and reliable monitoring system of hydraulic support which is of guiding significance to actual production, a monitoring method of hydraulic support in virtual environment is proposed.

In the concluding study, using meta-analysis methods and combining the basic elements of teaching system design, a quantitative analysis of 60 quasi-experimental or experimental virtual reality and augmented reality studies is conducted.

HB 9781536183276 £146.99 August 2020 Nova Science Publishers 228 pages



A Comprehensive Guide to Neural Network Modeling

Edited by Steffen Skaar

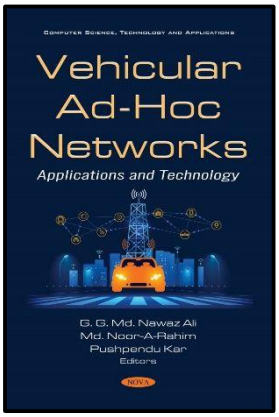
As artificial neural networks have been gaining importance in the field of engineering, this compilation aims to review the scientific literature regarding the use of artificial neural networks for the modelling and optimization of food drying processes.

The applications of artificial neural networks in food engineering are presented, particularly focusing on control, monitoring and modeling of industrial food processes.

The authors emphasize the main achievements of artificial neural network modeling in recent years in the field of quantitative structure–activity relationships and quantitative structure–retention relationships.

In the closing study, artificial intelligence techniques are applied to river water quality data and artificial intelligence models are developed in an effort to contribute to the reduction of the cost of future on-line measurement stations.

PB 9781536184662 £87.99 September 2020 Nova Science Publishers 172 pages



Vehicular Ad-Hoc Networks Applications and Technology

Edited by G. G. Md. Nawaz Ali

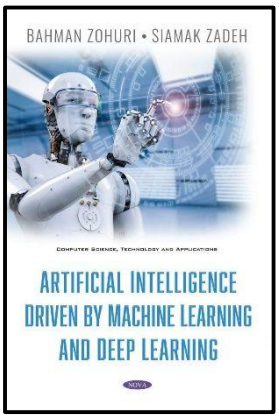
From the past decade vehicular ad hoc networks got tremendous attention from the industry, academia and research community. According to US National Highway Traffic Safety Administration (NHTSA), there are more than 30 thousands fatalities caused by the vehicle accidents in the U.S. each year, which worth around $250 billion economic cost annually. Research shows that 82% of these accidents can be reduced by the successful deployment of vehicular networks, because nearly 75% percent of vehicular crashes are caused by inattentive drivers.

Literally, vehicular ad hoc networks means a network forms by the vehicles. But it has been evolved to network with the infrastructure as well due to the inherent intermittent nature of vehicle-to-vehicle (V2V) connection. The high mobility of vehicles, wireless communication loss and range constraints are the main reason for this intermittent V2V connection. So, now vehicular networks means communication between vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I). There are billions of dollars invested to research, deployment and testing of vehicular networks. For the emerging connected and autonomous vehicle (CAV), a stable vehicular networks is the foremost requirement. It is now very much visible that CAV will be the future of Intelligent Transportation System (ITS).

The book is dedicated to discuss for the techniques, applications and relevant technologies of vehicular ad hoc networks and its challenges. The first chapter discuss about the routing protocols of vehicular networks. It focuses on different position-based routing protocols and their mechanisms for the successful use of vehicular networks for different applications. The second chapter discusses on the security and privacy issues on vehicular networks. A well-known security technique called Elliptic Curve Cryptography (ECC) is discussed to secure vehicular data from various tampering attacks. The third chapter discusses on the on-demand wireless broadcasting mechanism for improving data dissemination performance in terms of data delivery ratio and response time.

A network-coding based approach has been investigated for improving the overall performance of existing classical data broadcast algorithms. The fourth chapter describes how to get a dependable system in the lossy communication medium. This chapter discusses on a number of fault diagnosis techniques, their strengths and weaknesses, and it reviews their implementations in mobile wireless networks. The fifth chapter discusses the basics of Blockchain technology, applications, research challenges and opportunities in the field. Finally, chapter six discuss about the identification and mitigation of the faulty nodes in the wireless network.

HB 9781536180381 £178.99 July 2020 Nova Science Publishers 276 pages

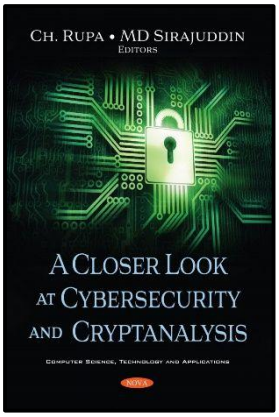


Artificial Intelligence Driven by Machine Learning and Deep Learning

Bahman Zohuri

The future of any business from banking, e-commerce, real estate, homeland security, healthcare, marketing, the stock market, manufacturing, education, retail to government organizations depends on the data and analytics capabilities that are built and scaled. The speed of change in technology in recent years has been a real challenge for all businesses. To manage that, a significant number of organizations are exploring the BigData (BD) infrastructure that helps them to take advantage of new opportunities while saving costs. Timely transformation of information is also critical for the survivability of an organization. Having the right information at the right time will enhance not only the knowledge of stakeholders within an organization but also providing them with a tool to make the right decision at the right moment. It is no longer enough to rely on a sampling of information about the organizations' customers. The decision-makers need to get vital insights into the customers' actual behavior, which requires enormous volumes of data to be processed. We believe that Big Data infrastructure is the key to successful Artificial Intelligence (AI) deployments and accurate, unbiased real-time insights. Big data solutions have a direct impact and changing the way the organization needs to work with help from AI and its components ML and DL. In this article, we discuss these topics.

HB 9781536183146 £247.99 October 2020 Nova Science Publishers 455 pages



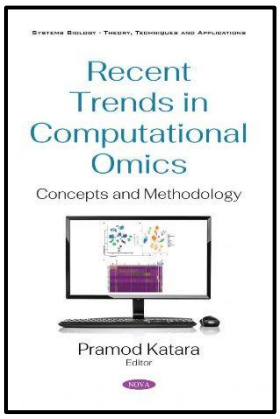
A Closer Look at Cybersecurity and Cryptanalysis

Edited by Ch. Rupa

A major concern in today's digital world is Security. Due to digitization, implementation of secure policies and procedures to ensure security became challenging issue. Also analyzing the strength of security algorithms or procedures is more important to avoid compromising of organizational assets. In this direction, this book explains the role of cryptanalysis in real world with practical examples. Cryptanalysis of various algorithms by using emerging technologies is explained which is helpful for reader/learner to implement innovative cryptanalysis schemes that assists to evaluate the existing cryptographic algorithms. This book also demonstrated different ways of evaluating the security of the system in the form of penetration testing. Tools for performing penetration testing is well illustrated with stepwise procedure which will give hands-on experience to the reader/audience. The role of data mining schemes in the context of intrusion detection system (IDS) is also illustrated. This book enlighten the use of IoT based security application in solving the social issues. Such demonstrated applications in this book will help readers/audiences to implement their own novel applications for addressing different societal issues.

We consider all aforementioned features as the strength of this book. With this impression we ensures that all undergraduate and postgraduate students of any discipline will get a basic idea on cryptography, cryptanalysis, penetration testing tools, cyber security, IDS and IoT applications in securing today's digitalized world.

PB 9781536181654 £75.99 July 2020 Nova Science Publishers 114 pages



Recent Trends in Computational Omics Concepts and Methodology

Edited by Pramod Katara

The last decade has witnessed various technological advances in life sciences, especially high throughput technologies. These technologies provide a way to perform parallel scientific studies in a very short period of time with low cost. High throughput techniques, mainly, next generation sequencing, microarray and mass spectrometry, have strengthened the omics vision in the last decades (study of complete system) and now resulted in well-developed branches of omics i.e., genomics, transcriptomics, proteomics and metabolomics, which deal with almost every level of central dogma of life. Practice of high throughput techniques throughout the world with different aims and objectives resulted in a voluminous data, which required computational applications, i.e., database, algorithm and software to store, process and get biological interpretation from primary raw data. Researchers from different fields are looking to analyze these raw data for different purposes, but lacking of proper information and knowledge in proper documented form creates different kinds of hurdles and raises the challenges. This book contains thirteen chapters that deal with different computational biology/bioinformatics resources and concepts which are already in practice by the scientific community or can be utilized to handle various aspects of different classes of omics data. It includes different computational concepts, algorithm, resources and recent trends belonging to the four major branches of omics (i.e., genomics, transcriptomics, proteomics and metabolomics), including integrative omics. It will help all scholars who are working in any branch of computational omics and bioinformatics field as well as those who would like to perform research at a systemic biology through computational approaches.

About the Author: **Pramod Katara**, Assistant Professor, Centre of Bioinformatics, Nehru Science Complex, University of Allahabad, Prayagraj, Allahabad, India

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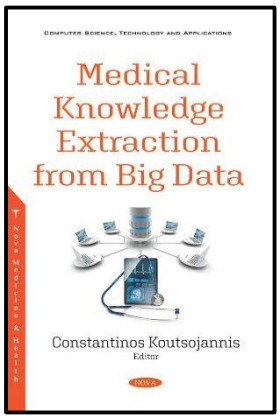


Medical Knowledge Extraction from Big Data

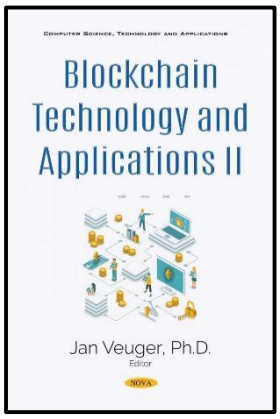
Edited by Constantinos Koutsojannis

Data mining refers to the activity of going through big data sets to look for relevant information.
As human health care data are the most difficult of all data to collect and their primary direction is the treatment of patients, and secondarily dealing with research, almost the only vindication for collecting medical data is to benefit the disease. All data miners should take into account that Medical Knowledge Extraction is internally connected with the Evidence-Based Medical approach because it uses data for already treated or not patients and there are times that opposites to Guideline Based medical practice. Additonally all researchers should be aware when are dealing with medical databases they may face the possibility that their work will never be accepted or even used from health care professionals if all these obligations will not be correctly addressed from the early beginning.

In the present book, one can find after the three introductory chapters, a number of successfully evaluated applications that have been developed after mining approaches in Big or smaller amount (according to the application) of medical Data in different fields of every day clinical practice from teams of experts.

The challenging adventure of Medical Knowledge Extraction can be followed by ambitious researchers finally resulting in a successful decision support system, that some times is so novel that it will provide new directions for basic or clinical research further that the existed. At least this procedure will save the experience of the best doctors on duty and will help young residents to be better and better.

HB 9781536179255 £146.99 July 2020 Nova Science Publishers 247 pages



Blockchain Technology and Applications II

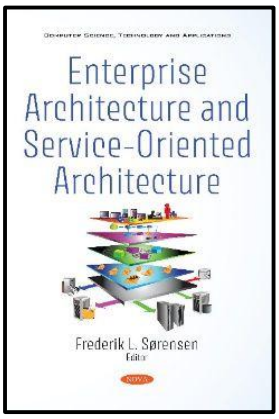
Edited by Jan Veuger

The inevitable convergence of the Blockchain, AI and IoT (Veuger 2019) will be an impactful combination of security, interconnectivity and autonomy to revolutionize the way processes run. A combination of Blockchain, AI and IoT technologies that affect the potential of how businesses, industries and even economies operate will redefine them more than they do now. Some applications and concepts have already seen an overlap between these technologies with promising results. One example is the combination of AI and Blockchain to manage Unmanned Aerial/Air/Airborne Vehicle traffic, making mass autonomous flying safer. This application alone will redefine the business of aviation and logistics.

The convergence of Blockchain, Ai and IoT can enable organizations to maximize the benefits of each of these technologies while minimizing the risks and constraints associated with them. Since IoT networks include a large number of connected devices, there are numerous vulnerabilities in the network that make the network vulnerable to hacker attacks, fraud, and theft. To prevent security problems, AI powered by machine learning can proactively defend against malware and hacker attacks. Network and data security can be further enhanced through a blockchain that can minimize illegal access to and alteration of data on the network. AI can also improve the functional capacity of the IoT network by making it more autonomous and smarter. For example, a proven convergence of Blockchain, AI and IoT is Fujitsu's algorithm to measure employee heat stress levels. The algorithm continuously monitors workers' physiological data (temperature, humidity, activity levels, pulse rate, etc.) using portable In Vitro Diagnostic Devices (IDA) and sensors to track the correlation between various factors and workers' health. The analysis can help the organization to improve working conditions and prevent health problems of workers. Applying Blockchain to this system can help maintain more personalized data by ensuring privacy or help pay health insurance amounts through smart contracts.

The expected impact of the convergence of Blockchain, AI and IoT is not (yet) foreseeable and existing applications are not (yet) perfect. Many organizations, and especially early adopters, are high opinionated about the value of cognitive technologies and therefore invest in them. Findings of applications are now (still) at an early stage and are not yet as advanced as is necessary to achieve real transformation, as well as that business models also determine this. The same can be said of the IoT and Blockchain. With increased interest, investment and innovation, the convergence of Blockchain, AI and IoT will become a reality.

HB 9781536179316 £211.99 July 2020 Nova Science Publishers 315 pages



Enterprise Architecture and Service-Oriented Architecture

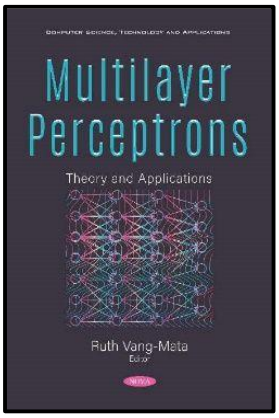
Edited by Frederik L. Sørensen

An enterprise architecture is an instrument that focuses on coherence between business processes, information distribution, and technology infrastructure of an organization. In this compilation, the authors begin by creating and subsequently discussing an artifact that provides architects with the capability of monitoring validity within ArchiMate enterprise architecture models.

Next, it is suggested that business specialists and enterprise architects can benefit from collocated training, and that training activities in enterprise architecture are both one-off training and recurring training, where the latter is providing a community of practice.

The authors consider ideas that may make it easier for organizations to realize the potential benefits of service-oriented architectures and cloud computing, as one of the challenges for software engineers today is keeping up with the rapid changes in technology.
The major features underlying microservice architecture are examined, particularly the advantages and the disadvantages of their technologies and implementation. This analysis also highlights the major capabilities of microservices in driving future advances in the software and hardware industries.

PB 9781536175882 £75.99 March 2020 Nova Science Publishers 128 pages



Multilayer Perceptrons
Theory and Applications

Edited by Ruth Vang-Mata

Multilayer Perceptrons: Theory and Applications opens with a review of research on the use of the multilayer perceptron artificial neural network method for solving ordinary/partial differential equations, accompanied by critical comments.

A historical perspective on the evolution of the multilayer perceptron neural network is provided. Furthermore, the foundation for automated post-processing that is imperative for consolidating the signal data to a feature set is presented.

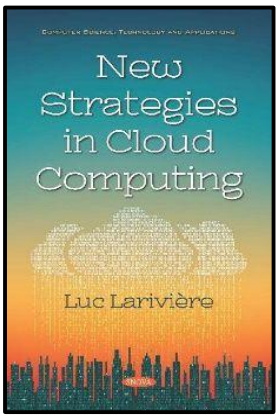
In one study, panoramic dental x-ray images are used to estimate age and gender. These images were subjected to image pre-processing techniques to achieve better results.

In a subsequent study, a multilayer perceptrons artificial neural network with one hidden layer and trained through the efficient resilient backpropagation algorithm is used for modeling quasi-fractal patch antennas.

Later, the authors propose a scheme with eight steps for a dynamic time series forecasting using an adaptive multilayer perceptron with minimal complexity. Two different data sets from two different countries were used in the experiments to measure the robustness and accuracy of the models.

In closing, a multilayer perceptron artificial neural network with a layer of hidden neurons is trained with the resilient backpropagation algorithm, and the network is used to model a Koch pre-fractal patch antenna.

PB 9781536173642 £75.99 March 2020 Nova Science Publishers 153 pages



New Strategies in Cloud Computing

Edited by Luc Larivière

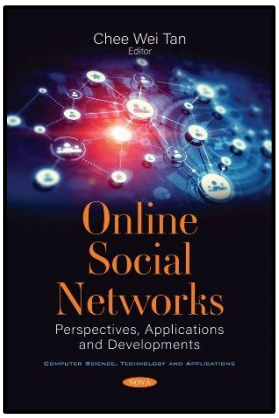
Cloud computing enables on-demand access to shared computing resources providing services more quickly and at a lower cost than having agencies maintain these resources themselves. Chapter 1 discusses selected agencies' progress in implementing cloud services, the extent to which those agencies increased cloud service spending and achieved savings or cost avoidances, and examples of agency-reported cloud investments with notable benefits.

The Office of Management and Budget (OMB) has developed a new strategy to accelerate agency adoption of cloud-based solutions: Cloud Smart. Chapter 2 reports on the strategy of successful cloud adoption: security, procurement, and workforce.

The Department of Defense (DoD) has entered the modern age of warfighting where the battlefield exists as much in the digital world as it does in the physical. Cloud is a fundamental component of the global infrastructure that will empower the warfighter with data and is critical to maintaining our military's technological advantage as reported in chapter 3. Chapter 4 discusses accelerated adoption of the Joint Enterprise Defense Infrastructure (JEDI) Cloud program.

In the Clarifying Lawful Overseas Use of Data (CLOUD) Act, Congress enacted one of the first major changes in years to U.S. law governing cross-border access to electronic communications held by private companies. Chapter 5 reports on the major components of the CLOUD Act. Chapter 6 discusses United States v. Microsoft Corp as it pertains to the CLOUD Act.

HB 9781536169072 £178.99 February 2020 Nova Science Publishers 266 pages



Online Social Networks
Perspectives, Applications and Developments

Edited by Chee Wei Tan

This book consists of contributions from preeminent experts in the field of network science, signal processing and machine learning, focusing on the theoretical and algorithmic aspects of online social networking technologies. As online social networks provide an important and diverse medium for spreading and disseminating various types of information, this book offers new perspectives and applications of these large-scale networks in engineering cyber intelligence.

The book introduces and explains how to design predictive analytics and computational tools, but also presents insights into forward-engineering new applications such as community detection, rumor source detection and large-scale online learning. Mathematical tools based on statistical inference, graph theory and machine learning as well as real-world data analysis are provided to help readers understand the advances in cyber intelligence. As such it is a valuable resource for graduate students and researchers in understanding the developments of online social networking technologies.

About the Author: Chee Wei Tan, College of Science and Engineering, City University of Hong Kong, Kowloon Tong, Hong Kong, China.

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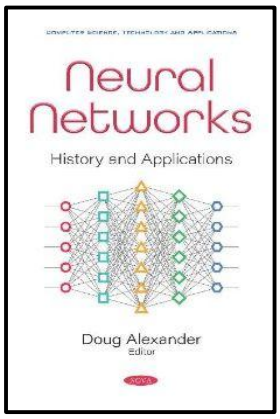

Neural Networks
History and Applications

Edited by Doug Alexander

With respect to the ever-increasing developments in artificial intelligence and artificial neural network applications in different scopes such as medicine, industry, biology, history, military industries, recognition science, space, machine learning and etc., *Neural Networks: History and Applications* first discusses a comprehensive investigation of artificial neural networks.

Next, the authors focus on studies carried out with the artificial neural network approach on the emotion recognition from 2D facial expressions between 2009 and 2019. The major objective of this study is to review, identify, evaluate and analyze the performance of artificial neural network models in emotion recognition applications.

This compilation also proposes a simple nonlinear approach for dipole mode index prediction where past values of dipole mode index were used as inputs, and future values were predicted by artificial neural networks. The study was also conducted for seasonal dipole mode index prediction because the dipole mode index is more prominent in the Sep-Oct-Nov season.

A subsequent study focuses on how mammography has a high false negative and false positive rate. As such, computer-aided diagnosis systems have been commercialized to help in micro-calcification detection and malignancy differentiation. Yet, little has been explored in differentiating breast cancers with artificial neural networks, one example of computer-aided diagnosis systems. The authors aim to bridge this gap in research.

The penultimate chapter reviews the general conditions under which synaptic plasticity most effectively takes place to support the supervised learning of a precise temporal code. Then, the accuracy of each plasticity rule with respect to its temporal encoding precision is examined, and the maximum number of input patterns it can memorize using the precise timings of individual spikes as an indicator of storage capacity in different control and recognition tasks is explored.

In closing, a case study is presented centered on an intelligent decision support system that is built on a neural network model based on the Encog machine learning framework to predict cryptocurrency close prices.

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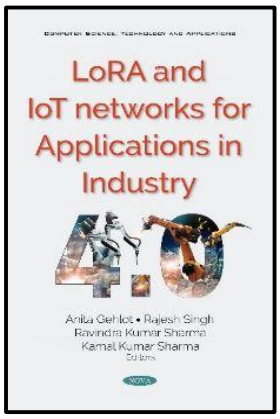

LoRA and IoT Networks for Applications in Industry 4.0

Ravindra Kumar Sharma

The concept of Industry 4.0 includes both Internet of Things (IoT) structure and the local networks which need to carry the real-time tasks. The LoRa technology can be implemented for industrial wireless networks to control sensors and actuators of the Industry 4.0 era.

This book aims to explore the methods and systems to implement LoRa network for Industry 4.0.
The book comprises of ten chapters.

Chapter 1 explains the monitoring of pipeline leaks, which play a prominent role in crude oil industry. To achieve the best solution and more protection of the environment, possible combinations of various technologies are discussed. Chapter 2 illustrates the low power wide area networks. A survey of recent published articles has been included on Low Power Wide Area networks and their applications. Chapter 3 discusses industrial hazards. It explores the various technical algorithms comprising of various equipments able to monitor environmental parameters by sensing through different pre-installed nodes deployed at specific positions. Chapter 4 deals with smart agriculture with an emphasis on guaranteed nourishment, effects of environmental changes on agribusiness along with lighting and smart parking issues. Chapter 5proposed an XBEee and IoT based architecture for the monitoring the garbage bins wirelessly. Here the XBee based sensor, which is placed in the garbage bin, initiates the function of our architecture and sends the status of the garbage bin to the local sever.

Chapter 6 identifies various areas where fire safety technology upgradation is required. The importance of wireless sensor networks as the one of the efficient methods for fire safety systems is also highlighted. Chapter 7 reports a review of research work related to the RSSI. RSSI is concluded as a very good indoor localization approach. Chapter 8explores the problem of measuring the depth and flow of water in large water body or water pipe. A solution is proposed which will reduce the chance of human error and make pace for intelligent cities. Chapter 9 discusses the cyber security in manufacturing and related industries. It explores the nature of the data, topologies of IoT devices, and complexities of threat management and ensuring compliance. Chapter 10 addresses the importance of fire safety in smart city and building along with the role of IoT for meeting the requirement.

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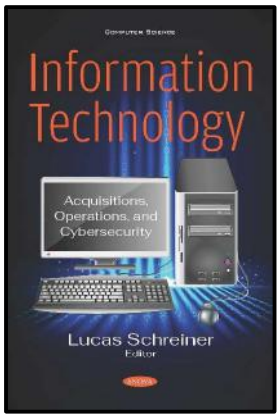

Information Technology
Acquisitions, Operations, and Cybersecurity

Edited by Lucas Schreiner

The federal government spends more than $80 billion each year on information technology (IT) investments; in FY2017 that investment is expected to increase to more than $89 billion. Historically, the projects supported by these investments have often incurred “multi-million dollar cost overruns and years-long schedule delays.” In addition, they may contribute little to mission-related outcomes and, in some cases, may fail altogether. These undesirable results “can be traced to a lack of disciplined and effective management and inadequate executive-level oversight.” The Federal Information Technology Acquisition Reform Act (FITARA) was enacted on December 19, 2014, to address these issues and codify existing initiatives managed by the Federal Chief Information Officer (CIO).

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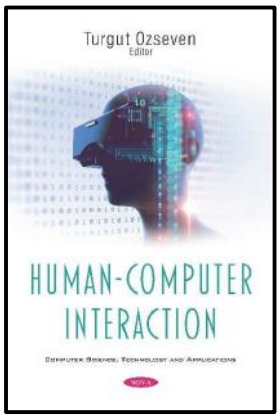

Human-Computer Interaction

Edited by Turgut Ozseven

Human Computer Interaction is used in all areas of our daily lives as a result of the rapid development of technology and computer systems. Human Computer Interaction is an interdisciplinary field of study involving the design and implementation of interactive technologies. The field of Human Computer Interaction is related to many areas such as human behavior, psychology, cognitive sciences, computer technologies, software engineering, ergonomics, graphic / industrial design, sociology and educational sciences. Researchers of this subject both observe the interaction of people with computers and design different technologies and examine the interaction of people with these technologies. The Human Computer Interaction system has four main components: user, task, tool, context.

Human Computer Interaction aims to develop interactive technologies through design, evaluation and implementation processes. The development of interactive technologies depends on usability. Usability can be determined by evaluating effectiveness, efficiency and satisfaction together. Effectiveness includes how much users can accomplish the tasks they are expected to do using the application; efficiency, how long the user has done the job; Satisfaction refers to the measure of the user's ideas when using the application.

One of the major shortcomings in HCI is the transformation of theoretical knowledge into practice. The purpose of the book is to introduce students, teachers, researchers, and practitioners to new advances in HCI. The book includes theoretical and practical studies prepared with the academic contributions of scientists working in different fields. It was decided to publish each chapter in the book after being examined by the scientific board. As an editor, my duty is to ensure breadth, while the chapter authors treat the delegated chapters with depth.
The book is designed for practitioners or researchers of all levels of expertise from novice to expert. Each of the book's individual topics could be considered as a compact, self-contained mini-book right under its title. The approach is to provide a framework and a set of techniques for evaluating and improving HCI. It presents a specific set of solutions, mostly obtained from real world projects and experimental studies, for routine applications. It further highlights promising emerging techniques for research and exploration opportunities.

The development team of this book wanted to thank their colleagues who made contributions to this book by providing continuous encouragements and thorough reviews of the chapters of the book.

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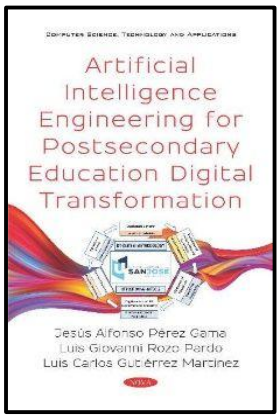

Artificial Intelligence Engineering for Postsecondary Education Digital Transformation

Edited by Jesus Alfonso Perez-Gama

We present conceptual foundations for artificial intelligence, expert systems, and knowledge engineering and management and discuss high quality in education. Following, we discuss the basics of our vision and prospective about higher education (HE): the battle for the future with digital transformation (DT). Next, we present our central Chapter 4 on DT: our dual model of knowledge and data, as befits a HE institution. Below, we present a succinct outline of our architectural model.

The pillars of the architecture are funding, research, entrepreneurship and social projection (Chapter 8); recognizing from the start that knowledge has its ethos in the university; these pillars correspond to:

• Productive ecosystem of the DT
• DT that enhances knowledge and innovation in the universities for the habilitation of the digital capabilities
• A new economy that requires the U transformation as social projection.
• New DT human talent required by the new knowledge and intelligence industry. The student hyper-personalization by competences and skills is required.

Ten Views of Our DT Model, given its complex process that takes place in long ways, a process required for the successful survival of an organization into the IV Industrial Revolution, with the final purpose of being very competitive, productive and of high quality (HQ).

The DT views, namely:

1- The DT Ecosystem.
2- The structural vision or the pillars of the DT mentioned.
3- The DT strategic map, showing scenarios, actors and vision-mission.
4- The architectural components for DT: 8 architectures were developed and implemented, applying some intelligent constructs that we have developed and documented in the last 10 years at FESSANJOSE (U. San José), leading DT in postsecondary education (PSEd).
5- Digital 360° architecture of DT Academy and Administration LOCUS: this architecture is the digital portfolio that implies the organization of the subsystems to obtain better and/or new functionalities based on knowledge to obtain an intelligent behavior. The DT multilayer-architecture approach is a system of systems (SoS) one, which ensures compliance with government policies, norms and standards, in a highly complex social institution with digital assets; this approach describes the subsystems at a higher level, where a system is composed, and with the protocols by which the subsystems communicate. It provides a 360° business vision map and a planning framework for commercial and technological changes.
6- The computational-mathematical perspective of DT, identifying endogenous and exogenous variables and their interrelations.
7- The synthesis, the Matrix of End-Means (EMM) that summarizes in DT: Where the HE is. In addition, where can the HE go?
8- The MIR Matrix, which describes DT Objectives, impacts-indicators and results.
9- The dynamic model of the DT system, based on computational intelligence, representing the system information control of all the components to achieve the completion of the DT.

The intelligent management information system (iMIS) for PSEd, shows the dynamics of DT, integrating several multilevel system hybrid architectures, as a space to respond to the solution of the HE problems, tending to the desired competitiveness, specifically pointing out the way that these modern technologies can be included for their adaptation and evolution in PSEd in post-modernity, making governability, and teaching and student productivity compatible with educational high quality, the purpose of DT. The interface Results of the iMIS includes: high quality metrics, digitization rate progress, indicators (an special appendix on KPI were included) and values of management, desertion, answers, and plans. The Input Interface includes data, information and knowledge acquisition, where the attributes, parameters.

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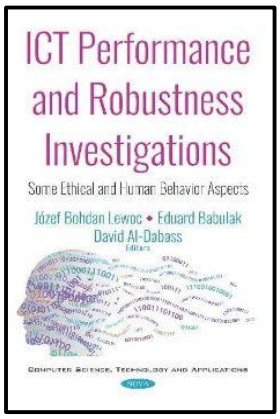

ICT Performance and Robustness Investigations
Some Ethical and Human Behavior Aspects

Edited by Józef Bohdan Lewoc

There is, in general, no doubt regarding the ethical and human behaviour aspects of the research work of any type. The researchers are thought of working for society and are low paid. However, in the practice of science and technology, they should work, first of all, for system designers who need their support in designing, developing and implementing the systems under investigation. Unfortunately, this is not a popular case in the area of Information and Communication Technology (ICT), where the support of the system and network researchers for the system and network designers, developers and operators is very limited.

Considering that, the team of authors of the book (the team) decided to present the design experiences gained during designing, implementing and operating some line of the computer systems and networks in Poland (the country). The country was selected purposefully: Due to the political reasons, various embargos were imposed on the importation of modern equipment and methods of the computer industry, and the team needed very severely good support from the researchers to fulfil the design and development tasks successfully. However, in the ICT domain, which is a relatively new study and, thus, needing the significant support of science in every country, this support was a minute one in practice. In well developed countries, possessing a surplus of hardware and software components, the need for the support was also observed but could be bypassed through using a surplus of supplies or by learning from the design errors. This bypass was much less available in the country in severe economic conditions and the political conditions of the so-called Cold War.

The objective of this book is to present the line of the ICT systems and networks under design and operation from the late 1960s and finishing when this book was written, and to present the requirements for the system and the basic support available from this science. The research aspects under consideration were, first of all, the performance evaluation and, for the systems of the 21st century, the robustness evaluation, with the system designers, implementers and operators being the ideal audience.

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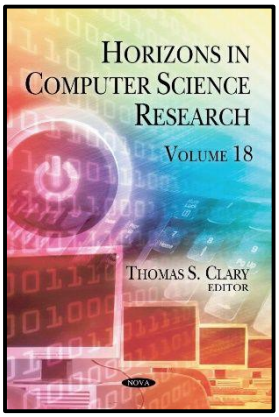

Horizons in Computer Science Research

Edited by Thomas S. Clary

Horizons in Computer Science Research. Volume 18 first discusses intermittently connected networks, a form of the delay tolerant network, where there never exists a complete end-to-end path between two nodes wishing to communicate.

The authors provide an overview of the current algorithms (both analytic and iterative) for the generation of tomographic images, including comparisons of the basic characteristics of image quality.

An intelligent scheduling framework is proposed to alleviate the problems encountered in modern job scheduling. The challenges of high performance computing scheduling and state-of-art scheduling methods to overcome these challenges are investigated.

The state of art developments in quantum cryptography are presented, as well as the fundamental laws of quantum physics that quantum key distribution is based on. Subsequently, three main protocols of key distribution are introduced which enable users to share a secret between them.

Three iterative methods for dose reconstruction in protoacoustics are discussed, including: gradient-descent algorithm, SART and MLEM, which are widely used in other medical imaging modalities such as PET, SPECT and CT.

Additionally, the authors evaluate the behaviour of the concurrent execution of tasks in different implementations by Java virtual machines. The performance measurements were analysed by rigorous statistical techniques: analysis of Variance and HSD comparison test of Tukey averages.
A mathematical model for finding the distribution of threads in local pools that minimises the makespan in integration processes is also presented. Makespan is a metric that calculates the average time a message takes to be executed by an integration process.

In closing, varied knowledge sources for aspect clustering are explored a new method, OpCluster-PT, is proposed. To support this research, annotated corpora and some related resources that are publicly available to the interested reader have been included.

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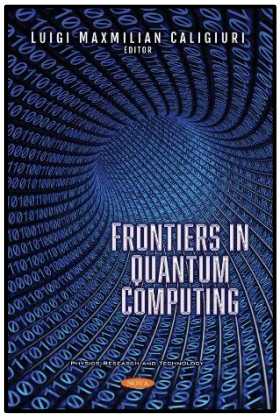
Volume 19 - HB 9781536183115 £229.99 October 2020 Nova Science Publishers 246 pages



Frontiers in Quantum Computing

Edited by Luigi Maxmilian Caligiuri

Quantum Computing is an ever-increasing field of interest both from a conceptual and applied standpoint. Quantum Mechanics has radically changed our vision and understanding of the physical reality and also has had an enormous technological and societal impact. On the other hand, the development of Information Theory, including computer science and communications theory, made possible the information "revolution" which has had a deep impact on our everyday life.

This volume isn't meant to represent a complete or beginner's guide to Quantum Computing but has the aim to present some of its most interesting and fascinating developments related to both theoretical and applied aspects. The target audience of this book is composed of scientists and researchers interested in the most advanced theoretical and applied developments of quantum computation and quantum information.

About the Author: Luigi Maxmilian Caligiuri (born in 30th of November 1972) is an Italian Physicist. He received laurea magna cum laude in theoretical Physics from University of Calabria, Cosenza, Italy in 1995. He has started his research and teaching activity at University of Calabria at Faculties of Sciences and Engineering in several fields of theoretical and applied sciences. From 2001 he is full professor of Physics and, from 2013, also the director of the Foundation of Physics Research Center (FoPRC) in Italy, an independent research organization devoted to advanced research in Physics. He has published several scientific papers in peer-reviewed international journals of physics and engineering in the fields of theoretical physics, acoustics, biophysics, electromagnetic fields and material sciences. He is editorial board member of numerous international journals related to theoretical and applied physics. His most recent interests relate to coherent quantum field theory and its application to different fields - from fundamental physics to cosmology and brain mechanism - to superluminal physics and to the study of consciousness and mind mechanism from the standpoint of quantum mechanics. He also conducts scientific popularization activity by writing essays in magazines and participating to TV programs.

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