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Advances in Digital Technologies

The use of digital information and web technologies is now essential to all our lives on a daily basis. In particular, web technologies that enable easy access to digital information in all its forms and regardless of the user's purpose are extremely important. This book presents papers from the 7th International Conference on Applications of Digital Information and Web Technologies (ICADIWT 2016), held in Keelung City, Taiwan, in March 2016. The conference, which has been organized since 2008, is aimed at building the infrastructure necessary for the large-scale development of web technologies, and attracts participants from many countries who attend the conference to demonstrate and discuss their research findings. The 19 full papers presented at the conference have been arranged into 5 sections: networking; fuzzy systems; intelligent information systems; data communication and protection; and cloud computing. Subjects covered fall under areas such as Internet communication, technologies and software; digital communication software and networks; the Internet of things; databases and applications; and many more. The book will be of interest to all those whose work involves the application of digital information and web technologies.

Human Behavioral Ecology

Human behavioral ecology (HBE) applies the principles of evolutionary theory and optimisation to the study of human behavioural and cultural diversity. Among other things, HBE attempts to explain variation in behaviour as adaptive solutions to the competing life-history demands of growth, development, reproduction, parental care, and mate acquisition. This book is a comprehensive introduction to the theoretical orientation and specific findings of HBE. It consolidates the insights of evolution and human behaviour into a single volume that reflects the current state and future of the field. It brings together leading scholars from across the evolutionary social sciences to provide a comprehensive and thought-provoking review of the state of the topic. Throughout, the authors explain the latest developments in theory and highlight critical debates in the literature, while also engaging readers with ethnographic insights and field-based studies that remain at the core of human behavioral ecology.

Osteosarcoma

This book reviews the brilliant progress made in the past three decades in clinical outcomes for osteosarcoma patients treated with a multidisciplinary approach, including limb-salvage surgery combined with neoadjuvant multidrug chemotherapy and aggressive management of pulmonary metastasis. Osteosarcoma was a miserable disease for adolescents and young adults until the early 1970s, with a survival rate that was less than 10–15% even after amputation for affected limbs because of the progression of pulmonary metastasis. With the development of neoadjuvant chemotherapy for osteosarcoma, including high-dose methotrexate, doxorubicin, cisplatin, and ifosfamide during the late 1970s and the 1980s, however, the prognosis has dramatically improved. Limb-salvage surgery for patients with extremity osteosarcoma is now a gold-standard surgical procedure for more than 90% of patients with localized disease. Additionally, aggressive pulmonary metastasectomy for patients with lung metastasis from osteosarcoma has contributed to improvement of their survival. More recently, carbon-ion radiotherapy has also been introduced for patients with unresectable osteosarcoma of the trunk, as in the spine and pelvis. In this volume the author provides valuable descriptions of an important new treatment modality for a multidisciplinary approach for osteosarcoma patients.

Application and Theory of Petri Nets and Concurrency

This book constitutes the proceedings of the 36th International Conference on Application and Theory of Petri Nets and Concurrency, PETRI NETS 2015, held in Brussels, Belgium, in June 2015. The 12 regular papers and 2 tool papers presented in this volume were carefully reviewed and selected from 34 submissions. In addition the book contains 3 invited talks in full paper length. The papers cover various topics in the field of Petri nets and related models of concurrency.

Manual Asymmetries, Handedness and Motor Performance

The performance of most tasks with one hand, typically the right, is a uniquely human characteristic. Not only do people prefer to use one hand rather than the other, but also they usually perform tasks faster and more accurately with this hand. The study of manual asymmetries and what such performance differences between the two hands reveal about brain organization and motor function has been a topic of considerable research over the last several decades. The aim of this Research Topic is to review and further explore the origins of manual asymmetries and their relationship to handedness, unimanual and bimanual motor performance, and brain function. The articles included here involve original research conducted in humans or non-human models species, as well as theoretical perspectives, review articles, and meta-analyses.

Influence of Inter- and Intra-Synaptic Factors on Information Processing in the Brain

Any brain activity relies on the interaction of thousands of neurons, each of which integrating signals from thousands of synapses. While neurons are undoubtedly the building blocks of the brain, synapses constitute the main loci of information transfer that lead to the emergence of neuronal code. Investigating synaptic transmission constitutes a multi-faceted challenge that brings together a large number of techniques and expertise ranging from experimental to computational approaches, bringing together paradigms spanning from molecular to neural network level. In this book, we have collected a series of articles that present foundational work aimed at shedding much-needed light on brain information processing, synaptic transmission and neural code formation. Some articles present analyses of regulatory mechanisms underlying neural code formation and its elaboration at the molecular level, while others use computational and modelling approaches to investigate, at synaptic, neuronal and inter-neuronal level, how the different mechanisms involved in information processing interact to generate effects like long-term potentiation (LTP), which constitutes the cellular basis of learning and memory. This collection, although not exhaustive, aims to present a framework of the most used investigational paradigms and showcase results that may, in turn, generate novel hypotheses and ideas for further studies and investigations.

Encyclopedic Turkish Film Lexicon, 1914-2014

This book analyses the participatory budgeting practice as it has evolved in evaluated countries, focusing on what is substantially at stake concerning the budget and issues involved, the actual participation, the way such processes are organised and administered, and the outcomes of such processes. It concludes that participatory budgeting in selected European countries is far away from the level of ‘best practice’, but that all experiences are not just trivial pursuits. The information collected serves to check, to what extent participatory budgeting as practiced in the countries involved presents a real attempt to change municipal budgets towards addressing the needs of marginalized groups and to improve decision-making based on local democracy and participation, or whether these processes as such are to be judged to be more important than any output and outcomes. The practices can neither be seen as a process of policy diffusion nor as a process of policy mimesis. The terminology of participatory budgeting remains, but the tools to achieve the goals resulted only in marginal changes in the status quo in municipalities in European countries practicing participatory budgeting, instead of resulting in radical changes to increase spending in favor of marginalized groups. Chapter 15 'Unraveled Practices of Participatory Budgeting in European Democracies' is available open access under a CC BY 4.0 license.

International Trends in Participatory Budgeting

One of the most striking properties of biological systems is their ability to learn and adapt to ever changing environmental conditions, tasks and stimuli. It emerges from a number of different forms of plasticity, that change the properties of the computing substrate, mainly acting on the modification of the strength of synaptic connections that gate the flow of information across neurons. Plasticity is an essential ingredient for building artificial autonomous cognitive agents that can learn to reliably and meaningfully interact with the real world. For this reason, the neuromorphic community at large has put substantial effort in the design of different forms of plasticity and in putting them to practical use. These plasticity forms comprise, among others, Short Term Depression and Facilitation, Homeostasis, Spike Frequency Adaptation and diverse forms of Hebbian learning (e.g. Spike Timing Dependent Plasticity). This special research topic collects the most advanced developments in the design of the diverse forms of plasticity, from the single circuit to the system level, as well as their exploitation in the implementation of cognitive systems.

Journal of Teacher Education

This book focuses on the implementation of AI for growing business, and the book includes research articles and expository papers on the applications of AI on decision-making, health care, smart universities, public sector and digital government, FinTech, and RegTech. Artificial Intelligence (AI) is a vital and a fundamental driver for the Fourth Industrial Revolution (FIR). Its influence is observed at homes, in the businesses and in the public spaces. The embodied best of AI reflects robots which drive our cars, stock our warehouses, monitor our behaviors and warn us of our health, and care for our young children. Some researchers also discussed the role of AI in the current COVID-19 pandemic, whether in the health sector, education, and others. On all of these, the researchers discussed the impact of AI on decision-making in those vital sectors of the economy.

Synaptic Plasticity for Neuromorphic Systems

The rise of internet and social media usage in the past couple of decades has presented a very useful tool for many different industries and fields to utilize. With much of the world’s population writing their opinions on various products and services in public online forums, industries can collect this data through various computational tools and methods. These tools and methods, however, are still being perfected in both collection and implementation. Sentiment analysis can be used for many different industries and for many different purposes, which could better business performance and even society. The Research Anthology on Implementing Sentiment Analysis Across Multiple Disciplines discusses the tools, methodologies, applications, and implementation of sentiment analysis across various disciplines and industries such as the pharmaceutical industry, government, and the tourism industry. It further presents emerging technologies and developments within the field of sentiment analysis and opinion mining. Covering topics such as electronic word of mouth (eWOM), public security, and user similarity, this major reference work is a comprehensive resource for computer scientists, IT professionals, AI scientists, business leaders and managers, marketers, advertising agencies, public administrators, government officials, university administrators, libraries, students and faculty of higher education, researchers, and academicians.

The Fourth Industrial Revolution: Implementation of Artificial Intelligence for Growing Business Success

The proceedings set LNCS 11727, 11728, 11729, 11730, and 11731 constitute the proceedings of the 28th International Conference on Artificial Neural Networks, ICANN 2019, held in Munich, Germany, in September 2019. The total of 277 full papers and 43 short papers presented in these proceedings was carefully reviewed and selected from 494 submissions. They were organized in 5 volumes focusing on theoretical neural computation; deep learning; image processing; text and time series; and workshop and

special sessions.

Research Anthology on Implementing Sentiment Analysis Across Multiple Disciplines

Stochastic fluctuations are intrinsic to and unavoidable at every stage of neural dynamics. For example, ion channels undergo random conformational changes, neurotransmitter release at synapses is discrete and probabilistic, and neural networks are embedded in spontaneous background activity. The mathematical and computational tool sets contributing to our understanding of stochastic neural dynamics have expanded rapidly in recent years. New theories have emerged detailing the dynamics and computational power of the balanced state in recurrent networks. At the cellular level, novel stochastic extensions to the classical Hodgkin-Huxley model have enlarged our understanding of neuronal dynamics and action potential initiation. Analytical methods have been developed that allow for the calculation of the firing statistics of simplified phenomenological integrate-and-fire models, taking into account adaptation currents or temporal correlations of the noise. This Research Topic is focused on identified physiological/internal noise sources and mechanisms. By \"internal\

Artificial Neural Networks and Machine Learning – ICANN 2019: Theoretical Neural Computation

This three-volume set, LNAI 11670, LNAI 11671, and LNAI 11672 constitutes the thoroughly refereed proceedings of the 16th Pacific Rim Conference on Artificial Intelligence, PRICAI 2019, held in Cuvu, Yanuca Island, Fiji, in August 2019. The 111 full papers and 13 short papers presented in these volumes were carefully reviewed and selected from 265 submissions. PRICAI covers a wide range of topics such as AI theories, technologies and their applications in the areas of social and economic importance for countries in the Pacific Rim.

Neuronal Stochastic Variability: Influences on Spiking Dynamics and Network Activity

Interest in big data has swelled within the scholarly community as has increased attention to the internet of things (IoT). Algorithms are constructed in order to parse and analyze all this data to facilitate the exchange of information. However, big data has suffered from problems in connectivity, scalability, and privacy since its birth. The application of deep learning algorithms has helped process those challenges and remains a major issue in today’s digital world. Advanced Deep Learning Applications in Big Data Analytics is a pivotal reference source that aims to develop new architecture and applications of deep learning algorithms in big data and the IoT. Highlighting a wide range of topics such as artificial intelligence, cloud computing, and neural networks, this book is ideally designed for engineers, data analysts, data scientists, IT specialists, programmers, marketers, entrepreneurs, researchers, academicians, and students.

The National Bibliography of Nigeria

This volume is the second (II) of four under the main themes of Digitizing Agriculture and Information and Communication Technologies (ICT). The four volumes cover rapidly developing processes including Sensors (I), Data (II), Decision (III), and Actions (IV). Volumes are related to ‘digital transformation” within agricultural production and provision systems, and in the context of Smart Farming Technology and Knowledge-based Agriculture. Content spans broadly from data mining and visualization to big data analytics and decision making, alongside with the sustainability aspects stemming from the digital transformation of farming. The four volumes comprise the outcome of the 12th EFITA Congress, also incorporating chapters that originated from select presentations of the Congress. The first part of this book (II) focuses on data technologies in relation to agriculture and presents three key points in data management, namely, data collection, data fusion, and their uses in machine learning and artificial intelligent technologies. Part 2 is devoted to the integration of these technologies in agricultural production processes by presenting

specific applications in the domain. Part 3 examines the added value of data management within agricultural products value chain. The book provides an exceptional reference for those researching and working in or adjacent to agricultural production, including engineers in machine learning and AI, operations management, decision analysis, information analysis, to name just a few. Specific advances covered in the volume: Big data management from heterogenous sources Data mining within large data sets Data fusion and visualization IoT based management systems Data Knowledge Management for converting data into valuable information Metadata and data standards for expanding knowledge through different data platforms AI - based image processing for agricultural systems Data - based agricultural business Machine learning application in agricultural products value chain

PRICAI 2019: Trends in Artificial Intelligence

This two-volume set of LNAI 12274 and LNAI 12275 constitutes the refereed proceedings of the 13th International Conference on Knowledge Science, Engineering and Management, KSEM 2020, held in Hangzhou, China, in August 2020.* The 58 revised full papers and 27 short papers were carefully reviewed and selected from 291 submissions. The papers of the first volume are organized in the following topical sections: knowledge graph; knowledge representation; knowledge management for education; knowledge-based systems; and data processing and mining. The papers of the second volume are organized in the following topical sections: machine learning; recommendation algorithms and systems; social knowledge analysis and management; text mining and document analysis; and deep learning. *The conference was held virtually due to the COVID-19 pandemic.

Advanced Deep Learning Applications in Big Data Analytics

This book features original papers from the 3rd International Conference on Smart IoT Systems: Innovations and Computing (SSIC 2021), presenting scientific work related to smart solution concepts. It discusses scientific works related to smart solutions concept in the context of computational collective intelligence consisted of interaction between smart devices for smart environments and interactions. Thanks to the high-quality content and the broad range of the topics covered, the book appeals to researchers pursuing advanced studies.

Information and Communication Technologies for Agriculture—Theme II: Data

Language in Social Life is a major series which highlights the importance of language to an understanding of issues of social and professional concern. It will be of practical relevance to all those wanting to understand how the ways we communicate both influence and are influenced by the structures and forces of contemporary social institutions. In all modern societies individuals are subject to tests, whether to enter educational programs, to pass from one level to the next or to grant certificates to practice. Yet, tests are powerful tools which are often introduced in undemocratic and unethical ways as disciplinary tools for carrying out various policy agendas. Tests can be detrimental to people's lives as they are capable of affecting and defining the knowledge and behaviour of those who are being tested. The Power of Tests applies a critical perspective of language tests by examining their uses and consequences in education and society and by viewing tests not as isolated events but rather as embedded in social, educational and political contexts. The book is divided into four parts: the first part establishes the power of tests through echoing the voices of test takers, describing the features of the power of tests, and the temptations that tests offer to bureaucrats who use them for power and control. The second part reports on studies that provide empirical evidence about intentions and effects of a number of large scale language tests. The third part interprets the results by examining their consequences on education and society, arriving at a model of tests' use. The final section of the book offers strategies for controlling and minimising the misuses of tests by introducing the notion of Critical Language Testing which calls for the examination of the consequences and misuses of tests, monitoring of power and pointing to their unethical uses. It also provides a comprehensive discussion of the responsibilities of language testers, including a new Code of Ethics, as well as strategies for guarding and

protecting the rights of test takers.

Knowledge Science, Engineering and Management

The term \"neuromechanics\" defines an integrative approach that combines the neuromuscular control and the biomechanical aspects of physical behavior in humans and animals. Crucial to this approach is a detailed description and modeling of the interaction between the nervous system and the controlled biomechanical plant. Only then do we have the broader context within which to understand evolution, movement mechanics, neural control, energetics, disability and rehabilitation. In addition to enabling new basic science directions, understanding the interrelations between movement neural and mechanical function should also be leveraged for the development of personalized wearable technologies to augment or restore the motor capabilities of healthy or impaired individuals. Similarly, this understanding will empower us to revisit current approaches to the design and control of robotic and humanoid systems to produce truly versatile human-like physical behavior and adaptation in real-world environments. This Research Topic is therefore poised at an opportune moment to promote understanding of apparently disparate topics into a coherent focus.

National Strategy for the Development of Statistics (NSDS), 2010-2014

Written for non-majors, Discovering Nutrition, Fifth Edition introduces students to the fundamentals of nutrition with an engaging and personalized approach. The text focuses on teaching behavioral change, personal decision making, and up-to-date scientific concepts in a number of innovative ways. Students will learn practical consumer-based nutrition information using the robust, interactive learning tools and study aids highlighted throughout the text. The Fifth Edition incorporates a new feature, Culture Corner, which introduces individuals within a variety of cultures, and discusses their nutritional customs and behaviors. It also examines the latest discoveries and dietary guidelines and empahsises how our nutritional behaviors influence lifelong personal health and wellness. Important Notice: The digital edition of this book is missing some of the images or content found in the physical edition.

Smart Systems: Innovations in Computing

In today's rapidly advancing digital world, governments face the dual challenge of harnessing technology to enhance security systems while safeguarding sensitive data from cyber threats and privacy breaches. Futuristic e-Governance Security With Deep Learning Applications provides a timely and indispensable solution to these pressing concerns. This comprehensive book takes a global perspective, exploring the integration of intelligent systems with cybersecurity applications to protect deep learning models and ensure the secure functioning of e-governance systems. By delving into cutting-edge techniques and methodologies, this book equips scholars, researchers, and industry experts with the knowledge and tools needed to address the complex security challenges of the digital era. The authors shed light on the current state-of-the-art methods while also addressing future trends and challenges. Topics covered range from skill development and intelligence system tools to deep learning, machine learning, blockchain, IoT, and cloud computing. With its interdisciplinary approach and practical insights, this book serves as an invaluable resource for those seeking to navigate the intricate landscape of e-governance security, leveraging the power of deep learning applications to protect data and ensure the smooth operation of government systems.

The Power of Tests

This book covers emerging trends in signal processing research and biomedical engineering, exploring the ways in which signal processing plays a vital role in applications ranging from medical electronics to data mining of electronic medical records. Topics covered include statistical modeling of electroencephalograph data for predicting or detecting seizure, stroke, or Parkinson’s; machine learning methods and their application to biomedical problems, which is often poorly understood, even within the scientific community; signal analysis; medical imaging; and machine learning, data mining, and classification. The book features

tutorials and examples of successful applications that will appeal to a wide range of professionals and researchers interested in applications of signal processing, medicine, and biology.

Neuromechanics and Control of Physical Behavior: from Experimental and Computational Formulations to Bio-inspired Technologies

In today's society, it is not only desirable but essential for a business to take on a global edge. The best way to ensure a successful future is to educate business students about global policies currently at play. Diverse Contemporary Issues Facing Business Management Education discusses the issues that are facing both large and small corporations and the students who are seeking employment there. Questioning not only what changes globalization has brought to the business world, but what ways our education system will have to change to keep up, this book is an essential reference source for business owners, educators, students, or anyone interested in the future globalization of the business market.

Discovering Nutrition

This two-volume set of LNAI 11838 and LNAI 11839 constitutes the refereed proceedings of the 8th CCF Conference on Natural Language Processing and Chinese Computing, NLPCC 2019, held in Dunhuang, China, in October 2019. The 85 full papers and 56 short papers presented were carefully reviewed and selected from 492 submissions. They are organized in the following topical sections: Conversational Bot/QA/IR; Knowledge graph/IE; Machine Learning for NLP; Machine Translation; NLP Applications; NLP for Social Network; NLP Fundamentals; Text Mining; Short Papers; Explainable AI Workshop; Student Workshop: Evaluation Workshop.

Futuristic e-Governance Security With Deep Learning Applications

In recent years, Higher Order Neural Networks (HONNs) have been widely adopted by researchers for applications in control signal generating, pattern recognition, nonlinear recognition, classification, and predition of control and recognition scenarios. Due to the fact that HONNs have been proven to be faster, more accurate, and easier to explain than traditional neural networks, their applications are limitless. Applied Artificial Higher Order Neural Networks for Control and Recognition explores the ways in which higher order neural networks are being integrated specifically for intelligent technology applications. Emphasizing emerging research, practice, and real-world implementation, this timely reference publication is an essential reference source for researchers, IT professionals, and graduate-level computer science and engineering students.

Signal Processing in Medicine and Biology

As technology continues to become more sophisticated, mimicking natural processes and phenomena also becomes more of a reality. Continued research in the field of natural computing enables an understanding of the world around us, in addition to opportunities for man-made computing to mirror the natural processes and systems that have existed for centuries. Nature-Inspired Computing: Concepts, Methodologies, Tools, and Applications takes an interdisciplinary approach to the topic of natural computing, including emerging technologies being developed for the purpose of simulating natural phenomena, applications across industries, and the future outlook of biologically and nature-inspired technologies. Emphasizing critical research in a comprehensive multi-volume set, this publication is designed for use by IT professionals, researchers, and graduate students studying intelligent computing.

Diverse Contemporary Issues Facing Business Management Education

Over the past 40 years, neurobiology and computational neuroscience has proved that deeper understanding

of visual processes in humans and non-human primates can lead to important advancements in computational perception theories and systems. One of the main difficulties that arises when designing automatic vision systems is developing a mechanism that can recognize - or simply find - an object when faced with all the possible variations that may occur in a natural scene, with the ease of the primate visual system. The area of the brain in primates that is dedicated at analyzing visual information is the visual cortex. The visual cortex performs a wide variety of complex tasks by means of simple operations. These seemingly simple operations are applied to several layers of neurons organized into a hierarchy, the layers representing increasingly complex, abstract intermediate processing stages. In this Research Topic we propose to bring together current efforts in neurophysiology and computer vision in order 1) To understand how the visual cortex encodes an object from a starting point where neurons respond to lines, bars or edges to the representation of an object at the top of the hierarchy that is invariant to illumination, size, location, viewpoint, rotation and robust to occlusions and clutter; and 2) How the design of automatic vision systems benefit from that knowledge to get closer to human accuracy, efficiency and robustness to variations.

Natural Language Processing and Chinese Computing

Digital literacy has become the vital competency that students need to master before graduating. This book provides rich examples of how to integrate it in disciplinary courses.While many institutions are developing introductory courses to impart universal literacy (skills students need to know) and creative literacy (skills for creating new content), discipline-specific skills (skills needed to succeed within a specific discipline) are a vital extension to their learning and ability to apply digital literacy in different contexts. This book provides examples of how to integrate digital literacy across a wide variety of courses spanning many domains.Rather than a wholly new core institutional outcome, digital literacy adds to the development of critical thinking, communication, problem-solving, and teamwork skills by building students' capacities to assess online information so they can ethically share, communicate, or repurpose it through the appropriate use of available digital technologies. In short, it provides the vital digital dimension to their learning and the literacy skills which will be in increasing demand in their future lives.Following introductory chapters providing context and a theoretical framework, the contributing authors from different disciplines share the digital competencies and skills needed within their fields, the strategies they use to teach them, and insights about the choices they made. What shines through the examples is that, regardless of the specificity of the disciplinary examples, they offer all readers a commonality of approach and a trove of ideas that can be adapted to other contexts.This book constitutes a practical introduction for faculty interested in including opportunities to apply digital literacy to discipline-specific content. The book will benefit faculty developers and instructional designers who work with disciplinary faculty to integrate digital literacy. The book underscores the importance of preparing students at the course level to create, and be assessed on, digital content as fields are modernizing and delivery formats of assignments are evolving.Domains covered include digital literacy in teacher education, writing, musicology, indigenous literary studies, communications, journalism, business information technology, strategic management, chemistry, biology, health sciences, optometry, school librarianship, and law.The book demonstrates a range of approaches that can used to teach digital literacy skills in the classroom, including:·Progressing from digital literacy to digital fluency ·Increasing digital literacy by creating digital content · Assessment of digital literacy ·Identifying ethical considerations with digital literacy ·Sharing digital content outside of the classroom ·Identifying misinformation in digital communications ·Digitizing instructional practices, like lab notes and essays ·Reframing digital literacy from assumption to opportunity ·Preparing students to teach digital literacy to others ·Collaborating with other departments on campus to support digital literacy instruction ·Incorporating media into digital literacy (digital media literacy) ·Using digital storytelling and infographics to teach content knowledge] ·Weaving digital literacy throughout the curriculum of a program, and with increasing depth

Applied Artificial Higher Order Neural Networks for Control and Recognition

An important part of the colossal effort associated with the understanding of the brain involves using electronics hardware technology in order to reproduce biological behavior in 'silico'. The idea revolves

around leveraging decades of experience in the electronics industry as well as new biological findings that are employed towards reproducing key behaviors of fundamental elements of the brain (notably neurons and synapses) at far greater speed-scale products than any software-only implementation can achieve for the given level of modelling detail. So far, the field of neuromorphic engineering has proven itself as a major source of innovation towards the ‘silicon brain’ goal, with the methods employed by its community largely focused on circuit design (analogue, digital and mixed signal) and standard, commercial, Complementary Metal-Oxide Silicon (CMOS) technology as the preferred `tools of choice’ when trying to simulate or emulate biological behavior. However, alongside the circuit-oriented sector of the community there exists another community developing new electronic technologies with the express aim of creating advanced devices, beyond the capabilities of CMOS, that can intrinsically simulate neuron- or synapse-like behavior. A notable example concerns nanoelectronic devices responding to well-defined input signals by suitably changing their internal state (‘weight’), thereby exhibiting `synapse-like’ plasticity. This is in stark contrast to circuit-oriented approaches where the `synaptic weight’ variable has to be first stored, typically as charge on a capacitor or digitally, and then appropriately changed via complicated circuitry. The shift of very much complexity from circuitry to devices could potentially be a major enabling factor for very-large scale `synaptic electronics’, particularly if the new devices can be operated at much lower power budgets than their corresponding 'traditional' circuit replacements. To bring this promise to fruition, synergy between the well-established practices of the circuit-oriented approach and the vastness of possibilities opened by the advent of novel nanoelectronic devices with rich internal dynamics is absolutely essential and will create the opportunity for radical innovation in both fields. The result of such synergy can be of potentially staggering impact to the progress of our efforts to both simulate the brain and ultimately understand it. In this Research Topic, we wish to provide an overview of what constitutes state-of-the-art in terms of enabling technologies for very large scale synaptic electronics, with particular stress on innovative nanoelectronic devices and circuit/system design techniques that can facilitate the development of very large scale brain-inspired electronic systems

Nature-Inspired Computing: Concepts, Methodologies, Tools, and Applications

This book is titled Osteosarcoma - Diagnosis, Mechanisms, and Translational Developments, and focuses on recent advancements and novel ideas in osteosarcoma research. In a manner of speaking, we have taken the multidisciplinary mindset essential for treating osteosarcoma and broadened it to include other areas of cancer research. By learning from gains in other areas of oncology, such as new lncRNAs, the understanding of cancer metabolism and oxidative phosphorylation, and new chemotherapy agents, we can apply them to the niche of osteosarcoma for treatment development. By drawing more attention to these novel and clever discoveries, we hope to continue this enthusiasm for advancements in basic and translational research in the field of osteosarcoma.

Hierarchical Object Representations in the Visual Cortex and Computer Vision

Modern neural networks gave rise to major breakthroughs in several research areas. In neuroscience, we are witnessing a reappraisal of neural network theory and its relevance for understanding information processing in biological systems. The research presented in this book provides various perspectives on the use of artificial neural networks as models of neural information processing. We consider the biological plausibility of neural networks, performance improvements, spiking neural networks and the use of neural networks for understanding brain function.

Integrating Digital Literacy in the Disciplines

Artificial Intelligence, Machine Learning, and Deep Learning in Precision Medicine and Liver Diseases: Concept, Technology, Application, and Perspectives combines four major applications of artificial intelligence (AI) within the field of clinical medicine specific to liver diseases: radiology imaging, electronic health records, pathology, and multiomics. The book provides a state-of-the-art summary of AI in precision

medicine in hepatology, clarifying the concept and technology of AI and pointing to the current and future applications of AI within the field of hepatology. Coverage includes data preparation, methodology and application within disease-specific cases in fibrosis, viral and steatohepatitis, cirrhosis, hepatocellular carcinoma, acute liver failure, liver transplantation, and more. The ethical and legal issues of AI and future challenges and perspectives are also discussed. By highlighting many new AI applications which can further research, diagnosis, and treatment, this reference is the perfect resource for both practicing hepatologists and researchers focused on AI applications in medicine. Introduces the concept of AI and machine learning of precision medicine in the field of hepatology Discusses current challenges of AI in healthcare and proposes future tasks for AI in new workflows of healthcare Provides real-world applications from domain experts in clinical medicine

Enabling Technologies for Very Large-Scale Synaptic Electronics

The expansion of digital data has transformed various sectors of business such as healthcare, industrial manufacturing, and transportation. A new way of solving business problems has emerged through the use of machine learning techniques in conjunction with big data analytics. Deep Learning Innovations and Their Convergence With Big Data is a pivotal reference for the latest scholarly research on upcoming trends in data analytics and potential technologies that will facilitate insight in various domains of science, industry, business, and consumer applications. Featuring extensive coverage on a broad range of topics and perspectives such as deep neural network, domain adaptation modeling, and threat detection, this book is ideally designed for researchers, professionals, and students seeking current research on the latest trends in the field of deep learning techniques in big data analytics.

Osteosarcoma

This volume describes how frontier efficiency methodologies such as Data Envelopment Analysis (DEA) and other techniques such as multi-criteria decision making can help service industries to improve their performance by providing a ranking of best-practice efficient service units and by identifying sources of inefficiency for each service unit. It explains how they can be used to determine potential improvement targets for each of the inefficient service units, to identify peers for each service organization and to provide a basis for continuous performance improvement. Presenting applications in a variety of industries, this book will be useful for the service management to improve service productivity, profitability, sustainability and quality and effectiveness of service deliveries. A free trial version of the World’s leading Data Envelopment Analysis Software (PIM-DEA) is available for readers of this book.

Artificial Neural Networks as Models of Neural Information Processing

Mounting evidence in the last years has demonstrated that self-regulation of brain activity can successfully be achieved by neurofeedback (NF). These methodologies have constituted themselves as new tools for cognitive neuroscience establishing causal links between voluntary brain activations and cognition and behavior, and as potential novel approaches for clinical applications in severe neuropsychiatric disorders (e.g. schizophrenia, depression, Parkinson´s disease, etc.). Current developments of brain imaging-based neurofeedback include the study of the behavioral modifications and neural reorganization produced by learned regulation of the activity of circumscribed brain regions and neuronal network activations. In a rapidly developing field, many open questions and controversies have arisen, i.e. choosing the proper experimental design, the adequate use of control conditions and subjects, the mechanism of learning involved in brain self-regulation, and the still unexplored potential long-lasting effect on brain reorganization and clinical alleviation, among others. This special issue on self-regulation of the brain of emotion and attention using NF approaches interested authors to report technical and methodological advances, scientific investigations in understanding the relation between brain activity and behaviour using NF, and finally studies developing clinical treatment of emotional and attentional disorders. The editors of this special issue anticipate rapid developments in this emerging field.

Artificial Intelligence, Machine Learning, and Deep Learning in Precision Medicine in Liver Diseases

Brain-inspired Machine Learning and Computation for Brain-Behavior Analysis
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