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# Professor Indian Institute Of Technology Roorkee

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Proceedings of the International Conference on Computational Intelligence and Sustainable Technologies  
 Information and Communication Technology for Intelligent Systems  
 Understanding Urbanisation in Northeast India  
 International Conference on Digital Libraries (ICDL) 2016  
 Demystifying the Brain  
 Recent Advances in Civil Engineering  
 Intelligent Manufacturing and Energy Sustainability  
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 Springer Handbook of Experimental Solid Mechanics  
 Computational Intelligence in Pattern Recognition  
 Mathematics in Science and Technology  
 Emerging Trends in Electrical, Communications and Information Technologies  
 Theory of Elasticity  
 Advances in Transportation Engineering

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## EVELYN CERVANTES

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*Proceedings of the International Conference on Computational Intelligence and Sustainable Technologies* Allied Publishers  
 This book features high-quality research papers presented at the 2nd International Conference on Computational Intelligence in Pattern Recognition (CIPR 2020), held at the Institute of Engineering and Management, Kolkata, West Bengal, India, on 4-5 January 2020. It includes practical development experiences in various areas of data analysis and pattern recognition, focusing on soft computing technologies, clustering and classification algorithms, rough set and fuzzy set theory, evolutionary computations, neural science and neural network systems, image processing, combinatorial pattern matching, social network analysis, audio and video data analysis, data mining in dynamic environments, bioinformatics, hybrid computing, big data analytics and deep learning. It also provides innovative solutions to the challenges in these areas and discusses recent developments.

## Information and Communication Technology for Intelligent Systems Elsevier

This volume explores the dynamics of urbanisation in Northeast India. It discusses the impact of the process of urbanisation on the environment, infrastructure and socio-economic conditions of the region. The chapters in the book: Examine various challenges and opportunities of urbanisation, such as frontier urbanism, urban congestion, smart cities, vernacular architecture, urban water and waste management, cross-border migration and ethnicity. Draw attention to critical issues that have massively disturbed the urban landscape including deterioration of water quality, seismic activity and air pollution. Give alternatives that could present possible solutions to the problems afflicting this region. Drawing on case studies rooted in extensive fieldwork, this book will be indispensable to researchers and students of urban studies, human geography, development economics, cultural studies and South Asian studies. It will also be of interest to policy-makers, government representatives and town planners. Understanding Urbanisation in Northeast India Springer Nature  
 This unique volume presents reviews of research in several important areas of applications of mathematical concepts to

science and technology, for example applications of inverse problems and wavelets to real world systems. The book provides a comprehensive overview of current research of several outstanding scholars engaged in diverse fields such as complexity theory, vertex coupling in quantum graphs, mixing of substances by turbulence, network dynamics and architecture, processes with rate — independent hysteresis, numerical analysis of Hamilton Jacobi — Bellman equations, simulations of complex stochastic differential equations, optimal flow control, shape optimal flow control, shape optimization and aircraft designing, mathematics of brain, nanotechnology and DNA structure and mathematical models of environmental problems. The volume also contains contributory talks based on current researches of comparatively young researchers participating in the conference.

Contents: Part A Invited Talk: In Appreciation of Dr Zakir Husain Award (M Zuhair Nashed) Kinematical Conservation Laws (KCL): Equations of Evolution of Curves and Surfaces (K R Arun and P Prasad) Systematic Discretization of Input/Output Maps and Control of Partial Differential Equations (J Heiland, V Mehrmann and M Schmidt) Vertex Couplings in Quantum Graphs: Approximations by Scaled Schrödinger Operators (P Exner) Complexity Leads to Randomness in Chaotic Systems (R Lozi) Mathematical Modeling for Unifying Different Branches of Science, Engineering and Technology (N Rudraiah) On Equivalence Transformations and Exact Solutions of a Helmholtz Type Equation (O P Bhutani and L R Chowdhury) Cognitive Radio: State-of-the-Art and Mathematical Challenges (T Nadkar, V Thumar, A Patel, Md Z Ali Khan, U B Desai and S N Merchant) Part B Thematic Reviews: Inverse Problems of Parameter Identification in Partial Differential Equations (B Jadamba, A A Khan and M Sama) Finite Element Methods for HJB Equations (M Boulbrachene) Dynamics and Control of Underactuated Space Systems (K D Kumar and Godard) Some New Classes of Inverse Coefficient Problems in Engineering Mechanics and Computational Material Science Based on Boundary Measured Data (A Hasanov) Some Recent Developments on Mathematical Aspect of Wavelets (P Manchanda and Meenakshi) Relevance of Wavelets and Inverse Problems to Brain (A H Siddiqi, H K Sevindir, Z Aslan and C Yazici) Wavelets and Inverse Problems (K Goyal and M Mehra) Optimization Models for a Class of Structured Stochastic Games (S K Neogy, S Sinha, A K Das and A Gupta) Part C Contributory Talks: Predator-Prey Relations for Mammals where Prey Suppress Breeding (Q J Khan and M Al-Lawatia) SEI Model with Varying Transmission and Mortality Rates (G Rost) Trajectories and Stability Regions of the Lagrangian Points in the Generalized Chermnykh-Like Problem (B S Kushvah) MHD Flow Past an Infinite Plate Under the Effect of Gravity Modulation (S Wasu and S C Rajvanshi)

Readership: Researchers in mathematical modeling, numerical analysis and computational mathematics. Keywords: Complexity Theory; Vertex Coupling in Quantum Graphs; Hamilton-Jacobi — Bellman Equation; Prey and Predator Model; Inverse Problems and Wavelets; Dynamics and Control of Under Actuated Space Systems

*International Conference on Digital Libraries (ICDL) 2016* CRC Press

Reliability concerns and the limitations of process technology can sometimes restrict the innovation process involved in designing nano-scale analog circuits. The success of nano-scale analog circuit design requires repeat experimentation, correct analysis of the device physics, process technology, and adequate use of the knowledge database. Starting with the basics, *Nano-Scale CMOS Analog Circuits: Models and CAD Techniques for High-Level Design* introduces the essential fundamental concepts for designing analog circuits with optimal performances. This book explains the links between the physics and technology of scaled

MOS transistors and the design and simulation of nano-scale analog circuits. It also explores the development of structured computer-aided design (CAD) techniques for architecture-level and circuit-level design of analog circuits. The book outlines the general trends of technology scaling with respect to device geometry, process parameters, and supply voltage. It describes models and optimization techniques, as well as the compact modeling of scaled MOS transistors for VLSI circuit simulation. • Includes two learning-based methods: the artificial neural network (ANN) and the least-squares support vector machine (LS-SVM) method • Provides case studies demonstrating the practical use of these two methods • Explores circuit sizing and specification translation tasks • Introduces the particle swarm optimization technique and provides examples of sizing analog circuits • Discusses the advanced effects of scaled MOS transistors like narrow width effects, and vertical and lateral channel engineering

*Nano-Scale CMOS Analog Circuits: Models and CAD Techniques for High-Level Design* describes the models and CAD techniques, explores the physics of MOS transistors, and considers the design challenges involving statistical variations of process technology parameters and reliability constraints related to circuit design.

#### **Demystifying the Brain** CRC Press

This book presents the select proceedings of the International Conference on Civil Engineering Trends and Challenges for Sustainability (CTCS 2021). It discusses emerging and latest research and advances in sustainability in different areas of civil engineering, providing solutions to sustainable development. Various topics covered include sustainable construction technology & building materials; structural engineering, transportation and traffic engineering, geotechnical engineering, environmental engineering, water resources engineering, remote sensing and GIS applications. This book will be of potential interest to researchers and professionals working in sustainable civil engineering and related fields.

#### *Recent Advances in Civil Engineering* Springer

This book comprises selected papers on advances in the field of health and environment safety that were presented at the leading international conference on advances in the field of health, safety, fire, environment, allied sciences and engineering (HSFEA 2016). The book focuses on the latest developments in the field of health and environment safety, and highlights related opportunities and challenges. The book also presents methods that can be used to effectively monitor and measure climate change and global warming. Further, the contents of this work stress the importance of maintaining safety and healthy work environments that are free of occupational health hazards. This book will be of interest to researchers, professionals, and policy makers alike.

#### **Intelligent Manufacturing and Energy Sustainability** CRC Press

The ICDL Conferences are recognized as one of the most important platforms in the world where noted experts share their experiences. Many DL experts have contributed thought-provoking papers in ICDL 2016. These important papers are reviewed and conceptualized into ICDL on different areas of DL proceedings. The Proceedings have two volumes and over 700 pages.

#### *Natural Products of Woody Plants* Springer Nature

This book presents the collection of the accepted research papers presented in the 1st 'International Conference on Computational Intelligence and Sustainable Technologies (ICoCIST-2021)'. This edited book contains the articles related to the themes on artificial intelligence in machine learning, big data analysis, soft computing techniques, pattern recognitions, sustainable

infrastructural development, sustainable grid computing and innovative technology for societal development, renewable energy, and innovations in Internet of Things (IoT).

*Digital Photoelasticity* Springer Nature

Interdisciplinary Engineering Sciences introduces and emphasizes the importance of the interdisciplinary nature of education and research from a materials science perspective. This approach is aimed to promote understanding of the physical, chemical, biological and engineering aspects of any materials science problem. Contents are prepared to maintain the strong background of fundamental engineering disciplines while integrating them with the disciplines of natural science. It presents key concepts and includes case studies on biomedical materials and renewable energy. Aimed at senior undergraduate and graduate students in materials science and other streams of engineering, this book Explores interdisciplinary research aspects in a coherent manner for materials science researchers Presents key concepts of engineering sciences as relevant for materials science in terms of fundamentals and applications Discusses engineering mechanics, biological and physical sciences Includes relevant case studies and examples

*Technology Drivers: Engine for Growth* Springer Science & Business Media

The Proceedings of 3rd International Conference on Opto-Electronics and Applied Optics, OPTRONIX 2016 is an effort to promote and present the research works by scientists and researchers including students in India and abroad in the area of Green Photonics and other related areas as well as to raise awareness about the recent trends of research and development in the area of the related fields. The book has been organized in such a way that it will be easier for the readers to go through and find out the topic of their interests. The first part includes the Keynote addresses by Rajesh Gupta, Department of Energy Science and Engineering, Indian Institute of Technology, Bombay; P.T. Ajith Kumar, President and Leading Scientist Light Logics Holography and Optics, Crescent Hill, Trivandrum, Kerala; and K.K. Ghosh, Institute of Engineering & Management, Kolkata, India. The second part focuses on the Plenary and Invited Talks given by eminent scientists namely, Vasudevan Lakshminarayanan, University of Waterloo, Canada; Motoharu Fujigaki, University of Fukui, Japan; Takeo Sasaki, Tokyo University of Science, Japan; Kehar Singh, Former Professor, Indian Institute of Technology, Delhi, India; Rajpal S. Sirohi, Tezpur University, India; Ajoy Kumar Chakraborty, Institute of Engineering & Management, India; Lakshminarayan Hazra, Emeritus Professor, Calcutta University, India; S.K. Bhadra, Emeritus Scientist, Indian Institute of Chemical Biology, India; Partha Roy Chaudhuri, Department of Physics, Indian Institute of Technology, Kharagpur, India; Navin Nishchal, Indian Institute of Technology, Patna, India; Tarun Kumar Gangopadhyay, CSIR-Central Glass and Ceramic Research Institute, India; Samudra Roy, Department of Physics, Indian Institute of Technology, Kharagpur, India; Kamakhya Ghatak, University of Engineering & Management, India. The subsequent parts focus on contributory papers in : Green Photonics; Fibre and Integrated Optics; Lasers, Interferometry; Optical Communication and Networks; Optical and Digital Data and Image Processing; Opto-Electronic Devices, Terahertz Technology; Nano-Photonics, Bio-Photonics, Bio-Medical Optics; Lasers, Quantum Optics and Information Technology; E. M. Radiation Theory and Antenna; Cryptography; Quantum and Non-Linear Optics, Opto-Electronic Devices; Non-Linear Waveguides; Micro-Electronics and VLSI; Interdisciplinary.

**Cloud-IoT Technologies in Society 5.0** Springer Nature

Theory of Elasticity provides a modern and integrated treatment of the foundations of solid mechanics as applied to the

mathematical description of material behavior primarily to serve the needs of undergraduate, postgraduate and research students of Civil, Mechanical and Aeronautical engineering. Basic concepts, definitions, theory as well as related practical applications are discussed in a logical and concise manner. The book includes a pedagogical features such as worked examples and problems to consolidate the readers' understanding of fundamental principles and illustrates their applications in many practical situations. An important feature of this book lies in the use of linear theory of elasticity to obtain solutions to some of the specialized problems related to soil mechanics and foundation engineering in particular.

*Electric Discharge Hybrid-Machining Processes* Springer Nature

In the late 1800s India seemed to be left behind by the Industrial Revolution. Today there are many technological Indians around the world but relatively few focus on India's problems. Ross Bassett—drawing on a database of every Indian to graduate from the Massachusetts Institute of Technology through 2000—explains the role of MIT in this outcome.

*Advances in Industrial Safety* The Energy and Resources Institute (TERI)

The conference on 'Interdisciplinary Research in Technology and Management' was a bold experiment in deviating from the traditional approach of conferences which focus on a specific topic or theme. By attempting to bring diverse inter-related topics on a common platform, the conference has sought to answer a long felt need and give a fillip to interdisciplinary research not only within the technology domain but across domains in the management field as well. The spectrum of topics covered in the research papers is too wide to be singled out for specific mention but it is noteworthy that these papers addressed many important and relevant concerns of the day.

*Interdisciplinary Engineering Sciences* Springer

This book provides the knowledge and insight into the fundamental aspects of Electric Discharge Machining (EDM) processes and various hybrid machining technologies derived to improve the machining efficiencies. Fundamental theory of material removal, recent research trends and future research directions have been covered in each chapter. After explaining EDM, Dry and Near-dry EDM processes, Electrochemical Spark Machining, Arc Machining processes, Electric Discharge Hybrid-Turning processes, Electrical Discharge Grinding, Electric Discharge Milling, and various assisted EDM processes have been discussed. Finally, modeling and simulation of hybrid machining processes are also included. The book reflects the recent developments and trends in electric discharge hybrid machining processes. It covers in detail the basics of EDM, various hybrid and assistive technologies in EDM. It includes the updated discussion on the significance of process parameters in various hybrid EDM processes. An overview of modelling and simulation of hybrid EDM process is provided. This book is aimed at Graduate students, researchers in manufacturing engineering, production engineering, and materials engineering.

**Enzyme Inactivation in Food Processing** Springer

Global Practices on Road Traffic Signal Control is a valuable reference on the current state-of-the-art of road traffic signal control around the world. The book provides a detailed description of the common principles of road traffic signal control using a well-defined and consistent format that examines their application in countries and regions across the globe. This important resource considers the differences and special considerations across countries, providing useful insights into selecting control strategies for signal timing at intersections and pedestrian crosswalks. The book's authors also include success stories for coping with increasing traffic-related problems,

examining both constraints and the reasons behind them. Presents a comprehensive reference on country-by-country practices on road traffic signal control Compiles and compares approaches across countries Covers theories and common principles Examines the most current systems and their implementation

Proceedings of the Multi-Conference 2011 Springer

This book presents an emerging new vision of the brain, which is essentially expressed in computational terms, for non-experts. As such, it presents the fundamental concepts of neuroscience in simple language, without overwhelming non-biologists with excessive biological jargon. In addition, the book presents a novel computational perspective on the brain for biologists, without resorting to complex mathematical equations. It addresses a comprehensive range of topics, starting with the history of neuroscience, the function of the individual neuron, the various kinds of neural network models that can explain diverse neural phenomena, sensory-motor function, language, emotions, and concluding with the latest theories on consciousness. The book offers readers a panoramic introduction to the “new brain” and a valuable resource for interdisciplinary researchers looking to gatecrash the world of neuroscience.

**I.C. Engines And Combustion** CRC Press

This volume of proceedings from the conference provides an opportunity for readers to engage with a selection of refereed papers that were presented during the 6th International Conference NUICONE'17. Researchers from industry and academia were invited to present their research work in the areas as listed below. The research papers presented in these tracks have been published in this proceeding with the support of CRC Press, Taylor & Francis Group. This proceeding will definitely provide a platform to proliferate new findings among the researchers. Chemical Process Development and Design Technologies for Green Environment Advances in Transportation Engineering Emerging Trends in Water Resources and Environmental Engineering Construction Technology and Management Concrete and Structural Engineering Sustainable Manufacturing Processes Design and Analysis of Machine and Mechanism Energy Conservation and Management

**The Technological Indian** Penguin UK

This book provides in-depth knowledge in the areas of convergence of cloud-IoT technologies and industry 4.0 with society 5.0, machine-to-machine communication, machine-to-person communication, techno-psychological perspective of society 5.0, sentiment analysis of smart digital societies, multi-access edge computing for 5G networks, discovery & location reporting of multi-access edge enabled clients/servers, m-health systems, enhancing the concert of M-health technologies in smart societies, supervising communication services in smart societies, life quality enhancement in smart city societies, multiple disease infection predictions, and societal opinion mining algorithms for smart cities societies using cloud-IoT integrated intelligent machine / deep learning technologies to the readers in the distributive environment. In this book, the authors have mandatorily discussed the implementation of cloud-IoT based machine learning technologies like clustering technique, Naïve Bayes classifier, artificial neural network (ANN), Firefly algorithm, Rough set classifiers, support vector machine classifier, decision tree classifier, ensemble classifier, random forest, and deep learning algorithms to analyze the behavior of intelligent machines and human habits using automated data scheduling and smart digital networks. At present, we live in a self-motivated and dynamic global society where technologies and challenges are unexpectedly changing overnight. These rapid changes in globalization and technological advances are creating new

market forces every day. Therefore, day-to-day innovation is essential for any business or institution to survive and flourish in such an atmosphere. Though, innovation is no longer just to create value to do good to individuals, societies, or organizations. The utmost purpose of innovation is to create a smart futuristic society where people can enjoy the best quality of life using natural resources and manmade technologies including cloud-IoT technologies, and industry 4.0. Hence, the innovators and their innovations must search for intelligent solutions to tackle major socio-technical problems and remove barriers of rural, urban and smart city societies. The smart digitization and intelligent implementation of manufacturing development processes are the necessities for today's rural, urban, and smart city industries. All types of industries including development, manufacturing, and research are presently shifting from bunch production to customized production. The fast advancements in manufacturing technologies have an in-depth impact on all types of societies including societies of rural areas, urban areas, and smart cities. Industry 4.0 includes the Internet of Things (IoT), Industrial Internet, Smart Manufacturing, Cloud-based computing, and Manufacturing Technologies. The objective of this book is to establish linkage between the Industry 4.0 components and various rural, urban & smart city societies (including society 5.0) to bring actual prosperity where human values, peace of mind, human relations, man-machine-relations, and calmness will have utmost preference. These objectives can be achieved by the integration of human societal values, and social opinion mining (SOM) approaches with the existing technologies.

Nano-scale CMOS Analog Circuits CRC Press

This book presents the proceedings of the International Conference on Health, Safety, Fire, Environment, and Allied Sciences (HSFEA 2018), highlighting the latest developments in the field of science and technology aimed at improving health and safety in the workplace. The volume comprises content from leading scientists, engineers, and policy makers, discussing water pollution and advanced remedial measures, and the impact on health and the environment. Topics of discussion include research on emerging water pollutants, their sources, monitoring and control. The contents of this volume will be of interest to researchers, practitioners, and policy makers alike.

Interdisciplinary Research in Technology and Management Springer Nature

The Fourth IIT traces the historical evolution of the Indian Institute of Technology Kanpur (IITK), established fourth in the chronological ladder of IITs after the institutes at Kharagpur, Bombay and Madras. The early beginnings of IITK are explored, with the appointment of Dr P.K. Kelkar as its founder-director, its humble commencement in the temporary premises of Harcourt Butler Technological Institute (HBTI) and the initiation of a traditional BTech programme. We see how rapid transformations enabled the institute to introduce and nurture a new academic culture in the country, illustrated by the paradigm shift in higher technical education and the freshness of a new spirit in higher education in general—the spirit of IITK. An inventive approach to faculty appointments, student admissions and the development of a novel academic structure are some of the deeply appreciated attributes that IITK has epitomized—and striven for. The book also captures IITK in the present times, in its pursuit of continually improving the material life of its students, staff members and the faculty, and the veritably important role played by the alumni, and also sheds light on the ‘new vision’ of the institute. Expertly and lovingly written by IITK insiders and long-timers, The Fourth IIT is ideal for past and present students and educators, and for anyone interested in an in-depth analysis of one of the most beloved and respected academic institutions in

the country.

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