Handbook of Research on Computational Intelligence for Engineering, Science, and Business

Siddhartha Bhattacharyya (RCC Institute of Information Technology, India) and Paramartha Dutta (Visva-Bharati University, India)

Using the same strategy for the needs of image processing and pattern recognition, scientists and researchers have turned to computational intelligence for better research throughputs and end results applied towards engineering, science, business and financial applications.

Handbook of Research on Computational Intelligence for Engineering, Science, and Business discusses the computation intelligence approaches, initiatives and applications in the engineering, science and business fields. This reference aims to highlight computational intelligence as no longer limited to computing-related disciplines and can be applied to any effort which handles complex and meaningful information.

Topics Covered:

- Adaptive Technologies
- Computational Intelligence
- Evolutionary Computation
- Innovative Computing Systems
- Neural Networks
- Systems Engineering
- Theoretical and Applied Sciences


Print: US $495.00 | Perpetual: US $745.00 | Print + Perpetual: US $990.00

Pre-pub Discount:*  
Print: US $470.00 | Perpetual: US $710.00

* Pre-pub price is good through one month after publication date.

Market: This premier publication is essential for all academic and research library reference collections. It is a crucial tool for academicians, researchers, and practitioners and is ideal for classroom use.

Dr. Siddhartha Bhattacharyya earned his Bachelors in Physics, Bachelors in Optics and Optoelectronics, and Masters in Optics and Optoelectronics from University of Calcutta, India in 1995, 1998, and 2000. He completed his PhD in Computer Science and Engineering from Jadavpur University, India in 2008. He is currently an Associate Professor in Information Technology of RCC Institute of Information Technology, Kolkata, India. Prior to this, he was an Assistant Professor in Computer Science and Information Technology of University Institute of Technology, The University of Burdwan, India from 2005-2011. He was a Lecturer in Information Technology of Kalyani Government Engineering College, India during 2001-2005. He is a co-author of a book and more than about 75 research publications. He was the member of the Young Researchers’ Committee of the WSC 2008 Online World Conference on Soft Computing in Industrial Applications. He was the convener of the AICTE-IEEE National Conference on Computing and Communication Systems (CoCoSys-09) in 2009. He has been the member of the organizing and technical program committees of several national and international conferences. He is the Assistant Editor of International Journal of Pattern Recognition Research since 2010. He is the member of the editorial board of International Journal of Engineering, Science and Technology and the member of the editorial advisory board of HETC Journal of Computer Engineering and Applications. His research interests include soft computing, pattern recognition and quantum computing. Dr. Bhattacharyya is a member of IEEE, IRSS and IAENG. He is a life member of OSI and ISTE, India.
Section 1: Overview of Computational Intelligence

Chapter 1
Computational Intelligence Using Type-2 Fuzzy Logic Framework
Neogi A. (The University of Burdwan, India)
Mondal A.C. (The University of Burdwan, India)
Mandal S.K. (National Institute of Technical Teachers’ Training & Research, India)

Chapter 2
Khondekar Mofazzal H. (Dr. B.C. Roy Engineering College, India)
Ghosh Dipendra N. (Dr. B.C. Roy Engineering College, India)
Ghosh Koushik (University Institute of Technology, University of Burdwan, India)
Bhattacharya Anup Kumar (National Institute of Technology, India)

Chapter 3
Machine Intelligence Using Hierarchical Memory Networks
James A. P. (IIITM-Kerala, India)

Section 2: Image Processing and Segmentation

Chapter 4
Image Analysis and Understanding Based on Information Theoretical Region Merging Approaches for Segmentation and Cooperative Fusion
Calderero Felipe (Universitat Pompeu Fabra (UPF), Spain)
Marqués Ferran (Technical University of Catalonía (UPC), Spain)

Chapter 5
MultiLevel Image Segmentation by a Multiobjective Genetic Algorithm Based OptimUSIG Activation Function
De Sourav (The University of Burdwan, India)
Bhattacharyya Siddhartha (RCC Institute of Information Technology, India)
Chakraborty Susanta (Bengal Engineering & Science University, India)

Chapter 6
A Novel Fuzzy Rule Guided Intelligent Technique for Gray Image Extraction and Segmentation
Mondal Koushik (Indian Institute of Science Education and Research, India)

Chapter 7
Graph Based Segmentation of Digital Images
Tripathy B.K. (VIT University, India)
Moudi PV.S.S.R. Chandra (VIT University, India)

Chapter 8
Development of a Stop-Line Violation Detection System for Indian Vehicles
Saha Satadal (MCKV Institute of Engineering, India)
Basu Subhadip (Jadavpur University, India)
Nasipuri Mita (Jadavpur University, India)

Chapter 9
A Comparative Study of Unsupervised Video Shot Boundary Detection Techniques Using Probabilistic Fuzzy Entropy Measures
Chakraborty Biswanath (RCC Institute of Information Technology, India)
Bhattacharyya Siddhartha (RCC Institute of Information Technology, India)
Chakraborty Susanta (Bengal Engineering & Science University, India)

Chapter 10
A Hierarchical Multilevel Image Thresholding Method Based on the Maximum Fuzzy Entropy Principle
Guan Pei P. (City University of Hong Kong, Hong Kong)
Yan Hong (City University of Hong Kong, Hong Kong & University of Sydney, Australia)

Chapter 11
Adaptive Median Filtering Based on Unsupervised Classification of Pixels
Mandal J. K. (University of Kalyani, India)
Mahopadhyay Somnath (Aryabhatta Institute of Engineering & Management Durgapur, India)

Section 3: Database Oriented Techniques

Chapter 12
Data Clustering Algorithms Using Rough Sets
B.K. Tripathy (VIT University, India)
Ghosh Adhir (VIT University, India)

Chapter 13
Evolution of Genetic Algorithms in Classification Rule Mining
Dutta Dipankar (University Institute of Technology, The University of Burdwan, India)
Sil Jaya (Bengal Engineering and Science University, India)

Chapter 14
Database Anonymization Techniques with Focus on Uncertainty and Multi-Sensitive Attributes
Tripathy B. K. (VIT University, India)

Chapter 15
Using Data Mining for Monitoring and Performance in Data Warehousing
Santos Ricardo Jorge (CISUC – FCTUC – University of Coimbra, Portugal)
Bernardino Jorge (CISUC – ISEC – Politecnico Institute of Coimbra, Portugal)
Vieira Marco (CISUC – FCTUC – University of Coimbra, Portugal)

Chapter 16
Schedule Based on Ant Colony Optimization for Aircraft Approach Experiments in Distributed Environment
Pacini Elma (Institute for Information and Communication Technologies, Universidad National de Cuyo, Argentina)
Mateos Cristian (Instituto Superior de Ingeniería de Software, Consejo Nacional de Investigaciones Científicas y Tecnicas, Argentina)
Garino Carlos García (Institute for Information and Communication Technologies, Universidad Nacional de Cuyo, Argentina)

Section 4: Classification, Design, and Modeling

Chapter 17
Particle Swarm Optimization Algorithm and its Hybrid Variants for Feature Subset Selection
Chakraborty Basabi (Iwate Prefectural University, Japan)

Chapter 18
An Evolving System of the Text Classification Problem
Oliveira Elais (Universidade Federal do Espírito Santo, Brazil)
Carrelli Patrick Marques (Universidade Federal do Espírito Santo, Brazil)
Salles Evandro Ottone Teatin (Universidade Federal do Espírito Santo, Brazil)

Chapter 19
Fuzzy Based Modeling, Control, and Fault Diagnosis of a Permanent Magnetic Synchronous Generator
Selvaganesan N. (Indian Institute of Space Science and Technology (IIST), Govt. of India, India)

Chapter 20
Algorithms and Principles for Intelligent Design of Flapping Wing Micro Aerial Vehicles
Harish Ajay Bangalore (Indian Institute of Science, India)
Harsurasamputh Dineshkumar (Indian Institute of Science, India)

Chapter 21
Fuzzy-Controlled Energy Conservation Technique (FECT) for Mobile ad hoc Networks
Banerjee Anuradha (Kalyani Government Engineering College, India)

Chapter 22
Decision Fusion of Multisensor Images for Human Face Identification in Information Security
Bhowmik Mrinal Kanti (Tripura University, India)
Majumder Goutam (Tripura University, India)
Bhattacharjee Debotosh (Jadavpur University, India)

Chapter 23
Modernization of a Healthcare and Medical Diagnosis System Using Multi Agent System (MAS): An Application in the Prognosis of Severe Acute Human Cranial Tumors
Gupta Shishir (University Institute of Technology, Burdwan University, India)
Mukherjee Sripari (Burdwan University, India)
Roy Sesa Singh (Tata Consultancy Service, India)

Section 5: Applications

Chapter 24
Watermarking of Data Using Biometrics
Majumder Swantirjith (Deemed University, India)
Das Tirtha Sankar (RCC Institute of Information Technology, India)
Order Your Copy Today!

Name: ____________________________________________
Organization: ____________________________________________
Address: ____________________________________________
City, State, Zip: ____________________________________________
Country: ____________________________________________
Tel: ____________________________________________
Fax: ____________________________________________
E-mail: ____________________________________________

☐ Enclosed is check payable to IGI Global in US Dollars, drawn on a US-based bank

☐ Credit Card ☐ Mastercard ☐ Visa ☐ Am. Express

3 or 4 Digit Security Code: ____________________________________________
Name on Card: ____________________________________________
Account #: ____________________________________________
Expiration Date: ____________________________________________