

Siddhartha Bhattacharyya  
Paramartha Dutta · Susanta Chakraborty  
Editors

# Hybrid Soft Computing Approaches

Research and Applications

# Contents

## Part I Hybrid Soft Computing Approaches: Research

<b>A Hybrid CS–GSA Algorithm for Optimization</b> . . . . .	3
Manoj Kumar Naik, Leena Samantaray and Rutuparna Panda	
<b>Study of Economic Load Dispatch by Various Hybrid Optimization Techniques</b> . . . . .	37
Dipankar Santra, Arindam Mondal and Anirban Mukherjee	
<b>Unsolved Problems of Ambient Computationally Intelligent TBM Algorithms</b> . . . . .	75
Ashish Runthala and Shibasish Chowdhury	
<b>Hybridizing Differential Evolution Variants Through Heterogeneous Mixing in a Distributed Framework.</b> . . . . .	107
G. Jeyakumar and C. Shunmuga Velayutham	

## Part II Hybrid Soft Computing Approaches: Applications

<b>Collaborative Simulated Annealing Genetic Algorithm for Geometric Optimization of Thermo-electric Coolers.</b> . . . . .	155
Doan V.K. Khanh, Pandian M. Vasant, Irraivan Elamvazuthi and Vo N. Dieu	
<b>Color Magnetic Resonance Brain Image Segmentation by ParaOptiMUSIG Activation Function: An Application</b> . . . . .	185
Sourav De and Siddhartha Bhattacharyya	

<b>Convergence Analysis of Backpropagation Algorithm for Designing an Intelligent System for Sensing Manhole Gases</b> . . . . .	215
Varun Kumar Ojha, Paramartha Dutta, Atal Chaudhuri and Hiranmay Saha	
<b>REFII Model as a Base for Data Mining Techniques Hybridization with Purpose of Time Series Pattern Recognition</b> . . . . .	237
Goran Klepac, Robert Kopal and Leo Mršić	
<b>A Soft Computing Approach for Targeted Product Promotion on Social Networks</b> . . . . .	271
Monika Bajaj, Shikha Mehta and Hema Banati	
<b>Hybrid Rough-PSO Approach in Remote Sensing Imagery Analysis</b> . . . . .	305
Anasua Sarkar and Rajib Das	
<b>A Study and Analysis of Hybrid Intelligent Techniques for Breast Cancer Detection Using Breast Thermograms</b> . . . . .	329
Usha Rani Gogoi, Mrinal Kanti Bhowmik, Debotosh Bhattacharjee, Anjan Kumar Ghosh and Gautam Majumdar	
<b>Neuro-Fuzzy Hybridized Model for Seasonal Rainfall Forecasting: A Case Study in Stock Index Forecasting</b> . . . . .	361
Pritpal Singh	
<b>Hybridization of 2D-3D Images for Human Face Recognition</b> . . . . .	387
Suranjan Ganguly, Debotosh Bhattacharjee and Mita Nasipuri	
<b>Neutrosophic Trust Evaluation Model in B2C E-Commerce</b> . . . . .	405
Swati Aggarwal and Anurag Bishnoi	
<b>Immune-Based Feature Selection in Rigid Medical Image Registration Using Supervised Neural Network</b> . . . . .	429
Joydev Hazra, Aditi Roy Chowdhury and Paramartha Dutta	
<b>Author Index</b> . . . . .	457