

# Table of Contents

## International Journal of Natural Computing Research

Volume 8 • Issue 4 • October-December-2019 • ISSN: 1947-928X • eISSN: 1947-9298

### Research Articles

- 1      **Minimization of Energy Hole in Under Water Sensor Networks (UWSNs)**  
Satyabrata Das, Veer Surendra Sai University of Technology, Burla, India  
Niva Tripathy, Veer Surendra Sai University of Technology, Burla, India
- 13     **A Novel Method for High Capacity Reversible Data Hiding Scheme Using Difference Expansion**  
Subhadip Mukherjee, Dept. of Computer Science, Vidyasagar University, Midnapore, India  
Biswapati Jana, Dept. of Computer Science, Vidyasagar University, Midnapore, India
- 28     **Image Denoising Using Novel Social Grouping Optimization Algorithm with Transform Domain Technique**  
B V D S Sekhar, Andhra University, Visakhapatnam, India  
P V G D Prasad Reddy, Andhra University, Visakhapatnam, India  
S Venkataramana, Andhra University, Visakhapatnam, India  
Vedula V S S S Chakravarthy, Raghu Institute of Technology, Modavalasa, India  
P Satish Rama Chowdary, Raghu Institute of Technology, Modavalasa, India
- 41     **Automatic Texture Based Classification of the Dynamics of One-Dimensional Binary Cellular Automata**  
Marcelo Arbori Nogueira, Universidade Presbiteriana Mackenzie, São Paulo, Brazil  
Pedro Paulo Balbi de Oliveira, Universidade Presbiteriana Mackenzie, São Paulo, Brazil

### COPYRIGHT

The **International Journal of Natural Computing Research (IJNCR)** (ISSN 1947-928X; eISSN 1947-9298), Copyright © 2019 IGI Global. All rights, including translation into other languages reserved by the publisher. No part of this journal may be reproduced or used in any form or by any means without written permission from the publisher, except for noncommercial, educational use including classroom teaching purposes. Product or company names used in this journal are for identification purposes only. Inclusion of the names of the products or companies does not indicate a claim of ownership by IGI Global of the trademark or registered trademark. The views expressed in this journal are those of the authors but not necessarily of IGI Global.

The *International Journal of Natural Computing Research* is indexed or listed in the following: ACM Digital Library; Bacon's Media Directory; Cabell's Directories; DBLP; Google Scholar; INSPEC; JournalTOCs; MediaFinder; The Standard Periodical Directory; Ulrich's Periodicals Directory