

# Table of Contents

## International Journal of Business Data Communications and Networking

Volume 17 • Issue 2 • July-December-2021 • ISSN: 1548-0631 • eISSN: 1548-064X

### Research Articles

- 1      **Network Slice Provisioning Approaches for Industry Verticals: New Business Models and Feasibility**  
Jaspreet Singh Walia, Aalto University, Finland  
Heikki Hämmäinen, Aalto University, Finland  
Kalevi Kilkki, Aalto University, Finland  
Hannu Flinck, Nokia Bell Labs, Finland  
Marja Matinmikko-Blue, University of Oulu, Finland  
Seppo Yrjölä, Nokia, Finland
- 16     **Protruder Optimization-Based Routing Protocol for Energy-Efficient Routing in Wireless Sensor Networks**  
Prajakta Thakare, GITAM University, India  
V. Ravi Sankar, GITAM University, India
- 41     **Wireless Body Area Networks for Healthcare: Application Trends and MAC Technologies**  
Nabila Azdad, MATSI Laboratory, ESTO, Mohammed First University, Oujda, Morocco  
Mohamed Elbouchari, MATSI Laboratory, ESTO, Mohammed First University, Oujda, Morocco
- 61     **Towards a Formal Validation of a Hybrid Multi-Agent Routing Protocol for Ad hoc Networks**  
Mohamed Amine Riahlia, LMOSE Laboratory, Boumerdes University, Algeria  
Ryma Abassi, University of Carthage, Tunisia  
Karim Tamine, Limoges University, France
- 76     **A New Cooperation Model for Dynamic Networks**  
Mohamed Amine Riahlia, LMOSE Laboratory, Boumerdes University, Algeria  
Sihem Goumri, Ingénierie des Systèmes et Télécommunications Laboratory, University of Boumerdes, Algeria  
Karim Tamine, Limoges University, France  
M'hamed Hamadouche, LMOSE Laboratory, University of Boumerdes, Algeria
- 91     **Outlier Detection Using Convolutional Neural Network for Wireless Sensor Network**  
Biswaranjan Sarangi, Biju Patnaik University of Technology, India  
Arunanshu Mahapatro, Veer Surendra Sai University of Technology, India  
Biswajit Tripathy, GITA Autonomous College, Bhubaneswar, India
- 107    **Adaptive-Sunflower-Based Grey Wolf Algorithm for Multipath Routing in IoT Networks**  
Reena P. Pingale, Sinhgad College of Science, India  
Shinde S. N., CMCS College, India

### COPYRIGHT

The *International Journal of Business Data Communications and Networking (IJBDCN)* (ISSN 1548-0631; eISSN 1548-064X), Copyright © 2021 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 Business Data Communications and Networking* is indexed or listed in the following: ABI/Inform; ACM Digital Library; Bacon's Media Directory; Burrelle's Media Directory; Cabells; CSA Illumina; DBLP; DEST Register of Refereed Journals; Excellence in Research for Australia; Gale Directory of Publications & Broadcast Media; GetCited; Google Scholar; INSPEC; JournalTOCs; MediaFinder; Norwegian Social Science Data Services (NSD); SCOPUS; The Index of Information Systems Journals; The Standard Periodical Directory; UGC-CARE List (India); Ulrich's Periodicals Directory; Web of Science; Web of Science Emerging Sources Citation Index (ESCI)