

ISSN: 1913-3715 Volume 14, Number 7, October 2021



International Journal of Communications, Network and System Sciences



<https://www.scirp.org/journal/ijcns>

JOURNAL EDITORIAL BOARD

ISSN 1913-3715 (Print) ISSN 1913-3723 (Online)

<https://www.scirp.org/journal/ijcns>

Editorial Board

Dr. Hamid Ali Abed Al-Asadi	Basra University, Iraq
Prof. Sabri Arik	Istanbul University, Turkey
Prof. Jalel Ben-Othman	Université de Paris, France
Prof. Zhenmin Chen	Florida International University, USA
Prof. Ko Chi Chung	National University of Singapore, Singapore
Prof. Daniel B. da Costa	Federal University of Ceará, Brazil
Dr. Franca Delmastro	National Research Council, Italy
Dr. Qiang Duan	Pennsylvania State University Abington College, USA
Prof. Md. B. El-Mashade	Al-Azhar University, Egypt
Prof. Kurt J. Engemann	Iona College, USA
Prof. Morteza Esmaeili	Isfahan University of Technology, Iran
Dr. Ravi Kumar Gangwar	Indian Institute of Technology (Indian School of Mines) Dhanbad, India
Prof. George Ghinea	Brunel University, UK
Prof. William A. Gruver	Simon Fraser University, Canada
Prof. Rushdi A. Hamamreh	Al-Quds University, Palestine
Dr. Jamil M. Hamodi	Hodeidah University, Yemen
Dr. Zhiyi Huang	University of Otago, New Zealand
Prof. Anca Daniela Ionita	University Politehnica of Bucharest, Romania
Prof. Hiroaki Ishii	Kwansei Gakuin University, Japan
Dr. Chris Joslin	Carleton University, Canada
Prof. Jozef Kelemen	Silesian University, Czech Republic
Prof. Alexander M. Korsunsky	Oxford University, UK
Dr. Gururaj H L	Vidyavardhaka College of Engineering, India
Prof. Felipe Lara-Rosano	National Autonomous University of Mexico, Mexico
Prof. Shahram Latifi	University of Nevada, USA
Dr. Nicola Mastronardi	National Research Council, Italy
Prof. Himanshu Monga	Jawaharlal Nehru Government Engineering College, India
Dr. Yuriy Polyakov	New Jersey Institute of Technology, USA
Prof. Jianbin Qiu	Harbin Institute of Technology, China
Prof. Kosai Raouf	Joseph Fourier University, France
Prof. Gerhard Ritter	University of Florida, USA
Dr. Ashok N. Rudrapatna	Bell Labs, Alcatel-Lucent, USA
Dr. Arif Sari	Girne American University, Cyprus
Prof. Innokentiy V. Semushin	Ulyanovsk State University, Russia
Dr. Maolin Tang	Queensland University of Technology, Australia
Prof. Lotfi A. Zadeh	University of California, USA

Table of Contents

Volume 14 Number 7

July 2021

4TQS: Four Tiers OVER Quality of Sensing with Energy Improvement in Wireless Sensor Network

L. O. P. Asqui, N. A. Z. Cedeño.....95

International Journal of Communications, Network and System Sciences (IJCNS)

Journal Information

SUBSCRIPTIONS

The *International Journal of Communications, Network and System Sciences* (Online at Scientific Research Publishing, <https://www.scirp.org/>) is published monthly by Scientific Research Publishing, Inc., USA.

Subscription rates:

Print: \$89 per issue.

To subscribe, please contact Journals Subscriptions Department, E-mail: sub@scirp.org

SERVICES

Advertisements

Advertisement Sales Department, E-mail: service@scirp.org

Reprints (minimum quantity 100 copies)

Reprints Co-ordinator, Scientific Research Publishing, Inc., USA.

E-mail: sub@scirp.org

COPYRIGHT

Copyright and reuse rights for the front matter of the journal:

Copyright © 2021 by Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY).

<http://creativecommons.org/licenses/by/4.0/>

Copyright for individual papers of the journal:

Copyright © 2021 by author(s) and Scientific Research Publishing Inc.

Reuse rights for individual papers:

Note: At SCIRP authors can choose between CC BY and CC BY-NC. Please consult each paper for its reuse rights.

Disclaimer of liability

Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any materials, instructions, methods or ideas contained herein. We expressly disclaim any implied warranties of merchantability or fitness for a particular purpose. If expert assistance is required, the services of a competent professional person should be sought.

SPONSOR

International School of Software, Wuhan University (iss.whu.edu.cn).

PRODUCTION INFORMATION

For manuscripts that have been accepted for publication, please contact:

E-mail: ijcns@scirp.org



International Journal of Communications, Network and System Sciences (IJCNS)

ISSN 1913-3715 (Print) ISSN 1913-3723 (Online)
<https://www.scirp.org/journal/ijcns>

IJCNS is an international refereed journal dedicated to the latest advancement of communications, network and system Science. The goal of this journal is to keep a record of the state-of-the-art research and promote the research work in these fast moving areas.

Subject Coverage

This journal invites original research and review papers that address the following issues in wireless communications and networks. Topics of interest include, but are not limited to:

3G, 4G and 5G Technologies	MIMO and OFDM Technologies
Ad Hoc and Mesh Networks	Network Protocol, QoS and Congestion Control
Coding, Detection and Modulation	Network Survivability
Cognitive Radio	Next Generation Network Architectures
Communication Networks Architecture Design	Reconfigurable Networks
Communication Reliability and Privacy	Resource Management
Communication Security and Information Assurance	Satellite Communication
Cooperative Communications	Sensor Networks
Embedded Distributed Systems	Simulation and Optimization Tools
Global Networks	UWB Technologies
Heterogeneous Networking	Wave Propagation and Antenna Design
Microprocessor	Wireless Personal Communications

We are also interested in short papers (letters) that clearly address a specific problem, and short survey or position papers that sketch the results or problems on a specific topic. Authors of selected short papers would be invited to write a regular paper on the same topic for future issues of the IJCNS.

Notes for Intending Authors

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. Paper submission will be handled electronically through the website. All papers are refereed through a peer review process. For more details about the submissions, please access the website.

Website and E-Mail

<https://www.scirp.org/journal/ijcns>

E-Mail: ijcns@scirp.org

What is SCIRP?

Scientific Research Publishing (SCIRP) is one of the largest Open Access journal publishers. It is currently publishing more than 200 open access, online, peer-reviewed journals covering a wide range of academic disciplines. SCIRP serves the worldwide academic communities and contributes to the progress and application of science with its publication.

What is Open Access?

All original research papers published by SCIRP are made freely and permanently accessible online immediately upon publication. To be able to provide open access journals, SCIRP defrays operation costs from authors and subscription charges only for its printed version. Open access publishing allows an immediate, worldwide, barrier-free, open access to the full text of research papers, which is in the best interests of the scientific community.

- High visibility for maximum global exposure with open access publishing model
- Rigorous peer review of research papers
- Prompt faster publication with less cost
- Guaranteed targeted, multidisciplinary audience



**Scientific
Research
Publishing**

Website: <https://www.scirp.org>

Subscription: sub@scirp.org

Advertisement: service@scirp.org