

PROCEEDINGS OF SPIE

***International Conference on
Cryptography, Network Security,
and Communication Technology
(CNSCT 2023)***

**Zhengmin Kong
Nasir Saeed**
Editors

**6–8 January 2023
Changsha, China**

Organized by
Wuhan University (China)

Sponsored by
Greater Noida Institute of Technology (India)
AEIC Academic Exchange Information Centre (China)

Published by
SPIE

Volume 12641

Proceedings of SPIE 0277-786X, V. 12641

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

International Conference on Cryptography, Network Security, and Communication Technology (CNSCT 2023),
edited by Zhengmin Kong, Nasir Saeed, Proc. of SPIE Vol. 12641, 1264101
© 2023 SPIE · 0277-786X · doi: 10.1117/12.2682769

Proc. of SPIE Vol. 12641 1264101-1

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings:

Author(s), "Title of Paper," in *International Conference on Cryptography, Network Security, and Communication Technology (CNSCT 2023)*, edited by Zhengmin Kong, Nasir Saeed, Proc. of SPIE 12641, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X
ISSN: 1996-756X (electronic)

ISBN: 9781510664944
ISBN: 9781510664951 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2023 Society of Photo-Optical Instrumentation Engineers (SPIE).

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of fees. To obtain permission to use and share articles in this volume, visit Copyright Clearance Center at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

Publication of record for individual papers is online in the SPIE Digital Library.

**SPIE. DIGITAL
LIBRARY**

SPIDigitalLibrary.org

Paper Numbering: A unique citation identifier (CID) number is assigned to each article in the Proceedings of SPIE at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

Contents

vii *Conference Committee*

COMPUTER NETWORK SECURITY AND DATA ENCRYPTION

- 12641 02 **Dark net traffic classification based on the K-NN classifier and traffic entropy** [12641-17]
- 12641 03 **Secure computing: logistic regression analysis with differential privacy** [12641-24]
- 12641 04 **Analysis of network security protection based on digital economy** [12641-32]
- 12641 05 **Honeynet optimization strategy based on attack graph** [12641-36]
- 12641 06 **A semi-homomorphic privacy computing solution based on SM2 and blockchain** [12641-15]
- 12641 07 **Vulnerability verification with the assistance of directed symbolic execution** [12641-23]
- 12641 08 **An FPGA partial reconfiguration method for satellite cryptographic device verification**
[12641-38]
- 12641 09 **Fragmentation and isolation technology of power communication network based on FlexE**
[12641-49]
- 12641 0A **Safety protection method and system of power distribution terminal** [12641-41]
- 12641 0B **Research on security system of electric Internet of Things based on depth protection** [12641-39]
- 12641 0C **A provably secure authenticated key exchange protocol based on lattice with stronger
anonymity** [12641-48]
- 12641 0D **Intellectual property transaction sharing scheme based on blockchain and proxy
re-encryption** [12641-9]
- 12641 0E **EfficientNet-based electromagnetic attack on AES cipher chips** [12641-2]
- 12641 0F **An efficient data protection scheme with blockchain in IoT** [12641-44]
- 12641 0G **Out-degree betweenness centrality based on betweenness centrality** [12641-37]
- 12641 0H **Hiding information in BMP based on ECC and LSB algorithm** [12641-35]

- 12641 OI **Research on certificate management and key management of C-V2X security authentication technology in intelligent network vehicle** [12641-43]
- 12641 OJ **Research on vulnerability detection based on web fingerprint identification** [12641-13]
- 12641 OK **RC5-CBC: best matching combination of block cipher and model of operation for implementing ORAM schemes** [12641-4]
- 12641 OL **Virus propagation model based on log feature detection** [12641-6]
- 12641 OM **Research on differential protection of distribution network based on 5G** [12641-40]

MOBILE COMMUNICATION AND DIGITAL SIGNAL PROCESSING

- 12641 ON **Trajectory tracking control method of UAV formation based on fuzzy control** [12641-45]
- 12641 OO **Research on key technologies of digital twin for electrical power communication network** [12641-28]
- 12641 OP **Multi-scale residual neural network for image steganalysis** [12641-16]
- 12641 OQ **Band assignment for massive IoT devices** [12641-42]
- 12641 OR **A stability improved weighted cluster head selection algorithm for mission-oriented flying ad hoc networks** [12641-21]
- 12641 OS **A consortium blockchain system designed for multi-domain cooperative alliance** [12641-26]
- 12641 OT **Message middleware-based message timing for alerting systems** [12641-3]
- 12641 OU **The comparison model of satellite-earth time based on special relativity and its accuracy analysis** [12641-33]
- 12641 OV **Research on trusted Modbus/TCP protocol of SCADA system based on digital envelope technology** [12641-27]
- 12641 OW **MacWilliams identities for linear codes over the ring Z_4+uZ_4 on the Hermitian inner product** [12641-12]
- 12641 OX **Constant Boolean search with arbitrary expressions in the Internet of Vehicles environment** [12641-25]
- 12641 OY **Energy-efficient amplify-and-forward full-duplex transmission strategy** [12641-30]
- 12641 OZ **Ultra reliable low-latency communications service resource allocation method of 5G network** [12641-31]

- 12641 10 **Research on quantum cheque based on the resolution of quantum state computing** [12641-14]
- 12641 11 **Cloud service quality assessment based on entropy weight method** [12641-10]
- 12641 12 **A covert communication model of Ethereum based on smart contracts** [12641-11]
- 12641 13 **A soft-output stack decoding of polarization-adjusted convolutional codes** [12641-34]
- 12641 14 **Research on vehicle lane-changing obstacle avoidance for Internet of Vehicles** [12641-18]
- 12641 15 **A new method for calculating traffic delay based on modified BPR function model** [12641-19]
- 12641 16 **Design and implementation of service registration and configuration center supporting heterogeneous systems** [12641-8]

Conference Committee

Conference General Chair

Samir Ladaci, National Polytechnic School of Constantine (Algeria)

Technical Program Committee Chair

Sandeep Saxena, Greater Noida Institute of Technology (India)

Publication Chairs

Nasir Saeed, Northern Border University (Saudi Arabia)

Zhengmin Kong, Wuhan University (China)

Technical Program Committee

Qing Li, Anhui Agricultural University (China)

Omar Dib, Wenzhou-Kean University (China)

Dimitrios Kollias, University of Greenwich (United Kingdom)

Attlee M. Gamundani, Namibia University of Science and Technology
(Namibia)

Prateek Srivastav, Chinese Academy of Sciences (China)

Rajesh S. Bansode, Thakur College of Engineering and Technology
(India)

Azim Zaliha Abd Aziz, Universiti Sultan Zainal Abidin (Malaysia)

