PROCEEDINGS OF SPIE

International Conference on High Performance Computing and Communication (HPCCE 2021)

N. Rajathi Rajeev Tiwari Editors

3–5 December 2021 Guangzhou, China

Organized by Wuhan University (China)

Sponsored by AEIC Academic Exchange Information Center (China)

Published by SPIE

Volume 12162

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 SPIEDigitalLibrary.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 High Performance Computing and Communication (HPCCE 2021)*, edited by N. Rajathi, Rajeev Tiwari, Proc. of SPIE 12162, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510652002

ISBN: 9781510652019 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2022 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.



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

COMMUNICATION ENGINEERING AND RADAR SIGNAL DETECTION TECHNOLOGY

12162 02	Enhancing the transferability of adversarial black-box attacks [12162-1]
12162 03	Design and research of logic gate based on photonic crystal self-collimation effect [12162-15]
12162 04	A resource management method for high throughput satellite communication system with multi beam and multi gateway [12162-10]
12162 05	Agile design of DCT circuit on soft CGRA [12162-3]
12162 06	Dim target detection of high speed moving radar in complex electromagnetic environment [12162-22]
12162 07	TLS-ESPRIT multiband fusion processing based on Hankel matrix improvement [12162-38]
12162 08	A novel shot boundary detection technique for illumination and motion effects [12162-21]
12162 09	Design of medium frequency broadband antenna for maritime digital broadcasting (NAVDAT) system [12162-20]
12162 0A	Power allocation strategies with per-antenna for secure directional modulation [12162-8]
12162 OB	Electrical field reconstruction by GAN [12162-14]
12162 OC	Tunable LTE MIMO loop antenna for laptop applications [12162-16]
12162 0D	Power terminal multi-core chip energy consumption optimization technology based on task scheduling in the field of 5G [12162-57]
12162 OE	Research on filtered multi-carrier transmission method for 5G communication system [12162-60]
12162 OF	One radar signal reconnaissance algorithm based on differential filter [12162-52]
12162 0G	Gaze-assisted remote control for quad-rotor UAV [12162-47]
12162 OH	Load-aware transmission mechanism for NVMeoF storage networks [12162-12]
12162 OI	Near field two-dimensional imaging based on MIMO array [12162-49]
12162 OJ	Analysis and research of all-optical logic and/or gate based on 2D photonic crystal [12162-11]

12162 OK	A new application of DNS redirection based on DNAPT [12162-51]
12162 OL	An integrated technology of relative measurement and space-to-space communication based on continuous microwave [12162-26]
12162 OM	An uplink channel estimation processor for 5G small cell [12162-18]
12162 ON	Radar system analysis using Matlab radar toolbox [12162-4]
12162 00	A novel cache strategy leveraging Redis with filters to speed up queries [12162-30]
12162 OP	Research on the method to select targets for communication jamming based on dynamic Bayesian network [12162-48]
12162 0Q	Research on construction schedule prediction method of power transmission and transformation project based on support vector machine [12162-45]
12162 OR	Transient loss analysis based on interleaved parallel system of GaN full bridge LLC resonant converter [12162-41]
12162 OS	Analysis of resistance performance parameters of cross-slanted self-bucking-restrained corrugated steel plate shear wall [12162-42]
12162 OT	Finite element analysis of pseudo dynamic behavior of steel reinforced concrete plane frame structure [12162-43]
	HIGH-PERFORMANCE COMPUTING AND VISUALIZATION ALGORITHM MODEL
12162 OU	An infrared dim small target detection algorithm based on spatial and temporal fusion of mathematical morphology [12162-2]
12162 OV	Numerical simulation of off-road vehicles steering on sand soil based on DEM-MBD method [12162-34]
12162 OW	Research on Python processing analysis of the Longji Yao and Zhuang ethnic terraces network evaluation data $[12162\text{-}29]$
12162 OX	Penetration parameter analysis of the sea-skimming aircraft [12162-6]
	renewation parameter analysis of the sea statisting alleran [12102 0]
12162 OY	Research on application of efficient hash function in blockchain technology [12162-17]
12162 OY 12162 OZ	
	Research on application of efficient hash function in blockchain technology [12162-17]

12162 12	Research on segmentation of MRI brain tumor image based on improved UNet3+ [12162-35]
12162 13	Design and implementation of knowledge graph of listed companies based on Neo4j [12162-58]
12162 14	A visual dynamic-SLAM method based semantic segmentation and multi-view geometry [12162-46]
12162 15	Joint entity structural and attribute information for knowledge graph completion [12162-9]
12162 16	Image security attribute annotation technology based on CAN and WordNet [12162-5]
12162 17	Typical grassland ecological policy driven model based on multi-agent system [12162-7]
12162 18	Discussion on implementation and application of RSA algorithm in smart card operating system [12162-55]
12162 19	Exploration of dataset COVID-19's impact on airport traffic [12162-54]
12162 1A	High-efficiency vector and scalar fused load store unit design [12162-36]
12162 1B	Emotional analysis of social media mental health based on deep learning [12162-53]
12162 1C	An image segmentation method of pulmonary nodules based on IAC-FCMSPCNN [12162-13]
12162 1D	Prediction of air pollutant concentration based on self-attention mechanism LSTM model [12162-32]
12162 1E	Research on fast detection algorithm of traffic road target [12162-24]
12162 1F	Research on the architecture of content auditing blockchain [12162-28]
12162 1G	Measurement and modeling of magnetic declination error associated with horizontal drift [12162-50]
12162 1H	The research and practice of software authorization scheme in distributed environment [12162-59]
12162 11	Short-term forecast of port cargo throughput based on ARIMA-RBF neural network [12162-40]
12162 1J	Comparison of minimum peripheral matrix algorithms in plant leaf segmentation [12162-33]
12162 1K	An integrated parametric structural design tool for super high-rise buildings based on Grasshopper and intelligent algorithm [12162-44]