

PROCEEDINGS OF SPIE

International Conference on Algorithms, Microchips and Network Applications

Ning Sun

Editor

18–20 February 2022

Zhuhai, China

Organized by

Nankai University (China)

Sponsored by

AEIC Academic Exchange Information Center (China)

Published by

SPIE

Volume 12176

Proceedings of SPIE 0277-786X, V. 12176

International Conference on Algorithms, Microchips and Network Applications,
edited by Ning Sun, Proc. of SPIE Vol. 12176, 1217601 · © 2022 SPIE
0277-786X · doi: 10.1117/12.2641121

Proc. of SPIE Vol. 12176 1217601-1

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 Algorithms, Microchips and Network Applications*, edited by Ning Sun, Proc. of SPIE 12176, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

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

ISBN: 9781510653290
ISBN: 9781510653306 (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.

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

SESSION 1 BIG DATA ALGORITHMS AND DEEP LEARNING OBJECT DETECTION

- 12176 02 **Prediction of blood oxygen saturation based on deep learning** [12176-13]
- 12176 03 **Military communication mode optimization algorithm based on fuzzy multi-objective decision making** [12176-62]
- 12176 04 **Improved sparrow search algorithm combining adaptive mutation and proportion adjustment strategy** [12176-44]
- 12176 05 **Temporal and spatial analysis of the impact of epidemic situation on tourists' emotional fluctuation in China based on text mining** [12176-58]
- 12176 06 **Prediction model of global COVID-19 based on big data technology** [12176-49]
- 12176 07 **Neural network quantization algorithms based on weights and activation values** [12176-52]
- 12176 08 **Solving multi depot school bus routing problem based on simulated annealing algorithm** [12176-82]
- 12176 09 **Research on machine learning classification algorithms for diabetes data** [12176-79]
- 12176 0A **Detection and segmentation of pulmonary nodules based on improved 3D VNet algorithm** [12176-21]
- 12176 0B **Bilateral personalized attention recommendation algorithm for user data based on neural network** [12176-16]
- 12176 0C **A landmark building detection and recognition based on improved Faster R-RDN algorithm** [12176-72]
- 12176 0D **A particle swarm algorithm combined with flower pollination algorithm** [12176-9]
- 12176 0E **Analysis of energy storage cost in Zhejiang Province base on the life cycle kwh cost algorithm** [12176-5]
- 12176 0F **A survey: research on firework algorithms** [12176-18]
- 12176 0G **Research on classification algorithm of commodity short text based on CNN** [12176-23]
- 12176 0H **Research on the architecture of energy big data operation service system and algorithm simulation based on decision tree** [12176-103]

- 12176 OI **Factory layout optimization based on Systematic Layout Planning and genetic algorithm** [12176-29]
- 12176 OJ **Numerical simulation of room fire with water mist space filling volume** [12176-30]
- 12176 OK **Research on transfer schedule optimization of high-speed railway based on benders decomposition algorithm** [12176-77]
- 12176 OL **Application of color image encryption algorithm based on logistic sine cosine mapping in image processing** [12176-14]
- 12176 OM **Research on intrusion detection algorithm based on dilated convolution and bidirectional gating cyclic unit** [12176-6]
- 12176 ON **Research on fuzzy clustering based on improved sparrow algorithm** [12176-37]
- 12176 OO **Object detection algorithm based on lightweight convolutional neural networks for mobile devices** [12176-40]
- 12176 OP **Research on medical image segmentation algorithm based on deep learning** [12176-73]
- 12176 OQ **Research and analysis of pruning algorithm** [12176-70]
- 12176 OR **A high speed moving target detection algorithm for modulated stepped-frequency radar** [12176-31]
- 12176 OS **Research on parallel algorithms for solving tridiagonal sparse linear equations** [12176-33]
- 12176 OT **Crow search algorithm with dynamic progressive strategy** [12176-60]
- 12176 OU **A summary of the research on whale optimization algorithms** [12176-4]
- 12176 OV **Research on elephant flow detection method based on information entropy and improved random forest** [12176-10]
- 12176 OW **Correctness verification and minimum cost calculating algorithm of comparison network** [12176-57]
- 12176 OX **3D reconstruction based on KAZE quasi-dense match algorithm** [12176-45]
- 12176 OY **Cruise ship optimal catering supply plan** [12176-75]
- 12176 OZ **Research on saliency detection algorithm of rural homestead** [12176-101]

SESSION 2 COMPUTER TECHNOLOGY AND DEVELOPMENT OF ELECTRONIC CIRCUIT CHIPS

- 12176 10 **Human-machine dialogue intention recognition after fusion of global positional information of sentence text intention classification [12176-3]**
- 12176 11 **The application of dual algorithms in IC card [12176-2]**
- 12176 12 **Improved particle swarm optimization combined with least squares support vector machines for short-term load forecasting [12176-59]**
- 12176 13 **The developments and applications of brain-like computing chips [12176-36]**
- 12176 14 **The insulation structure of the outgoing device area of UHV converter transformer and its long-term aging performance [12176-67]**
- 12176 15 **Density peaks clustering: a gentle comparison [12176-94]**
- 12176 16 **Online scheduling of three parallel machines with two GoS levels [12176-15]**
- 12176 17 **Wind power prediction based on multiple feature extraction by LassoLarsIC and long short-term memory [12176-65]**
- 12176 18 **Research on key technology of feature extraction based on surface EMG [12176-76]**
- 12176 19 **Issues and improvements of 5G RLC/AM retransmissions under specific cases [12176-35]**
- 12176 1A **Software family detection based on behavior analysis [12176-85]**
- 12176 1B **Vehicle detection based on improved YOLOv4 [12176-80]**
- 12176 1C **Charging station load prediction based on LSTM neural network [12176-53]**
- 12176 1D **File encryption storage and transmission system of national secret SCTO module [12176-50]**
- 12176 1E **Research on Web application injection vulnerabilities detection method based on pattern matching [12176-22]**
- 12176 1F **Design of an online teaching and research communication APP based on computer algorithms [12176-92]**
- 12176 1G **Research on power control algorithm of wireless sensor based on Nash bargaining solution [12176-34]**
- 12176 1H **SSCGAN: speech style conversion based on GAN [12176-68]**
- 12176 1I **The design of low noise broadband navigation satellite receiver frequency synthesizer and the application of BeiDou three generations [12176-17]**

- 12176 1J **Development of a computer network-based teaching and testing system** [12176-91]
- 12176 1K **Security protocol analysis based on run modes and Petri net** [12176-61]
- 12176 1L **An optimal whale optimization algorithm of misalignment error of space antenna harmonic reducer** [12176-105]

SESSION 3 ARTIFICIAL INTELLIGENCE NETWORK AND IOT MODELING PREDICTION

- 12176 1M **Stock classification and investment analysis based on K-means clustering** [12176-1]
- 12176 1N **Research on gated recurrent unit based stock price prediction model with multi-features under low time scale** [12176-88]
- 12176 1O **Research on the optimal model of public transport route generation for connecting urban rail transit** [12176-55]
- 12176 1P **An ensemble multilingual model for toxic comment classification** [12176-38]
- 12176 1Q **Attention based fully convolutional network for video summarization** [12176-8]
- 12176 1R **Knowledge graph entity alignment networks with multi-information aggregation** [12176-27]
- 12176 1S **Research on intelligent garden irrigation technology based on LORA infinite sensor network** [12176-69]
- 12176 1T **Power user behavior evaluation model based on 95598 user portrait** [12176-100]
- 12176 1U **An improved generative adversarial network for Chinese font generation** [12176-32]
- 12176 1V **CosGCN: cosine Gaussian capsule networks for few-shot learning** [12176-56]
- 12176 1W **Research on information security analysis and safety test technology of intelligent connected vehicle** [12176-12]
- 12176 1X **Evaluate the effects of smart classroom on Chinese academic achievements of junior high school students with potential growth model** [12176-83]
- 12176 1Y **Research on sampling model of financial data sharing based on cloud service** [12176-96]
- 12176 1Z **Trajectory tracking control of quadrotor UAV based on T265 positioning** [12176-47]
- 12176 20 **Research on traffic probabilistic forecasting with spatial-temporal graph neural networks** [12176-28]
- 12176 21 **Research on the fair (t,r,n) threshold secret sharing scheme** [12176-78]

- 12176 22 **Pedestrian trajectory prediction based on temporal attention** [12176-64]
- 12176 23 **Application of multiple automated guided vehicle path planning algorithm in IoT smart warehouse system** [12176-66]
- 12176 24 **Pedestrian re-identification based on multi-stream modal** [12176-25]
- 12176 25 **Fast 3D reconstruction of ancient buildings based on virtual reality and convolution network** [12176-54]
- 12176 26 **A method for forecasting low-temperature disaster based on random forest and LSTM_NN** [12176-51]
- 12176 27 **Research on nearly 14-day trajectory tracking warning system** [12176-24]
- 12176 28 **Study on network dormancy mechanism based on low duty cycle** [12176-98]
- 12176 29 **Construction of digital economy sharing model based on blockchain** [12176-97]
- 12176 2A **A hybrid Chinese named entity recognition method for Internet of Things** [12176-63]
- 12176 2B **A privacy-preserving attribute-based access control system based on blockchain** [12176-46]
- 12176 2C **Planning model of the ecological reserve based on cluster analysis** [12176-93]
- 12176 2D **Development and application of online live education platform based on 5G** [12176-95]
- 12176 2E **Sentiment analysis of online reviews based on BERT-BiLSTM-CBAM** [12176-19]
- 12176 2F **Research on pedestrian detection based on neuromorphic vision sensor** [12176-11]
- 12176 2G **Research on lane detection algorithm of intelligent vehicle** [12176-89]
- 12176 2H **Analysis of air ticket characteristics based on random forest classification and autoregressive integrated moving average prediction** [12176-84]
- 12176 2I **Analysis and prediction of Huawei brand search index based on R language time series** [12176-74]
- 12176 2J **Research on university archives management based on multi-objective particle swarm optimization algorithm** [12176-81]
- 12176 2K **Research on optimization of multimodal transport path under low-carbon background** [12176-87]

