PROCEEDINGS OF SPIE

International Conference on Cloud Computing, Performance Computing, and Deep Learning (CCPCDL 2024)

Xiangjie Kong Wanyang Dai Editors

14–16 August 2024 Zhengzhou, China

Organized by Industry and Information Technology Information Center of the People's Republic of China (China)

Sponsored by AEIC—Academic Exchange Information Center (China)

Published by SPIE

Volume 13281

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 Cloud Computing, Performance Computing, and Deep Learning (CCPCDL 2024)*, edited by Xiangjie Kong, Wanyang Dai, Proc. of SPIE 13281, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510683044

ISBN: 9781510683051 (electronic)

Published by

SPIF

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

Copyright © 2024 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

vii Conference Committee

INTELLIGENT COMPUTING AND DATA PROCESSING TECHNOLOGY

13281 02	Research on cloud storage data integrity verification protocol based on smart technologies [13281-39]
13281 03	Cloud manufacturing resource optimization allocation method based on improved sparrow search algorithm [13281-32]
13281 04	Research on coal mine gas overrun risk assessment based on analytic hierarchy process-principal component analysis and cloud model algorithm [13281-45]
13281 05	An identification-based computing-power resources co-allocation platform [13281-40]
13281 06	Conformal prediction based on principal component analysis for high-dimensional outlier detection [13281-25]
13281 07	GAN-based simulation Raman spectrum data generation method [13281-12]
13281 08	High slope deformation prediction based on residual modified ARIMA-GA-BP modeling [13281-27]
13281 09	Fault diagnosis method of rolling bearing based on improved deep convolutional neural network [13281-2]
13281 0A	Wood surface defect detection algorithm based on improved YOLOv5s [13281-64]
13281 OB	Multi-algorithm comparison and performance evaluation [13281-31]
13281 OC	Prediction of sports achievements based on time series analysis [13281-18]
13281 0D	Multiscale bearing fault diagnosis based on wavelet weight initialization and channel attention [13281-43]
13281 OE	An analysis method of mutual regulation potential of water-light-storage cluster based on mixed integer programming and mathematical model [13281-67]
13281 OF	Credit card transaction fraud detection based on DB-SVMSmote-ANN [13281-13]
13281 0G	Prediction of bus arrival time based on improved long short-term memory network model [13281-7]

13281 OH	Study of a hybrid algorithm based on NSGA-II and WOA for multiobjective problems [13281-20]
13281 01	The influence of privacy computing technology on the commercial utilization of public data and its governance path [13281-61]
13281 OJ	Research on environmental sensor data analysis based on real-time data warehouse [13281-53]
13281 OK	Research on vehicle detection algorithm based on YOLOv5 [13281-55]
13281 OL	Research on power ecological data service model based on privacy computing and computing power network technology [13281-3]
13281 OM	VMD-NGO-BiLSTM-based attitude angle prediction for unmanned vessels [13281-6]
13281 ON	Remote sensing target detection algorithm based on attention and feature alignment [13281-60]
13281 00	Optimization of tar yield in co-pyrolysis data of biomass and coal using improved regression model [13281-38]
13281 OP	Optimization algorithm for cloud resource scheduling based on auction mechanism [13281-22]
	MACHINE LEARNING AND IMAGE PROCESSING TECHNOLOGY
13281 0Q	MACHINE LEARNING AND IMAGE PROCESSING TECHNOLOGY Evolution and advancements in natural language processing: from representation learning to deep neural networks [13281-10]
13281 0Q 13281 0R	Evolution and advancements in natural language processing: from representation learning
	Evolution and advancements in natural language processing: from representation learning to deep neural networks [13281-10]
13281 OR	Evolution and advancements in natural language processing: from representation learning to deep neural networks [13281-10] Flight delay prediction based on machine learning method [13281-41] Design of power demand forecasting and marketing service platform based on deep
13281 OR 13281 OS	Evolution and advancements in natural language processing: from representation learning to deep neural networks [13281-10] Flight delay prediction based on machine learning method [13281-41] Design of power demand forecasting and marketing service platform based on deep learning [13281-35] Optimization and research on resource allocation strategy of vehicle edge computing based on deep learning [13281-66]
13281 OR 13281 OS 13281 OT	Evolution and advancements in natural language processing: from representation learning to deep neural networks [13281-10] Flight delay prediction based on machine learning method [13281-41] Design of power demand forecasting and marketing service platform based on deep learning [13281-35] Optimization and research on resource allocation strategy of vehicle edge computing based on deep learning [13281-66]
13281 OR 13281 OS 13281 OT 13281 OU	Evolution and advancements in natural language processing: from representation learning to deep neural networks [13281-10] Flight delay prediction based on machine learning method [13281-41] Design of power demand forecasting and marketing service platform based on deep learning [13281-35] Optimization and research on resource allocation strategy of vehicle edge computing based on deep learning [13281-66] Raman spectral preprocessing using multitask deep-learning network [13281-23] A related study on deep-learning-based opinion leader identification and influence

13281 OY	Health level verification for electric control valve based on BiLSTM with multihead attention mechanism $[13281-34]$
13281 OZ	Research on crop remote sensing image segmentation method integrating CNN and transformer [13281-19]
13281 10	Deep-learning-based demand response optimization and prediction model [13281-59]
13281 11	Remote sensing image semantic segmentation integrating feature complementarity and linear attention [13281-11]
13281 12	Thin film uniformity detection of solar wafers based on improved DeepLab v3+ and infrared thermal imaging technology $[13281-14]$
13281 13	A novel particle picking approach for cryo-electron microscopy images [13281-8]
13281 14	A method for identifying catalyst active sites based on deep learning [13281-68]
13281 15	Research on the application of domestic BIM technology in the lifecycle management of power grid projects [13281-42]
13281 16	Extended access control mechanism based on multiattribute fusion [13281-4]
13281 17	Improved mask-RCNN remote sensing image extraction based on attention mechanism [13281-17]
13281 18	Multilayer self-attention fusion pyramid network for enhanced image classification [13281-37]
13281 19	Research on underwater image processing method based on feature transformation unit [13281-56]
13281 1A	Enhancing low-dose CT images by 4x using CACTSR: a deep learning model [13281-36]
13281 1B	MSRF-Net: a meta-learning-based U-Net architecture with multiscale fusion and adaptive reweighting for aesthetic evaluation of hard pen calligraphy [13281-57]
13281 1C	An application of improved YOLOv8 in cherry recognition in natural environment [13281-62]
13281 1D	A novel industrial foreign impurity detection system design via deep space-spectrum fusion network and compressed sensing [13281-30]