2021 IEEE 15th International Conference on Big Data Science and Engineering (BigDataSE 2021)

Shenyang, China 20 – 22 October 2021



IEEE Catalog Number: CFP21Y04-POD **ISBN:**

978-1-6654-0039-8

Copyright © 2021 by the Institute of Electrical and Electronics Engineers, Inc. All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

IEEE Catalog Number:	CFP21Y04-POD
ISBN (Print-On-Demand):	978-1-6654-0039-8
ISBN (Online):	978-1-6654-0038-1

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400 Fax: (845) 758-2633 E-mail: curran@proceedings.com Web: www.proceedings.com



2021 IEEE 15th International Conference on Big Data Science and Engineering (BigDataSE) BigDataSE 2021

Table of Contents

Message from the General Chairs	ix
Message from the Program Chairs	x
Organizing Committee	
Program Committee	xii
Steering Committee	

2021 IEEE 15th International Conference on Big Data Science and Engineering (BigDataSE 2021)

Dual Attention-Based Interest Network for Personalized Recommendation System Xuan Zhou (Shaanxi Normal University, China), Xiaoming Wang (Shaanxi Normal University, China), Guangyao Pang (Shaanxi Normal University, China), Yaguang Lin (Shaanxi Normal University, China), Pengfei Wan (Shaanxi Normal University, China), and Meiling Ge (Shaanxi Normal University, China)	1
Spatial-Temporal Data Science of COVID-19 Data Deyu Deng (University of Manitoba, Canada), Carson K. Leung (University of Manitoba, Canada), Chenru Zhao (University of Manitoba, Canada), Yan Wen (University of Manitoba, Canada), and Hao Zheng (University of Manitoba, Canada)	. 7
An Incentive Mechanism for Resource Allocation in Coded Distributed Computing Jer Shyuan Ng (Alibaba Group; Alibaba-NTU JRI), Wei Yang Bryan Lim (Alibaba Group; Alibaba-NTU JRI), Zehui Xiong (SUTD, Singapore), Sahil Garg (École de Technologie Supérieure), Dusit Niyato (SCSE, NTU, Singapore), and Cyril Leung (Alibaba-NTU JRI; LILY Research Center, NTU, Singapore; ECE, UBC, Canada)	15
Two-Stream Graph Attention Convolutional for Video Action Recognition Deyuan Zhang (Shenyang Aerospace University, China), Hongwei Gao (Shenyang Aerospace University, China), Hailong Dai (Liaoning Planning and Designing Institute of Post and Telecommunication Company, China), and Xiangbin Shi (Shenyang Aerospace University, China)	23

A Chinese Medical Question Answering System Based on Knowledge Graph	28
 UEIN: A User Evolving Interests Network for Click-Through Rate Prediction	34
A STL-GALSTM Model to Predict the Track Irregularity of High-Speed Railway	42
An Efficient Redundancy Control and Load Balancing Scheme for Cloud Storage Fan Yang (China University of Geosciences, P. R. China), Zhao Ma (China University of Geosciences, P. R. China), and Heng Xu (China University of Geosciences, P. R. China)	49
 HRSE: a Novel High-Speed Random Sampling Encryption Scheme on Big Data	57
Improving the Number of Queries Supported by Differentially Private Mechanisms	65
 PKMark: A Robust Zero-Distortion Blind Reversible Scheme for Watermarking Relational Databases Xiao Tang (East China Normal University, China), Zhenfu Cao (East China Normal University, China; Tongji University, China), Xiaolei Dong (East China Normal University, China), and Jiachen Shen (East China Normal University, China) 	72
BV-CEI: A Compact Implementation of Interval Query Indexing Algorithm	80
MSD-Kmeans: A Hybrid Algorithm for Efficient Detection of Global and Local Outliers	87

Verifiable and Privacy-Preserving Ranked Multi-Keyword Search over Outsourced Data in
Clouds
 Partnership-Based Collaborative Learning Approach from Decentralized Data
 KMUL: A User Identity Linkage Method Across Social Networks Based on Spatiotemporal Data 111 Hui Xue (Institute of Information Engineering, Chinese Academy of Sciences; School of Cyber Security, University of Chinese Academy of Sciences, China), Bo Sun (National Internet Emergency Center, China), Chengxiang Si (National Internet Emergency Center, China), Wei Zhang (National Internet Emergency Center, China), and Jing Fang (National Internet Emergency Center, China)
A Validated Privacy-Utility Preserving Recommendation System with Local Differential Privacy
 SDCCD: Spatiotemporal Data Cleaning Based on Collision Detection
Design of Big Data Integration Platform Based on Hybrid Hierarchy Architecture

Author Index		
--------------	--	--