

2019 IEEE 35th International Conference on Data Engineering Workshops (ICDEW) ICDEW 2019

Table of Contents

Message from the ICDE 2019 Chairs	xii
ICDE 2019 Organizing Committee	xiv
Workshop Committees	xvi

International Workshop on Blockchain and Data Management (BlockDM)

Session I: Security and Privacy

VQL: Providing Query Efficiency and Data Authenticity in Blockchain Systems	1
<i>Zhe Peng (The Hong Kong Polytechnic University), Haotian Wu (The Hong Kong Polytechnic University), Bin Xiao (The Hong Kong Polytechnic University), and Songtao Guo (Chongqing University)</i>	
Scalable and Privacy-Preserving Design of On/Off-Chain Smart Contracts	7
<i>Chao Li (University of Pittsburgh), Balaji Palanisamy (University of Pittsburgh), and Runhua Xu (University of Pittsburgh)</i>	
Reducing Forks in the Blockchain via Probabilistic Verification	13
<i>Bing Liu (Harbin Institute of Technology), Yang Qin (Harbin Institute of Technology), and Xiaowen Chu (Hong Kong Baptist University)</i>	

Session II: Data and Application

Dynamic Data Quality for Static Blockchains	19
<i>Alan G. Labouseur (Marist College) and Carolyn C. Matheus (Marist College)</i>	
Blockchain-Based Bidirectional Updates on Fine-Grained Medical Data	22
<i>Chunmiao Li (SOKENDAI (The Graduate University for Advanced Studies), Japan; National Institute of Informatics, Japan), Yang Cao (Kyoto University), Zhenjiang Hu (National Institute of Informatics, Japan; SOKENDAI (The Graduate University for Advanced Studies), Japan; University of Tokyo, Japan), and Masatoshi Yoshikawa (Kyoto University)</i>	

Blockchain Enabled Distributed Data Management - A Vision	28
<i>Furqan Baig (Stony Brook University) and Fusheng Wang (Stony Brook University)</i>	
Technical Mechanics of a Trans-Border Waste Flow Tracking Solution Based on Blockchain Technology	31
<i>Dominik Schmelz (Vienna University of Technology, Industrial Software (INSO)), Karl Pinter (Vienna University of Technology, Industrial Software (INSO)), Stefan Strobl (Vienna University of Technology, Industrial Software (INSO)), Lei Zhu (Vienna University of Technology, Industrial Software (INSO)), Phillip Niemeier (Vienna University of Technology, Industrial Software (INSO)), and Thomas Grechenig (Vienna University of Technology, Industrial Software (INSO))</i>	

International Workshop on Data - Driven Smart Cities (DASC 2019)

Implementing Big Data Lake for Heterogeneous Data Sources	37
<i>Hassan Mehmood (University of Oulu, Finland), Ekaterina Gilman (University of Oulu, Finland), Marta Cortes (University of Oulu, Finland), Panos Kostakos (University of Oulu, Finland), Andrew Byrne (Dell EMC, Ireland), Katerina Valta (Draxis Environmental S.A, Greece), Stavros Tekes (Draxis Environmental S.A, Greece), and Jukka Riekkilä (University of Oulu, Finland)</i>	
TVDP: Translational Visual Data Platform for Smart Cities	45
<i>Seon Ho Kim (Integrated Media Systems Center, University of Southern California), Abdullah Alfarrarjeh (Integrated Media Systems Center, University of Southern California), George Constantinou (Integrated Media Systems Center, University of Southern California), and Cyrus Shahabi (Integrated Media Systems Center, University of Southern California)</i>	
Big Stream Processing Systems: An Experimental Evaluation	53
<i>Elkhan Shahverdi (University of Tartu, Estonia), Ahmed Awad (University of Tartu, Estonia), and Sherif Sakr (University of Tartu, Estonia)</i>	
Driving Big Data: A First Look at Driving Behavior via a Large-Scale Private Car Dataset	61
<i>Tong Li (The Hong Kong University of Science and Technology), Ahmad Alhilal (The Hong Kong University of Science and Technology), Anlan Zhang (Beihang University), Mohammad A. Hoque (University of Helsinki), Dimitris Chatzopoulos (The Hong Kong University of Science and Technology), Zhu Xiao (Hunan University), Yong Li (Tsinghua University), and Pan Hui (The Hong Kong University of Science and Technology; University of Helsinki)</i>	
A Data-Driven Approach for Tracking Human Litter in Modern Cities	69
<i>Ziang Zhao (University of California, Riverside), Yunfan Kang (University of California, Riverside), Amr Magdy (University of California, Riverside), Win Cowger (University of California, Riverside), and Andrew Gray (University of California, Riverside)</i>	

Quality of Experience Evaluation of Smart-Wearables: A Mathematical Modelling Approach	74
<i>Debajyoti Pal (King Mongkut's University of Technology Thonburi), Tuul Triyason (King Mongkut's University of Technology Thonburi), Vijayakumar Varadarajan (VIT University), and Xiangmin Zhang (Wayne State University)</i>	

Data Engineering Meets Intelligent Food and COoking Recipes (DECOR)

Food Image to Cooking Instructions Conversion Through Compressed Embeddings Using Deep Learning	81
<i>Madhu Kumari (NIT Hamirpur) and Tajinder Singh (Chandigarh University)</i>	
Computational Models for the Evolution of World Cuisines	85
<i>Rudraksh Tuwani (Indraprastha Institute of Information Technology (IIIT-Delhi)), Nutan Sahoo (Indraprastha Institute of Information Technology (IIIT-Delhi); University of Delhi), Navjot Singh (Indraprastha Institute of Information Technology (IIIT-Delhi)), and Ganesh Bagler (Indraprastha Institute of Information Technology (IIIT-Delhi))</i>	
Data Mining Approach to Chinese Food Analysis for Diet-Related Cardiometabolic Diseases	91
<i>Angela Chang (University of Macau), Jieyi Hu (University of Macau), Yichao Liu (Northeastern University of China), and Matthew Tingchi Liu (University of Macau)</i>	
Recommendation of Indian Cuisine Recipes Based on Ingredients	96
<i>Nilesh Nilesh (National Institute of Technology, Hamirpur), Madhu Kumari (National Institute of Technology, Hamirpur), Pritom Hazarika (National Institute of Technology, Hamirpur), and Vishal Raman (National Institute of Technology, Hamirpur)</i>	

International Workshop on Self-Managing Database Systems (SMDB)

Session 1: Self-Managing Frameworks

A Framework for Self-Managing Database Systems	100
<i>Jan Kossmann (Hasso Plattner Institute) and Rainer Schlosser (Hasso Plattner Institute)</i>	
Towards Auto-Scaling Existing Transactional Databases with Strong Consistency	107
<i>Michael A. Georgiou (Cyprus University of Technology), Aristodemos Paphitis (Cyprus University of Technology), Michael Sirivianos (Cyprus University of Technology), and Herodotos Herodotou (Cyprus University of Technology)</i>	
Distribution-Driven, Embedded Synthetic Data Generation System and Tool for RDBMS	113
<i>Joseph W. Hu (SAP), Ivan T. Bowman (SAP), Anisoara Nica (SAP), and Anil Goel (SAP)</i>	

Session 2: Keynote 1

Towards Self-Managing Cloud-Scale Computing Platforms: Experiences and Challenges	116
<i>Jingren Zhou (Alibaba Group)</i>	

Session 3: Machine Learning Driven Self-Managing

Gray Box Modeling Methodology for Runtime Prediction of Apache Spark Jobs	117
<i>Hani Al-Sayeh (Technische Universität Ilmenau) and Kai-Uwe Sattler (TU Ilmenau)</i>	
Guided Bayesian Optimization to AutoTune Memory-Based Analytics	125
<i>Mayuresh Kunjir (Duke University)</i>	
AutoCache: Employing Machine Learning to Automate Caching in Distributed File Systems	133
<i>Herodotos Herodotou (Cyprus University of Technology)</i>	

Session 4: Keynote 2

Cost/Performance in Modern Data Stores: How Data Caching Systems Succeed	140
<i>David Lomet (Microsoft Research)</i>	

International Workshop on Recommender Systems with Big Data (RSDB)

Session 1 (Keynote)

Session 2: Representation Learning for Recommendation

Learning to Select User-Specific Features for Top-N Recommendation of New Items	141
<i>Yifan Chen (National University of Defense Technology, China), Xiang Zhao (National University of Defense Technology, China; Collaborative Innovation Center of Geospatial Technology, China), Jinyuan Liu (Academy of Military Sciences, Beijing), Bin Ge (National University of Defense Technology, China; Collaborative Innovation Center of Geospatial Technology, China), and Weiming Zhang (National University of Defense Technology, China)</i>	
A Group Recommendation Approach Based on Neural Network Collaborative Filtering	148
<i>Jia Du (Wuhan University of Technology), Lin Li (Wuhan University of Technology), Peng Gu (Wuhan University of Technology), and Qing Xie (Wuhan University of Technology)</i>	
Incorporating Latent Space Correlation Coefficients to Collaborative Filtering	155
<i>Zongxi Li (City University of Hong Kong), Haoran Xie (The Education University of Hong Kong), Yingchao Zhao (Caritas Institute of Higher Education), and Qing Li (The Hong Kong Polytechnic University)</i>	

Session 3: Deep Neural Networks for Recommendation

Collaborative Generative Adversarial Network for Recommendation Systems	161
<i>Yuzhen Tong (The University of Queensland, Australia), Yadan Luo (The University of Queensland, Australia), Zheng Zhang (The University of Queensland, Australia), Shazia Sadiq (The University of Queensland, Australia), and Peng Cui (Tsinghua University, China)</i>	
Distilling Knowledge from User Information for Document Level Sentiment Classification	169
<i>Jialing Song (East China Normal University)</i>	
Context-Aware Attention-Based Data Augmentation for POI Recommendation	177
<i>Yang Li (The University of Queensland), Yadan Luo (The University of Queensland), Zheng Zhang (The University of Queensland), Shazia Sadiq (The University of Queensland), and Peng Cui (Tsinghua University)</i>	
Predicting Online User Purchase Behavior Based on Browsing History	185
<i>Yunghui Chu (National Chiao Tung University), Hui-Kuo Yang (National Chiao Tung University), and Wen-Chih Peng (National Chiao Tung University)</i>	

Session 4 (Keynote)

Session 5: New Aspects in Recommender Systems and Information Retrieval

Towards Distributed Multi-model Learning on Apache Spark for Model-Based Recommender	193
<i>Anas Alzogbi (University of Freiburg), Polina Koleva (University of Freiburg), and Georg Lausen (University of Freiburg)</i>	
Context-Aware Co-attention Neural Network for Service Recommendations	201
<i>Lei Li (Hong Kong Baptist University), Ruihai Dong (University College Dublin), and Li Chen (Hong Kong Baptist University)</i>	
Semantic Parsing and Attentive Feature-Temporal Pooling Network for Video-Based Person Image Retrieval	209
<i>Yu Mao (Beijing University of Posts and Telecommunication), Haiqing Du (Beijing University of Posts and Telecommunication), and Yong Liu (Beijing University of Posts and Telecommunication)</i>	

International Workshop on Large Scale Graph Data Analytics (LSGDA)

Session I: Graph & Algorithms

Reachability in Large Graphs Using Bloom Filters	217
<i>Arkaprava Saha (Indian Institute of Technology Delhi), Neha Sengupta (Indian Institute of Technology Delhi), and Maya Ramanath (Indian Institute of Technology Delhi)</i>	
Triangle Counting on GPU Using Fine-Grained Task Distribution	225
<i>Lin Hu (Peking University), Naiqing Guan (Peking University), and Lei Zou (Peking University)</i>	

Efficient Parallel Computing of Graph Edit Distance	233
<i>Ran Wang (East China Normal University), Yixiang Fang (University of New South Wales), and Xing Feng (Bloomberg)</i>	
MPMatch: A Multi-core Parallel Subgraph Matching Algorithm	241
<i>Xin Jin (East China Normal University) and Longbin Lai (The University of New South Wales)</i>	

Session II: Graph & Applications

Semantic Similarity Computation in Knowledge Graphs: Comparisons and Improvements	249
<i>Chaoqun Yang (Wuhan University), Yuanyuan Zhu (Wuhan University), Ming Zhong (Wuhan University), and Rongrong Li (Wuhan University)</i>	
Classification of Medical Images with Synergic Graph Convolutional Networks	253
<i>Bin Yang (Harbin Engineering University), Haiwei Pan (Harbin Engineering University), Jieyao Yu (Harbin Engineering University), Kun Han (Harbin Engineering University), and Yanan Wang (Harbin Engineering University)</i>	
Skyline Nearest Neighbor Search on Multi-layer Graphs	259
<i>Wanqi Liu (University of Technology Sydney), Dong Wen (University of Technology Sydney), Hanchen Wang (University of Technology Sydney), Fan Zhang (University of New South Wales), and Xubo Wang (University of Technology Sydney)</i>	
Improving Distributed Subgraph Matching Algorithm on Timely Dataflow	266
<i>Zhengmin Lai (East China Normal University), Zhengyi Yang (The University of New South Wales), and Longbin Lai (The University of New South Wales)</i>	

Session III: Social Networks

A Method for Scalable First-Order Rule Learning on Twitter Data	274
<i>Monica Senapati (University of Missouri-Kansas City), Laurent Njilla (Air Force Research Lab), and Praveen Rao (University of Missouri-Kansas City)</i>	
Elites Tweet? Characterizing the Twitter Verified User Network	278
<i>Indraneil Paul (IIIT Hyderabad), Abhinav Khattar (IIIT Delhi), Ponnurangam Kumaraguru (IIIT Delhi), Manish Gupta (Microsoft India), and Shaan Chopra (IIIT Delhi)</i>	
Generating Synthetic Graphs for Large Sensitive and Correlated Social Networks	286
<i>Xin Ju (Harbin Institute of Technology Shenzhen), Xiaofeng Zhang (Harbin Institute of Technology Shenzhen), and William K. Cheung (Hong Kong Baptist University)</i>	

International Workshop on Big Data Management on Emerging Hardware / Workshop on Data Management on Virtualized Active Systems (HardDB & Active)

Revisiting Hash Join on Graphics Processors: A Decade Later	294
<i>Johns Paul (Nanyang Technological University, Singapore), Bingsheng He (National University of Singapore), Shengliang Lu (National University of Singapore), and Chiew Tong Lau (Nanyang Technological University, Singapore)</i>	
Initial Experience with 3D XPoint Main Memory	300
<i>Jihang Liu (SKL of Computer Architecture, ICT, CAS, University of Chinese Academy of Sciences) and Shimin Chen (SKL of Computer Architecture, ICT, CAS, University of Chinese Academy of Sciences)</i>	

International Workshop on Indexing and Retrieval for Multimedia Database (IRMD)

Fully Convolutional DenseNets for Polyp Segmentation in Colonoscopy	306
<i>Jieyao Yu (Harbin Engineering University), Haiwei Pan (Harbin Engineering University), Qi Yin (Harbin Engineering University), Xiaofei Bian (Harbin Engineering University), and Qianna Cui (Harbin Engineering University)</i>	
Sparse Manifold Embedded Hashing for Multimedia Retrieval	312
<i>Yongxin Wang (Shandong University), Xin Luo (Shandong University), Huaxiang Zhang (Shandong Normal University), and Xin-Shun Xu (Shandong University)</i>	
Multi-camera Background and Scene Activity Modelling Based on Spearman Correlation Analysis and Inception-V3 Network	319
<i>Keyang Cheng (Jiangsu University), Muhammad Saddam Khokhar (Jiangsu University), Yunbo Rao (University of Electronic Science and Technology of China), and Rabia Tahir (Jiangsu University)</i>	
Large-Scale Image Search using Region Division	326
<i>Yunbo Rao (University of Electronic Science and Technology of China), Wei Liu (University of Electronic Science and Technology of China), Jiansu Pu (University of Electronic Science and Technology of China), Zheng Wang (University of Electronic Science and Technology of China), and Qifei Wang (University of California)</i>	
Generation of a Short Narrative Caption for an Image Using the Suggested Hashtag	331
<i>Shivam Gaur (The University of Queensland)</i>	
Author Index	339