

2019 IEEE 38th International Performance Computing and Communications Conference (IPCCC 2019)

**London, United Kingdom
29 – 31 October 2019**



**IEEE Catalog Number: CFP19PHO-POD
ISBN: 978-1-7281-1026-4**

**Copyright © 2019 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:	CFP19PHO-POD
ISBN (Print-On-Demand):	978-1-7281-1026-4
ISBN (Online):	978-1-7281-1025-7
ISSN:	1097-2641

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

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

QUERY OPTIMIZATION APPROACH WITH SHUFFLE INTERMEDIATE CACHE LAYER FOR SPARK SQL	1
<i>Mingyu Zhai ; Aibo Song ; Jingyi Qiu ; Xuechun Ji ; Qingxi Wu</i>	
A C++ LIBRARY FOR TENSOR DECOMPOSITION	7
<i>Jiapeng Huang ; Linghe Kong ; Xiao-Yang Liu ; Wenhao Qu ; Guihai Chen</i>	
EFFICIENT ATTACK CORRELATION AND IDENTIFICATION OF ATTACK SCENARIOS BASED ON NETWORK-MOTIFS	9
<i>Steffen Haas ; Florian Wilkens ; Mathias Fischer</i>	
IOT MEETS DISTRIBUTED AI - DEPLOYMENT SCENARIOS OF BONSEYES AI APPLICATIONS ON FIWARE	20
<i>Lucien Moor ; Lukas Bitter ; Miguel De Prado ; Nuria Pazos ; Nabil Ouerhani</i>	
PLACEMENT OPTIMIZATION OF IOT SECURITY SOLUTIONS FOR EDGE COMPUTING BASED ON GRAPH THEORY	22
<i>Tanguy Godquin ; Morgan Barbier ; Chrystel Gaber ; Jean-Luc Grimault ; Jean-Marie Le Bars</i>	
A STOCHASTIC BASED PHYSICAL LAYER SECURITY IN COGNITIVE RADIO NETWORKS: COGNITIVE RELAY TO FUSION CENTER	29
<i>Oluyomi Simpson ; Yichuang Sun</i>	
REZIG: DECOMPOSE A COLLISION VIA REFERENCE WAVEFORM IN ZIGBEE	36
<i>Yifeng Cao ; Zhe Wang ; Linghe Kong ; Guihai Chen</i>	
AN ALMOST-ZERO LATENCY LIGHTWEIGHT MECHANISM FOR CACHING DECISION IN ICN CONTENT ROUTER	38
<i>Qifeng Yang ; Haojiang Deng ; Lingfang Wang ; Yiqiang Sheng</i>	
INTELLIGENT IOT SENSING SYSTEM BASED ON COMPRESSIVE SENSING WITH ADAPTIVELY LEARNED DICTIONARY	46
<i>Martina Cilia ; Keisuke Yamamoto</i>	
TOWARDS INDUSTRIAL IOT-AR SYSTEMS USING DEEP LEARNING-BASED OBJECT POSE ESTIMATION	54
<i>Yongbin Sun ; Sai Nithin Reddy Kantareddy ; Joshua Siegel ; Alexandre Armengol-Urpi ; Xiaoyu Wu ; Hongyu Wang ; Sanjay Sarma</i>	
EXPLOITING TEMPERATURE-VARIED ECU FINGERPRINTS FOR SOURCE IDENTIFICATION IN IN-VEHICLE NETWORK INTRUSION DETECTION	62
<i>Miaoqing Tian ; Ruobing Jiang ; Chaoqun Xing ; Haipeng Qu ; Qian Lu ; Xiaoyun Zhou</i>	
COOPERATIVE FAIR BANDWIDTH SCALING IN CONTENTION-BASED WIRELESS NETWORKS USING TIME TOKEN BUCKET	70
<i>Christopher Kramer ; Kiran Mathews ; Reinhard Gotzhein</i>	
EMULATE PROCESSING OF ASSORTED DATABASE SERVER APPLICATIONS ON FLASH-BASED STORAGE IN DATACENTER INFRASTRUCTURES	79
<i>Janki Bhimani ; Rajinikanth Pandurangan ; Ningfang Mi ; Vijay Balakrishnan</i>	
DEANONYMIZING TOR IN A STEALTHY WAY	87
<i>Jianjun Lin ; Jianbo Gao ; Zhenhao Wu ; Chengxiang Si ; Bo Sun</i>	
A BLOCKCHAIN-BASED AUTHENTICATION METHOD WITH ONE-TIME PASSWORD	95
<i>Mingli Zhang ; Liming Wang ; Jing Yang</i>	
F2MC: ENHANCING DATA STORAGE SERVICES WITH FOG-TOMULTICLOUD HYBRID COMPUTING	104
<i>Yinjin Fu ; Xiaofeng Qiu ; Jian Wang</i>	
COST EFFICIENT INTERNET PATH TRACKING BASED ON ROUTING CHANGES PREDICTION	110
<i>Yujia Liu ; Changqing An</i>	
AUTOMATIC DATA QUALITY ENHANCEMENT WITH EXPERT KNOWLEDGE FOR MOBILE CROWDSENSING	118
<i>Jinghan Jiang ; Kui Wu ; Huan Wang ; Rong Zheng</i>	
A METHOD BASED ON HIERARCHICAL SPATIOTEMPORAL FEATURES FOR TROJAN TRAFFIC DETECTION	125
<i>Jiang Xie ; Shuhao Li ; Yongzheng Zhang ; Xiaochun Yun ; Jia Li</i>	
A COMPREHENSIVE STUDY OF ACCELERATING IPV6 DEPLOYMENT	133
<i>Tianyu Cui ; Chang Liu ; Gaopeng Gou ; Junzheng Shi ; Gang Xiong</i>	

RELIABILITY, TIMELINESS AND LOAD REDUCTION AT THE EDGE FOR CLOUD GAMING	141
<i>Antonio Franco ; Emma Fitzgerald ; Björn Landfeldt ; Ulf Kömer</i>	
I KNOW WHAT YOU ARE DOING WITH REMOTE DESKTOP	149
<i>Minghao Jiang ; Gaopeng Gou ; Junzheng Shi ; Gang Xiong</i>	
ATUMM: AUTO-TUNING MEMORY MANAGER IN APACHE SPARK	156
<i>Danlin Jia ; Janki Bhimani ; Son Nam Nguyen ; Bo Sheng ; Ningfang Mi</i>	
ALEAP: ATTENTION-BASED LSTM WITH EVENT EMBEDDING FOR ATTACK PROJECTION.....	164
<i>Shuhan Fan ; Songyun Wu ; Zhiliang Wang ; Zimu Li ; Jiahai Yang ; Heng Liu ; Xinran Liu</i>	
EXPLOITING SOCIAL NETWORK CHARACTERISTICS FOR EFFICIENT ROUTING IN OCEAN VESSEL AD HOC NETWORKS.....	172
<i>Qihang Bing ; Ruobing Jiang ; Feng Hong</i>	
SCHEDULING DEPENDENT TASKS IN EDGE NETWORKS	180
<i>Mohammed Maray ; Arshad Jhumka ; Adam Chester ; Mohamed Younis</i>	
LT CODES WITH FEEDBACK: ACCELERATE THE DISTRIBUTED MATRIX-VECTOR MULTIPLICATION WITH STRAGGLERS	184
<i>Xiao Yang ; Ming Jiang ; Chunming Zhao</i>	
AN EFFICIENT GREYBOX FUZZING SCHEME FOR LINUX-BASED IOT PROGRAMS THROUGH BINARY STATIC ANALYSIS	190
<i>Yaowen Zheng ; Zhanwei Song ; Yuyan Sun ; Kai Cheng ; Hongsong Zhu ; Limin Sun</i>	
IDENTIFY OS FROM ENCRYPTED TRAFFIC WITH TCP/IP STACK FINGERPRINTING	198
<i>Xinlei Fan ; Gaopeng Gou ; Cuicui Kang ; Junzheng Shi ; Gang Xiong</i>	
AUTONOMOUS DETECTION OF SYNCHRONIZATION ATTACKS IN THE INDUSTRIAL INTERNET OF THINGS	205
<i>Meriem Smache ; Alexis Olivereau ; Thibault Franco-Rondisson ; Assia Tria</i>	
VOTEGEO: AN IOT-BASED VOTING APPROACH TO VERIFY THE GEOGRAPHIC LOCATION OF CLOUD HOSTS	214
<i>Dongzheng Jia ; Limin Liu ; Shijie Jia ; Jingqiang Lin</i>	
DATA HEAT PREDICTION IN STORAGE SYSTEMS USING BEHAVIOR SPECIFIC PREDICTION MODELS.....	223
<i>Lu Pang ; Anis Alazzawe ; Krishna Kant ; Jeremy Swift</i>	
DEVELOPING THE PARALLELIZATION METHODS FOR FINDING THE ALL-PAIRS SHORTEST PATHS IN DISTRIBUTED MEMORY ARCHITECTURE.....	231
<i>Mohammed Alghamdi ; Ligang He ; Yujue Zhou ; Junyu Li</i>	
TOPOLOGY-AWARE SPARSE ALLREDUCE FOR LARGE-SCALE DEEP LEARNING	239
<i>Truong Thao Nguyen ; Mohamed Wahib ; Ryousei Takano</i>	
A BYTE-LEVEL CNN METHOD TO DETECT DNS TUNNELS.....	247
<i>Chang Liu ; Liang Dai ; Wenjing Cui ; Tao Lin</i>	
HS-TCN: A SEMI-SUPERVISED HIERARCHICAL STACKING TEMPORAL CONVOLUTIONAL NETWORK FOR ANOMALY DETECTION IN IOT.....	255
<i>Yongliang Cheng ; Yan Xu ; Hong Zhong ; Yi Liu</i>	
ACCELERATING QUIC'S CONNECTION ESTABLISHMENT ON HIGH-LATENCY ACCESS NETWORKS.....	262
<i>Erik Sy ; Tobias Mueller ; Moritz Moennich ; Hannes Federrath</i>	
USING DCT-BASED APPROXIMATE COMMUNICATION TO IMPROVE MPI PERFORMANCE IN PARALLEL CLUSTERS	270
<i>Qianqian Fan ; David J. Lilja ; Sachin S. Sapatnekar</i>	
HIDING AND TRAPPING: A DECEPTIVE APPROACH FOR DEFENDING AGAINST NETWORK RECONNAISSANCE WITH SOFTWARE-DEFINED NETWORK.....	280
<i>Junchi Xing ; Mingliang Yang ; Haifeng Zhou ; Chunming Wu ; Wei Ruan</i>	
SPHINX: A TRANSPORT PROTOCOL FOR HIGH-SPEED AND LOSSY MOBILE NETWORKS.....	288
<i>Junfeng Li ; Dan Li ; Wenfei Wu ; K. K. Ramakrishnan ; Jinkun Geng ; Fei Gui ; Fanzhao Wang ; Kai Zheng</i>	
MIMIC: FAST RECOVERY FROM DATA CORRUPTION ERRORS IN STENCIL COMPUTATIONS	296
<i>Anis Alazzawe ; Krishna Kant</i>	
RENDERING SCHEDULING FRAMEWORK IN EDGE COMPUTING: A CONGESTION GAME-BASED APPROACH	304
<i>Bing Zhou ; Hongqi Yang</i>	
A NEW C&C CHANNEL DETECTION FRAMEWORK USING HEURISTIC RULE AND TRANSFER LEARNING	310
<i>Jianguo Jiang ; Qilei Yin ; Zhixin Shi ; Meimei Li ; Bin Lv</i>	

ON EFFECTS OF MOBILITY MANAGEMENT SIGNALLING BASED DOS ATTACKS AGAINST LTE TERMINALS	319
<i>Chuan Yu ; Shuhui Chen</i>	
TIPIFICATION OF IMPERSONATED ACCOUNTS ON INSTAGRAM	327
<i>Koosha Zarei ; Reza Farahbakhsh ; Noël Crespi</i>	
HIGH-PRECISION ADAPTIVE SLOPE COMPENSATION CIRCUIT FOR SYSTEM-ON-CHIP POWER MANAGEMENT	333
<i>Hua Fan ; Weiping Cheng ; Yang Li ; Quanyuan Feng ; Hongrui Che ; Xuanhong Zeng ; Haizhu Wang ; Hongquan Wang ; Dagang Li ; Kelin Zhang ; Yuanjun Cen ; Kaung Oo Htet ; Hadi Heidari</i>	
QUANTITATIVE ANALYSIS OF MOBILE APPLICATION USER INTERFACE DESIGN	335
<i>Zexun Jiang ; Hao Yin ; Yan Luo ; Jiaying Gong ; Yuannan Yang ; Manshan Lin</i>	
SIDE-CHANNEL INFORMATION LEAKAGE OF TRAFFIC DATA IN INSTANT MESSAGING	343
<i>Ke Li ; Hong Li ; Hongsong Zhu ; Limin Sun ; Hui Wen</i>	
A DEEP LEARNING APPROACH TO DYNAMIC PASSIVE RTT PREDICTION MODEL FOR TCP	351
<i>Desta Haileselassie Hagos ; Paal E. Engelstad ; Anis Yazid ; Carsten Griwodz</i>	
INTEGRATION OF TEMPORAL CONTEXTUAL INFORMATION FOR ROBUST ENERGY DISAGGREGATION	361
<i>Pascal A. Schirmer ; Iosif Mporas</i>	
ENERGY AND DELAY CO-AWARE COMPUTATION OFFLOADING WITH DEEP LEARNING IN FOG COMPUTING NETWORKS	367
<i>Xi Zhu ; Siguang Chen ; Songle Chen ; Geng Yang</i>	
UNCOVERING FLAMING EVENTS ON NEWS MEDIA IN SOCIAL MEDIA	373
<i>Praboda Rajapaksha ; Reza Farahbakhsh ; Noël Crespi ; Bruno Defude</i>	
JILY: COST-AWARE AUTOSCALING OF HETEROGENEOUS GPU FOR DNN INFERENCE IN PUBLIC CLOUD	381
<i>Zhaoxing Wang ; Xuehai Tang ; Qiuyang Liu ; Jizhong Han</i>	
CONTRACT-CONNECTION:AN EFFICIENT COMMUNICATION PROTOCOL FOR DISTRIBUTED LEDGER TECHNOLOGY	389
<i>Yibin Xu ; Yangyu Huang</i>	
ADAPTIVE DIFFERENTIALLY PRIVATE DATA STREAM PUBLISHING IN SPATIO-TEMPORAL MONITORING OF IOT	393
<i>Teng Wang ; Xinyu Yang ; Xuebin Ren ; Jun Zhao ; Kwok-Yan Lam</i>	
CLR: A CLASSIFICATION OF DNS TUNNEL BASED ON LOGISTIC REGRESSION	401
<i>Kemeng Wu ; Yongzheng Zhang ; Tao Yin</i>	
IMPROVING LATENCY AND JITTER PERFORMANCE IN CDMA-BASED NEXT-GENERATION ETHERNET PASSIVE OPTICAL NETWORKS FOR 5G APPLICATIONS	402
<i>Robert Raad ; Elie Inaty ; Martin Maier</i>	
PIFOGBED: A FOG COMPUTING TESTBED BASED ON RASPBERRY PI	410
<i>Qiaozhi Xu ; Junxing Zhang</i>	
CAN*T – AN ISOBUS PRIVACY PROXY FOR COLLABORATIVE SMART FARMING	418
<i>Rene Helmke ; Jan Bauer ; Alexander Bothe ; Nils Aschenbruck</i>	
QUICKR: A NOVEL ROUTING STRATEGY FOR WIRELESS MOBILE INFORMATION-CENTRIC NETWORKS	421
<i>Adita Kulkarni ; Anand Seetharam</i>	
MINING CROSS-PLATFORM USER BEHAVIORS FOR DEMOGRAPHIC ATTRIBUTE INFERENCE	429
<i>Haoran Xu ; Yuqing Sun ; Xiangjun Li</i>	
VPGA: AN SDN-BASED LOCATION PRIVACY ZONES PLACEMENT SCHEME FOR VEHICULAR NETWORKS	431
<i>Abdelwahab Boualouache ; Ridha Soua ; Thomas Engel</i>	
GPUS CACHE PERFORMANCE ESTIMATION USING REUSE DISTANCE ANALYSIS	439
<i>Yehia Arafat ; Gopinath Chennupati ; Atanu Barai ; Abdel-Hameed A. Badawy ; Nandakishore Santhi ; Stephan Eidenbenz</i>	
MALICIOUS DOMAIN DETECTION VIA DOMAIN RELATIONSHIP AND GRAPH MODELS	447
<i>Wenxuan He ; Gaopeng Gou ; Cuicui Kang ; Chang Liu ; Zhen Li ; Gang Xiong</i>	
Author Index	