The 19th International Conference on Parallel and Distributed Computing, Applications and Technologies (PDCAT 2018)

2018 International Conferences
(Sponsored / Technically Sponsored by KIPS / KIPS SWRG)

The 10th International Conference on Computer Science and its Applications (CSA 2018)
- December, 17-19, 2018, Kuala Lumpur, Malaysia
- http://www.csa-conference.org/2018

The 13th KIPS International Conference on Ubiquitous Information Technologies and Applications (CUTE 2018)
- December, 17-19, 2018, Kuala Lumpur, Malaysia
- http://www.cute-conference.org/2018
The 19th International Conference on Parallel and Distributed Computing, Applications and Technologies (PDCAT 2018)

Message from the PDCAT 2018 General Chairs

The 19th International Conference on Parallel and Distributed Computing, Applications and Technologies (PDCAT) is a major forum for scientists, engineers, and practitioners throughout the world to present their latest research, results, ideas, developments and applications in all areas of parallel and distributed computing. Beginning in Hong Kong in 2000, PDCAT-18 will be held in Jeju, Korea after 18 years of successful journey through various countries/regions including Taiwan, Japan, China, Singapore, Australia, New Zealand, and Korea across Asia-Oceania. We are inviting new and unpublished papers.

The conference papers included in the proceedings cover the following topics: PDCAT of Networking and Architectures, Software Systems and Technologies, Algorithms and Applications, and Security and Privacy. Accepted and presented papers highlight new trends and challenges of Parallel and Distributed Computing, Applications and Technologies. We hope readers will find these results useful and inspiring for their future research.

Our special thanks go to the Program Chairs: Houcine Hassan (Universitat Politècnica de Valencia, Spain), Hui Tian (Griffith University, Australia), Yunsick Sung (Dongguk University, Korea) and all Program Committee members and all reviewers for their valuable efforts in the review process that helped us to guarantee the highest quality of the selected papers for the conference.

PDCAT 2018 General Chairs

James Park, SeoulTech, Korea
Yi Pan, Georgia State University, USA
Young-Sik Jeong, Dongguk University, Korea
Hong Shen, University of Adelaide, Australia
Qun JIN, Waseda University, Japan
The 19th International Conference on Parallel and Distributed Computing, Applications and Technologies (PDCAT 2018)

Organization

Honorary Chair
Doo-soon Park, SoonChunHyang University, Korea

General Chairs
James Park, SeoulTech, Korea
Yi Pan, Georgia State University, USA
Young-Sik Jeong, Dongguk University, Korea
Hong Shen, University of Adelaide, Australia
Qun JIN, Waseda University, Japan

Program Chairs
Houcine Hassan, Universitat Politecnica de Valencia, Spain
Hui Tian, Griffith University, Australia
Yunsick Sung, Dongguk University, Korea

Workshop Chairs
Daewon Lee, Seokyeong University, Korea
Ka Lok Man, X'ian Jiaotong-Liverpool University, China

Publicity Chairs
Byoungwook Kim, Dongguk University, Korea
Kyung-Soo Lim, ETRI, Korea
Neil Y. Yen, The University of Aizu, Japan
Rossi Kamal, IEEE Seoul Chapter, Korea
Yingpeng Sang, Sun Yat-sen University, China

Local Committee
Jungho Kang(Chair), Baewha Women's University, Korea

Program Committee
Ahmed El Oualkadi, Abdelmalek Essaadi University, Morocco
Alexiei Dingli, University of Malta, Malta
Andrzej M. Goscinski, Deakin University, Australia
Cheonshik Kim, Sejong University, Korea
Cho-Chin Lin, National Ilan University, Taiwan
Chuan-Ming Liu, National Taipei University of Technology, Taiwan
Depei Qian, Beihang University, China
Dorairaj Prabu, Broadcom Corporation, India
El-Sayed M. El-Alfy, King Fahd University of Petroleum and Minerals, Saudi Arabia
EunYoung Lee, Dongduck Woman's University, Korea
Haibo Zhang, University of Otago, New Zealand
Hirohi Ishikawa, Tokyo Metropolitan University, Japan
Hui Tian, Griffith University, Australia
I-Cheng Chang, National Dong Hwa University, Taiwan

KIPS CSWRG
Korea Information Processing Society
Computer Software Research Group
Jaeshup Oh, Sookmyung Women's University, Korea
Javier Martínez Torres, Centro Universitario de la Defensa, Spain
Jun Wu, Beijing Jiaotong University, China
Jun Yan, University of Wollongong, Australia
Kaijun Ren, National University of Defense Technology, China
Kapetanios Epaminondas, University of Westminster, United Kingdom
Kenli Li, Hunan University, China
Li Tao, XI'AN University of Posts&Telecommunications, China
Manu Malek, Institute of Electrical and Electronics Engineers Inc, USA
Manuel Domínguez-M Morales, University of Seville, Spain
Maytham Safar, Kuwait University, Kuwait
Michaeal Sheng, Macquarie University, Australia
Nitaigour Premchand Mahalik, California State University, USA
Prasun Kumar Sahoo, Chang Gung University, Taiwan
Rajkummar Buyya, University of Melbourne, Australia
Ren-Song Ko, National Chung Cheng University, Taiwan
Sheng-Shih Wang, Minghsin University of Science and Technology, Taiwan
Soon M. Chung, University Dayton, USA
Sun-Yuan Hsieh, National Cheng Kung University, Taiwan
Teofilo Gonzalez, University of California Santa Barbara, USA
Ye Tian, University of Science and Technology of China
Yidong Li, Beijing Jiaotong University, China
Yu Zhang, Los Alamos National Laboratory, USA
Yu-Chen Hu, Providence University, China
Zhiyi Huang, University of Otago, New Zealand
Empowering Cognitive Security Systems with Computational Intelligence & Granular Computing

Vincenzo Loia Ph.D.
Chair Professor
Department of Management and Innovation Systems
University of Salerno, Italy

Abstract
To solve the pressing security challenges of our era, we need more creative approaches capable to detect connections between relations, events concepts, in evolving context characterized by an explosive mixture of structured and unstructured data coming up from multiple sensor and human based networks. In this talk we explore how to integrate Granular Computing and Computational Intelligence with security based systems in order to enrich the cognitive power. We present the evolution of a framework where different application scenarios are described, evidentiating the benefits arising from such an integration. This novel integration can be viewed as a novel paradigm useful to design, build, and deploy distributed systems suitable for Smart Cities.

Biography
Professor Vincenzo Loia received B.S. degree in computer science from University of Salerno, Italy in 1985 and the M.S. and Ph.D. degrees in computer science from University of Paris VI, France, in 1987 and 1989, respectively. From 1989 he is Faculty member at the University of Salerno where he teaches Safe Systems, Situational Awareness. His current position is as Chair and Professor of Computer Science at Department of Management and Innovation Systems. He is the editor-in-chief of Evolutionary Intelligence and the editor-in-chief of Ambient Intelligence and Humanized Computing, both from Springer. He is an Associate Editor of various journals, including the IEEE Transactions on System, Man and Cybernetics: Systems; IEEE Transactions on Fuzzy Systems; IEEE Transactions on Industrial Informatics; IEEE Transactions on the IEEE Transactions on Cognitive and Developmental Systems. His research interests include soft computing, agent technology for technologically complex environments Web intelligence, Situational Awareness. He was principal investigator in a number of industrial R&D projects and in academic research projects. He is author of over 400 original research papers in international journals, book chapters, and in international conference proceedings. He hold in the last years several role in IEEE Society in particular for Computational Intelligence Society (Chair of Emergent Technologies Technical Committee, IEEE CIS European Representative, Vice-Chair of Intelligent Systems Applications Technical Committee).
Blockchain for Smart Communities: Opportunities and challenges

Neeraj Kumar, Ph.D.
Professor,
Department of Computer Science & Engineering
Thapar Institute of Engineering and Technology
Punjab, India

Abstract
From the last few decades there has been an exponential increase in the usage of Internet-enabled devices which raises the issues of security and privacy of the data among the end users. The traditional existing cryptographic primitives are not sufficient to solve these problems due to their heavy computation and communication costs. However, during this era, there is an evolution of new distributed ledger based technology called as Blockchain. Blockchain is a specific distributed shared database, which has been illustrated to possess salient advantages including security, immutability, and decentralization. It allows every transaction to be recorded in a verifiable and permanent way, which is essential to create a distributed, transparent, and secure energy-trading environment.

However, various issues in blockchain are still in their infancy and need novel contribution from the research community to address these issues. For example, proof of work used for block verification requires heavy cryptographic primitives computation. Hence, efficient decisions need to be taken that whether this proof of work needs to be executed on resource constrained smart devices or powerful servers. Secondly, blocks in the blockchain use storage space before any operation to be carried out. Hence, efficient usage of various data structures is prerequisite for successful implementation of any solution in this environment. So, the issues such as searching and indexing play a vital role with respect to efficient implementation. Verification and validation of the blocks created also is important issues need to be analysed before any block to be included in the chain of blocks. So, verification and validation time for the blocks verification is also an important issue to be discussed. Hence, in this talk we will explore the applicability of blockchain for various IoT application, challenges to implement blockchain for real world critical applications, and future scope of this emerging technology.

Biography
Neeraj Kumar (M16, SM) received the Ph.D. degree in computer science and engineering from Shri Mata Vaishno Devi University, Jammu and Kashmir, India, and worked as a Postdoctoral Research Fellow with Coventry University, Coventry, U.K. He is working as an Associate Professor with the Department of Computer Science and Engineering, Thapar Institute of Engineering and Technology (Deemed to be University), Patiala, India. Dr. Kumar has coauthored more than 200 technical research papers in leading journals and conferences from IEEE, Elsevier, Springer, John Wiley etc. Some of his research findings are published in top cited journals such as IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, IEEE TRANSACTIONS ON DEPENDABLE AND SECURE COMPUTING, IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS, IEEETRANSACTIONS ON CONSUMER ELECTRONICS, IEEE TRANSACTIONS ON INDUSTRIAL INFORMATICS, IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, IEEE INTELLIGENT TRANSPORTATION SYSTEMS MAGAZINE, IEEE NETWORK, IEEE COMMUNICATIONS MAGAZINE, IEEE WIRELESS COMMUNICATIONS, IEEE INTERNET OF THINGS JOURNAL, IEEE SYSTEMS JOURNAL, Future Generation Computing Systems, Journal of Network and Computer Applications, and ComCom. He has
guiding many research scholars leading to Ph.D. and M.E./M.Tech degree. His research is supported by funding from UGC, DST, CSIR, and TCS. He is an Associate Technical Editor of IEEE Communication Magazine and an Associate Editor of IJCS, Wiley, JNCA, Elsevier, and Security & Communication, Wiley. He is a member of Cyber Physical System research group where his team is exploring various aspects related to security, privacy, network management and embedded systems. He has supervised various Ph.D. and M.E. thesis. He is member of various professional bodies across the globe.
# PROGRAM SCHEDULE FOR PDCAT 2018

## Day 1, Aug. 20, 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Min</th>
<th>HALL -A</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00-12:00</td>
<td>120</td>
<td>Organizing Committee Meeting I (Only for Invited Members)</td>
</tr>
<tr>
<td>13:00-15:00</td>
<td>120</td>
<td>Local Arrangement Committee Meeting (Only for Invited Members)</td>
</tr>
<tr>
<td>16:00-17:30</td>
<td>90</td>
<td>Executive Meeting - Organized by BIC 2018 (Only for Invited Members)</td>
</tr>
</tbody>
</table>

## Day 2, Aug. 21 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Min</th>
<th>HALL A</th>
<th>HALL B</th>
<th>HALL C</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:40-10:40</td>
<td>120</td>
<td></td>
<td>Registration</td>
<td></td>
</tr>
<tr>
<td>10:40-12:00</td>
<td>80</td>
<td></td>
<td>Session C-2 PDCAT 2018</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chair : Yeong-Seok Seo</td>
<td></td>
</tr>
<tr>
<td>12:00-13:00</td>
<td>60</td>
<td></td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>13:00-13:30</td>
<td>30</td>
<td></td>
<td>Empowering Cognitive Security Systems with</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Computational Intelligence &amp; Granular Computing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vincenzo Loia Ph.D.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Professor at University of Salerno</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chair: Kwang-il Hwang</td>
<td></td>
</tr>
<tr>
<td>13:30-14:00</td>
<td>30</td>
<td></td>
<td>Blockchain for Smart Communities: Opportunities</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and challenges</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Neeraj Kumar, Ph.D.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Professor at Thapar Institute of Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and Technology</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chair: Kwang-il Hwang</td>
<td></td>
</tr>
<tr>
<td>14:00-14:10</td>
<td>10</td>
<td></td>
<td>Coffee Break</td>
<td></td>
</tr>
<tr>
<td>14:10-15:30</td>
<td>80</td>
<td></td>
<td>Session C-3 PDCAT 2018</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chair : Jong-Myon Kim</td>
<td></td>
</tr>
<tr>
<td>15:30-18:00</td>
<td>150</td>
<td></td>
<td>Coffee Break</td>
<td></td>
</tr>
<tr>
<td>18:00-19:20</td>
<td>80</td>
<td></td>
<td>Banquet (HALL B)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chair: Kwang-il Hwang</td>
<td></td>
</tr>
</tbody>
</table>
The 19th International Conference on Parallel and Distributed Computing, Applications and Technologies (PDCAT 2018)

Day 3, Aug. 22 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Min</th>
<th>HALL A</th>
<th>HALL B</th>
<th>HALL C</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00-10:40</td>
<td>100</td>
<td>Session C-5 PDCAT 2018</td>
<td>Chair : Jehn-Ruey Jiang</td>
<td></td>
</tr>
<tr>
<td>10:40-10:50</td>
<td>10</td>
<td>Coffee Break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:50-12:30</td>
<td>100</td>
<td>Session C-6 PDCAT 2018</td>
<td>Chair : Cheol Hong Kim</td>
<td></td>
</tr>
</tbody>
</table>

1. A paper presentation should be made by one of authors of the paper for 20 minutes. (10 minutes for the presentation itself and 5 minutes for Q/A)
2. All speakers of each session should meet the session chair at their room 10 minutes before the session begins.
3. Windows 7 laptops running the Adobe Reader and Microsoft Office for paper presentations will be prepared. Please prepare for your presentation.
DETAILED SCHEDULE FOR
PDCAT 2018

Day 2, Aug. 21, 2018 (Tuesday)

08:40-10:40  Registration

10:40-12:00  Session C-2 : PDCAT 2018
(HALL C)
(Chair: Yeong-Seok Seo)

1. Autoencoder-based Anomaly Detection with Intrusion Scoring for Smart Factory Environments
   Gimin Bae, Sunggyun Jang, Minseop Kim, Inwhee Joe
2. SGNet: Design of Optimized DCNN for Real-Time Face Detection
   Seunghyun Lee, Minseop Kim, Inwhee Joe
3. Efficient Scheduling Strategy for Data Collection in Delay-Tolerant Wireless Sensor Networks with a Mobile Sink
   Zhansheng Chen, Hong Shen, Tingmei Wang
4. Software Requirements for an Ultra large scale System to Compute Multi dimension Mean Failure Cost
   Mouna Jouini, Latifa Ben Arfa Rabai, Ridha Khedri
5. Parallelization of the DIANA algorithm in OpenMP
   Hethini Ribeiro, Roberta Spolon, Aleardo Manacero Jr., Renata S. Lobato
   Shan Yang, Liang Chen, De Li
7. Flash Animation Watermarking Algorithm Based on SWF Tag Attributes
   YiAn Zuo, ZhiXun Zheng, De Li
8. Design and Implementation of a Novel SDN-based Architecture for Wi-Fi Networks
   Lei Liu, Mingzheng Li, Lei Mei, Ye Tian
9. Location based One-time Conference Protocol without Personal Information
   Jiyoung Lim, SangHyun Lim
10. Green vs Revenue: Profit maximization for large scale data center with stochastic constraints
    Huaiwen He, Hong Shen
11. Analysis of massive e-learning Processes: an approach based on big association rules mining
    Asma Hassani, Sonia Ayachi Ghannouch
12. Body gesture modeling for psychology analysis in job interview based on deep Spatio-temporal approach
    intissar khalifa, ridha ejbali, mourad zaied

12:00-13:00  Lunch break
13:00-13:30  Keynote Speaker I  
(Chair: Kwang-il Hwang)

Empowering Cognitive Security Systems with Computational Intelligence & Granular Computing

Ph.D. Vincenzo Loia  
Professor at University of Salerno

13:30-14:00  Keynote Speaker II  
(Chair: Kwang-il Hwang)

Blockchain for Smart Communities: Opportunities and challenges

Ph.D. Neeraj Kumar  
Professor at Thapar Institute of Engineering and Technology

14:00-14:10  Coffee break

14:10-15:30  Session C-3 : PDCAT 2018  
(HALL C)  
(Chair: Jong-Myon Kim)

1. Evaluation for Two Bloom Filters’ Configuration  
Chenxi Luo, Zhu Wang, Tiejian Luo

2. An Efficient Model and Algorithm for Privacy-preserving Trajectory Data Publishing  
Songyuan Li, Hong Shen, Yingpeng Sang

3. A Study of an Automated Software Effort Measurement Method  
Yeong-Seok Seo, Hyun-Soo Jang

4. A Fast Global AVF calculation Methodology for Multi-core Reliability Assessment  
Jiajia Jiao, Dezhi Han

5. What Makes Charitable Crowdfunding Projects Successful: A Research Based on Data Mining and Social Capital Theory  
Xizi Wang, Li Wang

6. A SwarmESB based architecture for an European Healthcare Insurance System in Compliance with GDPR  
Cristina Georgiana Calancea, Lenuta Alboia, Andrei Panu

7. Blockchain and smart-contracts modeled in a SwarmESB ecosystem  
Ioana Staneseu, Lenuta Alboia, Andrei Panu
8. A Study on Deriving and Simulating Pre-risk on Complex Gas Facilities for Preventing Accidents
   Jeong Seok Oh

9. An Optimized Regularization Method to Enhance Low-Resource MT
   Yatu Ji, Hongxu Hou, Ying Lei, Zhong Ren

    Yue Lu, Hui Tian, Jiajia Yin

11. Privacy Preserving Classification Based on Perturbation for Network Traffic
    Yue Lu, Hui Tian, Hong Shen, Dongdong Xu

15:30-18:00  Coffee break

18:00-19:20  Banquet at Hall B
             (Chair: Kwang-il Hwang)

**Day 3, Aug. 22, 2018 (Wednesday)**

9:00-10:40  Session C-5 : PDCAT 2018
            (HALL C)
            (Chair Jehn-Ruey Jiang)

1. Adaptive Control and Optimization on Dynamic Load Balancing Model
   Tinglei Zhao, Jianzhong Qiao, Shukuan Lin, Yanhua Wang

2. PINUS: Indoor Weighted Centroid Localization with Crowdsourced Calibration
   Jehn-Ruey Jiang, Hanas Subakti, Ching-Chih Chen, and Kazuya Sakai

3. Pipeline Patterns on top of Task-Based Runtimes
   Enes Bajrovic, Siegfried Benkner, Jiri Dokulil

4. A Generic Approach for the Verification of Static and Dynamic Behavioral Properties of
   SCDL/WS-BPEL Service-Component Architectures
   Taoufik Sakka Rouis, Layth Sliman, Mourad Kmimich, Mohamed Tahar Bhiri

5. Pattern-based approaches for business process improvement: A literature review
   Missaoui Nesrine, Ghannouchi Ayachi Sonia

6. A Development of Architecture for Risk Area Prediction System
   Ugiwyeon Lee, Jeongseok Oh

7. Fault Diagnosis of a Wireless Sensor Network using a Hybrid Method
   Farzin Piltan, Jong-Myon Kim

8. Design Consideration for an Intelligent Video Surveillance System using Cloud Computing
   Kyung-Soo Lim, Seoung-Hyeon Lee, Jong Wook Han, Geon Woo Kim

9. Design of SNS-based English Word Learning System for Daily Study
   Chungin Lee, Doyeon Kim, Sujeong Kim, Yunsick Sung

10. Study of Real Toy Tank-based Mixed Reality Contents
    Eunhee Park, Namgwang Ryu, Jisun Lee, Yunsick Sung
11. Autonomous Flight Control Method of Drones for Enforcement of Traffic Law Violation
   Jeonghoon Kwak, Sang-Geol Lee, Yunsick Sung

12. Study on Application Method for Automation Solution using Blockchain dApp Platform
    Seong-kyu Kim, Hyun-Taek Kwon, Young-Kun Kim, Dae-Won Keum, Ung-Mo Kim

13. Smart Grid an Advanced Method for Saving Energy In Vietnam
    Nhan Tran Van, Le Hoanh Su

    Ga-Yeon Kim, Jeong-Yong Byun

10:50-12:30 Session C-6 : PDCAT 2018
(HALL A)
(Chair Cheol Hong Kim)

1. A Study on L1 Data Cache Bypassing Methods for High-Performance GPUs
   Cong Thuan Do, Min Goo Moon, Jong Myon Kim, Cheol Hong Kim

2. Memory Contention Aware Power Management for High Performance GPUs
   Hong Jun Choi, Dong Oh Son, Cheol Hong Kim

3. Dynamic Selective Warp Scheduling for GPUs using L1 Data Cache Locality Information
   Gwang Bok Kim, Jong Myon Kim, Cheol Hong Kim

4. Automatic Classification of Transformed Protocols Using Deep Learning
   Changmin Jeong, Mirim Ahn, Haengho Lee, Younggu Jung

5. Towards a Two Factor Authentication method using Zero-Knowledge Protocol in Online Banking Services
   Yichen Han, Manish Singh

   Jinyeong Kang, Inwhee Joe

7. Cost-Performance Comparison of Various Accelerator Implementation Platforms for Deep Convolutional Neural Network
   Yechan Yu, HaJin Kim, Jinjoo Ha, Daewoo Kim, and Kang Yi

8. Covert Timing Channel Design for Uniprocessor Real-Time Systems
   Jaeheon Kwak, Jinkyu Lee

   Jungsok Cho, Jeongdoo Lee, Doosan Cho

10. Spectrum-centric Differential Privacy for Hypergraph Spectral Clustering
    Xiaochun Wang, Yidong Li, Yi Jin, Wei Wang

11. Investment Intention towards Online Peer-to-Peer Platform: A Data Mining Approach based on Perceived Value Theory
    Xizi Wang, Li Wang

    Seung-Mo Je, Jun-Ho Huh

KIPS CSWRG
Korea Information Processing Society
Computer Software Research Group
Conference Venue

RAMADA JEJU HAMDEOK
470, Shinbuk-ro, Jocheon-eup
Jeju Special Self-Governing Province, South Korea

Tel: +82 64 735 9000
Fax: +82 64 735 9050
The 19th International Conference on Parallel and Distributed Computing, Applications and Technologies (PDCAT 2018)