## I. Program Overview

# DataCom/SOCA/SC2/IOV Program (18<sup>th</sup>-21<sup>st</sup> Nov. 2019)

Monday, 18 <sup>th</sup> Nov.	Event	
13:00-16:00	Registration	
13:30-14:40 (70 min)	KDBD workshop I	
	Roorm 106	
14:40-15:10 (30 min)	Coffee Break	
15:10-16:20 (70 min)	KDBD workshop II	
	Roorm 106	
16:30 -17:30 (60 min)	Committee meeting	

Tuesday, 19 <sup>th</sup> Nov.	Event			
08:00-17:00	Registration			
09:00~09:20 (20 min)			ning	
09:20-09:30 (10 min)		Group	Photo	
09:30-10:40 (70 min)	Keynot	e Speech 1 - F	Prof. Hideyuki 7	Fokuda
	S	ession Chair -	Chi-Sheng Shi	ih
		Banqu	et Hall	
10:40-11:00 (20 min)		Coffee	Break	
11:00-12:10 (70 min)	Keynote	Speech 2 – Pr	of. Roger Zimn	nermann
	Session Chair - Ren-Hung Hwang			
	Banquet Hall			
12:10-13:30 (80 min)	Lunch (Lunch box, banquet hall)			
13:30-14:50 (80 min)	Session 1A	Session 1B	Session 1C	Session 1D
(Best Paper Candidates)	DataCom I	SOCA I	SC2 I	IOV I
	Room 101	Room 102	Room 103	Room 106
14:50-15:30 (40 min)	Coffee Break			
	Poster I (Conference Hall)			
15:30-16:40 (70 min)	Session 2A	Session 2B	Session 2C	Session 2D
	DataCom II	SOCA II	SC2 II	IOV II
	Room 101	Room 102	Room 103	Room 106
16:40-16:50 (10 min)	Coffee Break			
16:50-18:00 (70 min)	Session 3A	Session 3B	Session 3C	Session 3D
	DataCom III	SOCA III	SC2 III	IOV III
	Room 101	Room 102	Room 103	Room 106
18:20-20:30	Welcome Reception			
	Banquet Hall			

Wednesday, 20 <sup>th</sup> Nov.	Event	
08:30-17:00	Registration	
09:10-10:20 (70 min)	Keynote Speech 3 – Prof. Marco Aiello	
	Session Chair - Anna Kobusińska	
	Banquet Hall	
10:20-10:40 (20 min)	Coffee Break	
10:40-11:50 (70 min)	Keynote Speech 4 – Dr. Tzi-Cker Chiueh	

	Session Chair - Chung-Ming Huang Banquet Hall		
11:50-13:30 (100 min)	Lunch(Restaurant-Hoya)		
13:30-14:50 (80 min)	Session 4A	Session 4B	Session 4C
	DataCom IV	SOCA IV	SC2 IV
	Room 101	Room 102	Room 103
14:50-15:30 (40 min)	Coffee Break Poster II (Buffet, Conference Hall)		
15:30-16:40 (70 min)	Session 5A	Session 5B	Session 5C
	DataCom V	SOCA V	SC2 V
	Room 101	Room 102	Room 103
16:40-16:50 (10 min)	Coffee Break		
16:50-18:00 (70 min)	Session 6A	Session 6B	Session 6C
	DataCom VI	SOCA VI	SOCA VII
	Room 101	Room 102	Room 103
18:20-20:30	Banquet (Banquet Hall)		

Thursday, 21 <sup>st</sup> Nov.	Event
11:00-12:00	Committee Meeting (By Invitation)
13:00-18:00	Half-day City Tour (Foreigners)

## II. Technical Program

### **DataCom Advanced Program**

Monday, 18<sup>th</sup> November 2019 13:30 – 14:40 KDBD workshop I Room 106 Chair: Liang Zhao

- **1.** Instantaneous Availability Model for Systems Considering Multi-factor Logistic Delay Yi Yang, Kunlun Wei and Haoran Chen
- **2.** An optimization for spare parts transportation route based on real-time monitoring Ziyang Ge, Meilin Wen, Yi Yang and Rui Kang
- **3.** Multiple Kernel K-means Clustering : A Self-weighted Learning Approach Hong Yu, Tiantian Zhang, Beilei Cui and Linlin Zong
- **4. Bilinear CNN for Low-shot Footprint Classification** Min Fang, Luotian Wu, Xilong Lu, Jin Liu and Yan Zhang

15:10 - 16:20	KDBD workshop II	Room 106
Chair: Zhikui Chen		

- 1. Abnormal Detection of Gas Turbine Engine Based on Time-Frequency Feature Analysis Xiumin Ma and Chi Feng
- 2. Analysis and Design of Network Public Opinion Early Warning System for Emergencies Weihong Xin
- **3.** Source Apportionment of Heavy Metals in Soils Based on Hierarchical Clustering Lu Wang, Zhikui Chen, Yujie Zhao, Qiucen Li, Huiyue Su and Zongling Ren
- 4. Correlated and Uncorrelated Feature Co-Learning with Dual Graph Regularization for Multi-View Data Clustering

Tingting Sun, Chunyang Mo, Liang Zhao and Zhikui Chen

#### Tuesday, 19<sup>th</sup> November 2019

13:30 - 14:50Session 1ADataCom IRoom 101Chair: Che-Rung Lee

1. SSN:A Spatial Semantic Network for High-accuracy, Stable and Generalized Intent Detection

Zhi Zeng, Chi-Yin Chow and Jia-Dong Zhang

2. Cyber Intrusion Detection by Using Deep Neural Networks with Attack-sharing Loss Boxiang Dong, Wendy Hui Wang, Aparna S. Varde, Dawei Li, Bharath K. Samanthula, Weifeng Sun and Liang Zhao

- 3. Motion Capture System Towards Big Data Collection of Craftsmanship Masanobu Yamamoto, Yuki Miura and Tetsushi Ohsawa
- 4. A Data-Driven Knowledge-Enriched Framework for Dialogue Modeling Wei-Po Lee and Jhih-Yuan Huang

#### 15:30 – 16:40 DATACOM Session II Room 101

Chair: Yi-Hwa Liu

1. Data Analysis of Portfolio Optimization using Artificial Neural Network in China's Stock Market

Chia-Hung Wang and Xiaojing Wu

2. SCNNSC: Spelling Check based Neural Network for Sentiment

#### Classification

Yiwen Li, Yi Song and Kai Shuang

- **3.** TF-RNN: A Method of Rumor Detection on Social Media Peng Xu, Yonghao Zhu, Kai Shuang, Yulu Cao, Yiming Liu and Shu Wang
- 4. Predicting Performance of Social Media Postings using Data Mining Methods

Szu Chuang Li, Yi-Wen Chen and Yennun Huang

#### 16:50 – 18:00 DATACOM Session III Room101

Chair: Yean-Fu Wen

- 1. Blockchain Synchronisation Performance Enhancement Using Forwarder Assignment in an Overlay Network Yean-Fu Wen and Ping-Ju Wu
- 2. Leveraging Reinforcement Learning to Allocate Bandwidth in the Agent-based Resource Management System Mu-Cheng Wang, Paul C. Hershey and Theodore E. Ioakimidis
- 3. Data-Pattern Driven Cache-Collision Timing Attacks Against AES-GCM James Huang and Xiaoming Li
- 4. Using Inaccurate Job Prediction for Detecting Machine Failures in Parallel Computing Cluster

Ting-Yu Lin and Jerry Chou

Wednesday, 20<sup>th</sup> November 2019 13:30 – 14:50 DATACOM Session IV Room 101 Chair: Hung-Chang Hsiao

**1.** Robust Classification of Step Data of Exercise

Haoqi Fu, Keqin Shi and Weiqiang Sun

- 2. Dangerous Goods Detection System of X-ray Images Based on Mask R-CNN Yen-Hua Lin, Kuang-Cheng Lo, Yu-Chien Chen and Yen-Wen Chen
- **3. Face Swapping Neural Networks Based on Improved Autoencoders** Wei-Jong Yang, Bao-Nan Lin, Jar-Ferr Yang, Pau-Choo Chung and Songan Mao
- 4. Interpretable Distance Metric Learning for Handwritten Chinese Character Recognition

Boxiang Dong, Aparna S. Varde, Danilo Stevanovic, Jiayin Wang and Liang Zhao

#### 15:30 – 16:40 DATACOM Session V Room 101 Chair: Cheng-Hsin Hsu

1. A Data Mining Approach to Surveying Literature on Behavioral Big Data in Operations Management Academic Research

Hsiao-Hui Lee, Patrizia Mach, Galit Shmueli and Inbal Yahav

- 2. Combining Multiple Ranking Systems on the Generalized Permutation Rank Space Xinliang Zhong, Landon Hurley, Suman Sirimulla, Christina Schweikert and D. Frank Hsu
- **3.** Where are the optimization potential of machine learning kernels? Christophe Cerin, Congfeng Jiang, Walid Saad and Emna Mekni
- 4. Distributed-Memory Vertex-Centric Network Embedding for Large-Scale Graphs Sara Riazi and Boyana Norris

## 16:50 – 18:00 DATACOM Session VI Room 101

Chair: Yi Zou

1. Forecasting Daily Accommodation Occupancy for Supply Preparation by a Sharing Economy Platform

Ta-Chun Kuan, Sz-Wei Wu, Cheng-Che Liao, Mahsa Ashouri, Galit Shmueli and Che Lin

2. Computational modelling of speech data integration to assess interactions in B2B sales calls

Vered Silber-Varod, Anat Lerner, Nehoray Carmi, Daphna Amit, Yonathan Guttel, Chris Orlob and Omri Allouche

- 3. Recommendation System for Online Programming Judge Platforms Heimei Lao and Che-Rung Lee
- 4. Fuzzy–based approach for identifying epistasis in large-scale data Cheng-Hong Yang, Sin-Hua Moi, Yu-Da Lin and Li-Yeh Chuang

## -SOCA Advanced Program

Tuesday, 19<sup>th</sup> November 2019 13:30 – 14:50 SOCA Session I Chair: Anna Kobusinska

Room 102

- **1. DIMON: Distributed Monitoring System for Decentralized Edge Clouds in Guifi.net** Roger Pueyo Centelles, Mennan Selimi, Felix Freitag and Leandro Navarro.
- 2. Monitoring Data Management Services on the Edge Using Enhanced TSDBs Wenxi Zeng, Shuai Zhang, I-Ling Yen, Farokh B. Bastani and San-Yih Hwang
- **3. Evaluation of Autoscaling Metrics for (stateful) IoT Gateways** Helge Dickel, Vladimir Podolskiy and Michael Gerndt
- 4. Step-by-Step Guidelines for Making Smart Contract Smarter Ya-Wen Jeng, Yung-Chen Hsieh and Ja-Ling Wu

15:30 - 16:40SOCA Session IIRoom 102Chair: Chi-Sheng Shih

1. Web Service Selection with Correlations: A feature-based Abstraction Refinement Approach

Kaustabha Ray, Ansuman Banerjee and Swarup Mohalik

- 2. Towards Scalable Semantic Service Composition Soumi Chattopadhyay and Ansuman Banerjee
- 3. Making Sense of a Service-Oriented Architecture (SOA) Governance Framework in Digital Ecosystem Utilizing a Sociotechnical Approach Kedar Patwardhan

16:50 - 18:00	SOCA Session III	Room 102
Chair: I-Ling Yen		

1. Serving Machine Learning Workloads in Resource Constrained Environments: a Serverless Deployment Example

Angelos Christidis, Roy Davies and Sotiris Moschoyiannis

- 2. Exploiting recommender service to enhance efficiency of replication Anna Kobusińska, Michał Boroń, Aleksandra Kerebińska, Dionisis Margaris
- 3. Service-Oriented Architecture for Intelligent Management with Data Analytics and Visualization

Hsuan-Yu Lin, Yu-Hsuan Chiu, Wei-Chieh Liao and Ray-I Chang (Work-in-Progress)

4. [WiP] Implementation of a Personal Authentication System T-TIME Gi-Chul Yang and Haengun Oh

## Wednesday, 20<sup>th</sup> November 2019

#### 13:30 – 14:50 SOCA Session IV

#### Room102

Chair: Janming Ho

- 1. PicPose: Using Picture Posing for Localization Service on IoT Devices Yu Meng, Kwei-Jay Lin, Bo-Lung Tsai, Chih-Sheng Shih and Bin Zhang
- 2. Unsupervised Online Anomaly Detection on Multivariate Sensing Time Series Data for Smart Manufacturing Ruei-Jie Hsieh, Jerry Chou and Chih-Hsiang Ho
- 3. Sitting Posture Prediction and Correction System using Arduino-Based Chair and Deep Learning Model

Haeyoon Cho, Hee-Joe Choi, Chae-Eun Lee and Choo-Won Sir

4. AutoCoach: Driving Behavior Management Using Intelligent IoT Services Zahraa Marafie, Kwei-Jay Lin, Daben Wang, Haoyu Lyu, Yu Meng and Takayuki Ito

15:30 – 16:40 SOCA Session V Room 102

Chair: Andrzej Skulimowski

- 1. Priority-based Event Management using Fuzzy Logic for an IoT-BPM Architecture Abir Ismaili-Alaoui, Ouafae Kasmi, Amine Baïna, Karim Baïna, Khalid Benali and Mostafa Bellafkih
- 2. Multilayer Architecture for Content-based Image Retrieval Systems Rafał Grycuk, Patryk Najgebauer, Robert Nowicki and Rafał Scherer
- [WiP] Concept and Implementation of an Adaptive Decentralized Control System for Human-Technology Interaction Thomas Kirks, Jana Jost, Tim Uhlott and Soeren Kerner
- 4. [WiP] Metalworking Industry: Quality Management via Edge Computing-based Cloud Monitoring System

Zheng-Wei Wu, Shang-Chih Lin, Po-Chun Hu, Shun-Feng Su and Yennun Huang

# 16:50 - 18:00SOCA Session VIRoom 102Chair:Sotiris Moschoyiannis

- 1. MToS: Multi-Tenant Network over Software Defined Networking Wen-Kang Jia, Yaw-Chung Chen and Johanes Lin
- 2. Real-time Proof of Violation with Adaptive Huffman Coding Hash Tree for Cloud Storage Service

Jehn-Ruey Jiang and Wei-Sheng Chung

- [WiP] User Interaction with a Technology Evolution Model to Select Most Viable Enterprise Information Systems Andrzej M.J. Skulimowski and Inez Badecka
- 4. [WiP] Review of Cybersecurity Research Topics, Taxonomy and Challenges: Interdisciplinary Perspective

Hatma Suryotrisongko and Yasuo Musashi

## 16:50 – 18:00 SOCA Session VII Room 103

Chair: Kwei-Jay Lin

1. Software Architecture Design of Cloud Platforms in Automotive Domain: An Online Survey

Ahmad Banijamali, Philipp Heisig, Johannes Kristan, Pasi Kuvaja and Markku Oivo

2. D&D: A Distributed and Disposable Approach to Privacy Preserving Data Analytics in User-Centric Healthcare

Zheng Li and Esteban J. Pino

3. [WiP] IoT Application in Sports to Support Skill Acquisition and Improvement Kazunari Ishida

## - SC2 Advanced Program

Tuesday, 19<sup>th</sup> November 2019 13:30 – 14:50 SC2 Session I Chair: Christophe Cérin

Room 103

- 1. uNVMe-TCP: A user space approach to optimizing NVMe over Fabrics TCP transport Ziye Yang, Qun Wan, Gang Cao, Karol Latecki
- 2. qCUDA-ARM: Virtualization for Embedded GPU Architectures Bo-Yu Huang and Che-Rung Lee
- **3. Rethinking Software Defined Cloud Storage for Disaggregation** Yi Zou, Arun Raghunath, Anjaneya Chagam, Sujoy Sen and Tushar Gohad
- 4. A SaaS-Native Wildcard Searchable Encryption Scheme for Protecting Privacy in Cloud Services

Shen-Ming Chung, Ming-Der Shieh and Tzi-Cker Chiueh

15:30 - 16:40	SC2 Session II	Room 103
Chair: Chao-Tung Ya	ng	

- 1. An Ethereum-based Data Synchronization Platform for Distributed Networks Jianru Lin, Keshan Zhang, Sicong Zhou, Kangying Lin, Yang Yang, Huawei Huang and Kun Wang
- 2. Distributed Logging Service with Distributed Hash Table for Cloud Takayuki Kushida
- 3. FLEDGE: Kubernetes Compatible Container Orchestration on Low-resource Edge Devices

Tom Goethals, Bruno Volckaert and Filip De Turck

**4.** Accelerated Promethee Algorithm based on Dimensionality Reduction Tarek Menouer, Christophe Cérin and Patrice Darmon

16:50 – 18:00 SC2 Session III Chair: Frank T. Yeh

1. Implementing a Business/Technology Architecture Alignment-Oriented Process Applied to the Social-Sanitary Sector Fernanda Lugmaña-Hidalgo and José Luis Garrido

**Room 103** 

- 2. A Lightweight Time Series Main-memory Database for IoT Real-time Services Lina Lan, Ruisheng Shi, Bai Wang and Lei Zhang
- **3.** A review on blockchain-based systems and applications Jingyu Zhang, Siqi Zhong, Jin Wang, Lei Wang, Yaqiong Yang, Boyang Wei and Guoyao Zhou
- Tuning Runtimes in Open Source FaaS David Balla, Markosz Maliosz, Csaba Simon and Daniel Gehberger

## Wednesday, 20<sup>th</sup> November 2019

13:30 – 14:50 SC2 Session IV Room 103 Chair: Rebecca Lin

#### **1.** Achieving Dynamic Resource Allocation in the Hadoop Cloud System Tsozen Yeh and Shengchieh Yu

- 2. A Workflow Interoperability Approach Based on Blockchain Yuchen Fang, Xuanzhao Tang, Maolin Pan and Yang Yu
- **3. Air Pollution Forecasting Using LSTM-Multivariate Regression Model** Satheesh Abimannan, Yue-Shan Chang and Chi-Yeh Lin
- Human-centered design tools for smart toys
  Anna Priscilla de Allbuquerque, Judith Kelner and Patrick Hung
- 5. Representing cloud security and privacy policies and detecting potential problems Anthony Opara and Lawrence Chung

15:30 - 16:40	SC2 Session V	Room 103
Chair: Mu-Cheng Wa	ang	

- 1. Serverless Skeletons for Elastic Parallel Processing Stefan Kehrer, Jochen Scheffold and Wolfgang Blochinger
- 2. A Realtime Crypto Computing and Block-Dependability Abhilash Kancharla and Nohpill Park
- **3.** Architecture to Speed up Redundant Data Processing in a MapReduce Cloud Tzu-Chi Huang, Kuo-Chih Chu, Xue-Yan Zeng, Fu-Lin Jou, Ming-Fong Tsai and Ce-Kuen Shieh
- 4. Offloading Optimization with Delay Distribution in the 3-tier Federated Cloud, Edge, and Fog Systems

Ren-Hung Hwang, Yung-Cheng Lai and Ying-Dar Lin

## - IOV Advanced Program

Tuesday, 19<sup>th</sup> November 2019 13:30 – 14:50 IOV Session I Chair: Kun-Chan Lan

Room 104

- 1. Uplink Access Control in Narrowband IoT Ren-Hung Hwang, Min-Chun Peng and Bo-Hao Tu
- Utilizing Connectivity Maps to Accelerate V2I Communication in Cellular Network Dead Spots Jon Arild Ekberg Meyer, Ergys Puka and Peter Herrmann

## 15:30 – 16:40 IOV Session II Room 104

Chair: Chung-Ming Huang

- 1. A novel protocol for Information Dissemination in Vehicular Networks Ravi Tomar, Hanumat G Sastry and Manish Prateek
- 2. Dynamic Path Planning Method Based on Cluster Queuing Communication in VANET Mengdi Du, Shuisheng Lin, Chunbo Luo, Liang Zhou, Haifen Yang and Christos Grecos
- 3. Performance Evaluation of Citywide Intersections Traffic Control Algorithm inVANETs-Based

Sarah Baras and Mourad Elhadef

4. Task Planning with Manual Intervention using Improved JSHOP2 Planner Liancheng Tao and Ao Zhou

16:50 - 18:00	IOV Session III	Room 104
Chair: Andrzej M. S	kulimowski	

- 1. Multi-task Planning with the Consideration of Task Priority Renkang Ke and Ao Zhou
- 2. From AI to CI: A Definition of Cooperative Intelligence in Autonomous Driving Jun Liu, Yang Xiao and Jiawei Wu
- 3. Learning Route Planning from Experienced Drivers Using Generalized Value Iteration Network

Xiao Wang, Quan Yuan, Zhihan Liu, Yushun Dong, Xiaojuan Wei and Jinglin Li

4. Predicting Steering for Autonomous Vehicles Based on Crowd Sensing and Deep Learning

Taiyu Liu, Jinglin Li and Quan Yuan

### **III.** Poster Sessions

## Tuesday, 19<sup>th</sup> November 2019

14:50-15:30 Poster I Vo

**Venue: Conference Hall** 

- 1. Mid-Tier Models for Big Data Jayesh Patel
- 2. Forecasting Daily Accommodation Occupancy for Supply Preparation by a Sharing Economy Platform

Ta-Chun Kuan, Sz-Wei Wu, Cheng-Che Liao, Mahsa Ashouri, Galit Shmueli and Che Lin

3. Improve User-Experience of E-Commerce Website by Graph Analysis with Deep Learning

Ray-I Chang

- 4. A Data-Driven Approach to Monitoring Colocation Data Centers Brian Setz, G Subrahmanya Venkata Radha Krishna Rao, Alexander Lazovik and Marco Aiello
- 5. An Empirical Study on Abnormal Trajectory Detection Umair Sabir and Che-Rung Lee
- 6. Forecasting hotel accommodation demand: the study in Kaohsiung Cheng-Hong Yang, Borcy Lee, Hsiang-Yu Yin, Chun-Hung Lien, Yu-Da Lin and Cheng-Feng Lee
- 7. Coronary heart diseases prediction based on cardiology clinical features Cheng-Hong Yang, Li-Yeh Chuang and Po-Yin Chang
- 8. Tiered Financial Fraud Detection Utilizing Precision Stratified Random Forest Assembly

Charles Gardner and Dan Lo

- 9. An Analysis of the Number of Passengers Collected with A Practical Management Support System for Regional Public Transportation Service Chinasa Sueyoshi, Hideya Takagi and Kentaro Inenaga
- **10. Demo: Stream Processing of Software-Defined Video Analytics on a Smart Campus** Cheng-Hsin Hsu
- **11. Multi-class Vehicle Detection using Multi-scale Hard Negative Mining** Minsung Kang and Young-Chul Lim
- 12. Transparent Big Data Infrastructural Services for Semiconductor Wafer Fabrication Foundries

Hung-Chang Hsiao

# Wednesday, 20th November 201914:50-15:30Poster IIVenue: Conference Hall

- **1. ExpanAI: A Smart End-to-End Platform for the development of AI applications** Yongmei Wei
- 2. Smoke and Stress Tests for Travel Service Applications via LoadRunner

Chau-Yi Chou, Yu-Bin Fang, Shuen-Tai Wang and Fang-An Kuo

3. Privacy-Preserving Content-Based Publish/Subscribe Service Based on Order Preserving Encryption

Mingdong Li, Qifeng Luo, Lu Wang and Ruisheng Shi

4. Improve the House Price Prediction Accuracy with a Stacked Generalization Ensemble Model

Shilong Xiong, Qibo Sun and Ao Zhou

- **5.** Dysphasia's Voice Extraction and Period Selection in Deep Learning Framework Hung-Shing Huang, Yue-Shan Chang and Bo-Yu Lin
- 6. AI Model Repository for dynamic model selection on edge devices Jaewon Moon and Seungwoo Kum
- 7. Enumerating-Based Apriori Algorithms for Mining Frequent Patterns on MapReduce Hsing-Lung Chen and Hao-Yu Wang
- 8. Overall mortality risk identification in breast cancer registry database Cheng-Hong Yang, Sin-Hua Moi, Li-Yeh Chuang, Fu Ou-Yang, Ming-Feng Hou and Yu-Da Lin
- 9. Edge Service Migration for Vehicular Networks Based on Multi-Agent Deep Reinforcement Learning

Haohan Zhang, Jinglin Li and Quan Yuan

- **10. A Road Traffic Guidance Service Based on Deep Reinforcement Learning** Kaihui Chen, Zhihan Liu, Jinglin Li and Quan Yuan
- 11. Development of Low-Cost Sensors based Multi-sensors Integration Positioning Algorithm for Land Vehicle Tracking and Monitoring Device Chi-Ho Park and Joong-Hee Han