

PROGRAM GUIDE



NBiS-2020

The 23-rd International Conference on
Network-Based Information Systems

and



*Intelligent Networking
and Collaborative Systems*

INCoS-2020

The 12-th International Conference on
Intelligent Networking and Collaborative Systems

August 31st - September 2nd, 2020

University of Victoria, Victoria, Canada

Technically Co-sponsored by:



University of Victoria
Canada

FIT Fukuoka Institute of Technology
福岡工業大学

Fukuoka Institute of Technology
Japan

TABLE OF CONTENTS

NBiS-2020 Organizing Committee	3
Welcome Message from the NBiS-2020 Steering Committee Co-Chairs	4
Welcome Message from NBiS-2020 General Co-Chairs	5
Welcome Message from NBiS-2020 Program Committee Co-Chairs	6
INCoS-2020 Conference Organizing Committee	7
Welcome Message from the INCoS-2020 Organizing Committee	8
NBiS-2020 & INCoS-2020 Keynote I	9
NBiS-2020 & INCoS-2020 Keynote II	10
NBiS-2020 Main Conference and Workshops Program	11
Monday, August 31, 2020	11
08:00 Registration	11
09:00-09:30 Opening Ceremony	11
09:30-10:30 Single Session: NBiS-2020 & INCoS-2020 Keynote I	11
10:30-11:00 Coffee Break	11
11:00-12:30 Parallel Sessions	11
NBiS-S1: Intelligent Systems and Artificial Intelligence	12
WSSM-S1: Web Applications and Systems	12
INWC-S1: Mobile Computing and Communication	12
12:30-13:30 Lunch Break	12
13:30-15:00 Parallel Sessions	12
NBiS-S2: Cloud, Fog and Edge Computing	13
WSSM-S2: Web-based Computing and E-Learning Systems	13
ISSE-S1: Intelligent and Smart Systems	13
15:00-15:30 Coffee Break	13
15:30-17:00 Parallel Sessions	13
NBiS-S3: Attack Detection and Secure Systems	14
ADPNA-S1: Distributed and Parallel Systems	14
17:30-19:30 Welcome Reception Party	14
Tuesday, September 1, 2020	15
08:00 Registration	15
09:30-10:30 Single Session: NBiS-2020 & INCoS-2020 Keynote II	15
10:30-11:00 Coffee Break	15
11:00-12:30 Parallel Sessions	15
NBiS-S4: Distributed and Parallel Computing	15
DEMoC-S1: Data Engineering and Mobile Computing	15
12:30-13:30 Lunch Break	15
13:30-15:00 Parallel Sessions	15
NBiS-S5: Security and Privacy	16

HETNET-S1: Heterogeneous Networking and Applications	16
15:00-15:30 Coffee Break	16
15:30-17:00 Parallel Sessions	16
NBiS-S6: Algorithms and Systems	16
INVITE-S1: Multimedia Applications	17
18:00-20:00 Banquet Party	17
Tuesday, September 1, 2020	17
NBiS-2020 Organizing Committee Meeting and Discussion	17
INCoS-2020 Main Conference and Workshops Program	18
Monday, August 31, 2020	18
08:00 Registration	18
09:00-09:30 Opening Ceremony	18
09:30-10:30 Single Session: NBiS-2020 & INCoS-2020 Keynote I	18
10:30-11:00 Coffee Break	18
11:00-12:30 Parallel Sessions	18
INCoS-S1: Intelligent Computing Systems	19
WIND-S1: Network Control and Scheduling	19
12:30-13:30 Lunch Break	19
13:30-15:00 Parallel Sessions	19
INCoS-S2: Big Data and Social Networking	19
WIND-S2: Information Network Design	20
15:00-15:30 Coffee Break	20
15:30-17:00 Parallel Sessions	20
INCoS-S3: Blockchain Applications and Intelligent Decision Systems	20
BDS-S1: Intelligent Systems and Mobile Computing	20
17:30-19:30 Welcome Reception Party	20
Tuesday, September 1, 2020	21
08:00 Registration	21
09:30-10:30 Single Session: NBiS-2020 & INCoS-2020 Keynote II	21
10:30-11:00 Coffee Break	21
11:00-12:30 Parallel Sessions	21
INCoS-S4: Semantics, Ontologies and Data Mining	21
FINCoS-S1: Frontiers in Intelligent Networking and Collaborative Systems	21
12:30-13:30 Lunch Break	22
13:30-15:00 Parallel Sessions	22
INCoS-S5: Security for Wireless and Mobile Networks	22
MIDAP-S1: Medical Image and Data Analysis and Processing	22
15:00-15:30 Coffee Break	22
15:30-17:00 Parallel Sessions	22
INCoS-S6: Multimedia Computing and Energy-Efficient Systems	22
18:00-20:00 Banquet Party	23
Tuesday, September 1, 2020	23
NBiS-2020 Organizing Committee Meeting and Discussion	23
Time Table	24

NBiS-2020 Organizing Committee

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Makoto Takizawa, Hosei University, Japan

Welcome Message from the NBiS-2020 Steering Committee Co-Chairs

Welcome to the 23rd International Conference on Network-Based Information Systems (NBiS-2020), which will be held at University of Victoria, Victoria, Canada from August 31 to September 2, 2020.

The main objective of NBiS is to bring together scientists, engineers, and researchers from both network systems and information systems with the aim of encouraging the exchange of ideas, opinions, and experiences between these two communities.

NBiS started as a workshop and was held for 12 years together with DEXA International Conference as one of the oldest among DEXA Workshops. The workshop was very successful and in 2009 edition the NBiS was held at IUPUI, Indianapolis, USA as an independent International Conference supported by many international volunteers. In following years, the NBiSs was held in Takayama, Gifu, Japan (2010), Tirana, Albania (2011) Melbourne, Australia (2012), Gwangju, Korea (2013), Salerno, Italy (2014), Taipei, Taiwan (2015), Ostrava, Czech Republic (2016), Toronto, Canada (2017), Bratislava, Slovakia (2018) and Oita, Japan (2019).

In this edition of NBiS, many papers were submitted from all over the world. They were carefully reviewed and only high quality papers will be presented during conference days.

Many volunteer people have kindly helped us to prepare and organize NBiS-2020. We would like to thank General Co-Chairs, Program Co-Chairs, Workshops Co-Chairs, Organizing Committee Members, Program Committee Members and other volunteers for their great help and support. We have special thanks also to Finance Chair and Web Administrator Co-Chairs. Finally, we thank the Local Organization Team at University of Victoria, Canada for their good arrangements.

We do hope that you will enjoy the conference and have a good time in Victoria, Japan.

NBiS-2020 Steering Committee Co-Chairs

Leonard Barolli, *Fukuoka Institute of Technology (FIT), Japan*

Makoto Takizawa, *Hosei University, Japan*

Welcome Message from NBiS-2020 General Co-Chairs

We would like to welcome you to the 23rd International Conference on Network-Based Information Systems (NBiS-2020), which will be held at University of Victoria, Victoria, Canada from August 31 to September 2, 2020.

It is our honour to chair this prestigious conference, as one of the important conferences in the field. Extensive international participation, coupled with rigorous peer reviews, has made this an exceptional technical conference. The Technical Program and Workshops add important dimensions to this event. We hope that you will enjoy each and every component of this event and benefit from interactions with other attendees.

Since its inception, NBiS has attempted to bring together people interested in information and networking, in areas that range from the theoretical aspects to the practical design of new network systems, distributed systems, multimedia systems, Internet/web technologies, mobile computing, intelligent computing, pervasive/ubiquitous networks, dependable systems, semantic services, Grid, P2P, and scalable computing. For NBiS-2020, we have continued these efforts as novel networking concepts emerge and new applications flourish.

The organization of an international conference requires the support and help of many people. A lot of people have helped and worked hard for a successful NBiS-2020 technical program and conference proceedings. First, we would like to thank all the authors for submitting their papers. We are indebted to Track Co-Chairs, Program Committee members and reviewers who carried out the most difficult work of carefully evaluating the submitted papers.

We would like to give our special thanks to Prof. Leonard Barolli and Prof. Makoto Takizawa the chairs of the Steering Committee for giving us the opportunity to hold this conference and for their guidance on organizing the conference. We would like to thank Program Co-Chairs and Workshops Co-Chairs for their excellent work. We would like to express our great appreciation to our keynote speakers for accepting our invitation as keynote speakers of NBiS-2020.

We hope that you have an enjoyable and productive time during the conference.

NBiS-2020 General Co-Chairs

Kin Fun Li, *University of Victoria, Canada*
Tomoya Enokido, *Rissho University, Japan*

Welcome Message from NBiS-2020 Program Committee Co-Chairs

Welcome to the 23rd International Conference on Network-Based Information Systems (NBiS-2020), which will be held at University of Victoria, Victoria, Canada from August 31 to September 2, 2020.

The purpose of NBiS conference is to bring together developers and researchers to share ideas and research work in the emerging areas of network and information systems.

The contributions included in the proceedings of NBiS-2020 cover all aspects of theory, design and application of computer networks and information systems. There are many topics of information networking such as cloud computing, wireless sensor networks, ad-hoc networks, peer-to-peer systems, grid computing, social networking, multimedia systems and applications, security, distributed and parallel systems and mobile computing.

The organization of an International Conference requires the support and help of many people. First, we would like to thank all authors for submitting their papers. We would like to thank all Track Chairs and Program Committee Members, who carried out the most difficult work of carefully evaluating the submitted papers.

We would like to give special thanks to Prof. Leonard Barolli and Prof. Makoto Takizawa the Chairs of the Steering Committee of NBiS for their strong encouragement, guidance, insights, and for their effective coordination of conference organization. We would like to greatly thank General Co-Chairs for their great support and invaluable suggestions to make the conference a very successful event.

We hope you will enjoy the conference.

NBiS-2020 Program Committee Co-Chairs

Michael McGuire, *University of Victoria, Canada*

Lidia Ogiela, *Pedagogical University of Cracow, Poland*

Naohiro Hayashibara, *Kyoto Sangyo University, Japan*

INCoS-2020 Conference Organizing Committee

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Sina Ghaffari, University of Victoria, Canada

Finance Chair

Makoto Ikeda, Fukuoka Institute of Technology, Japan

Steering Committee Chair

Leonard Barolli, Fukuoka Institute of Technology, Japan

Welcome Message from the INCoS-2020 Organizing Committee

Welcome to the 12th International Conference on Intelligent Networking and Collaborative Systems (INCoS-2020), which is held at University of Victoria, Victoria, Canada from August 31 to September 2, 2020.

INCoS is a multidisciplinary conference that covers latest advances in intelligent social networks and collaborative systems, intelligent networking systems, mobile collaborative systems, secure intelligent cloud systems, etc. Additionally, the conference addresses security, authentication, privacy, data trust and user trustworthiness behaviour, which have become crosscutting features of intelligent collaborative systems. With the fast development of the Internet, we are experiencing a shift from the traditional sharing of information and applications as the main purpose of the networking systems to an emergent paradigm, which locates people at the very centre of networks and exploits the value of people's connections, relations and collaboration. Social networks are playing a major role as one of the drivers in the dynamics and structure of intelligent networking and collaborative systems.

Virtual campuses, virtual communities and organizations strongly leverage intelligent networking and collaborative systems by a great variety of formal and informal electronic relations, such as business-to-business, peer-to-peer and many types of online collaborative learning interactions, including the virtual campuses and eLearning and MOOCs systems. Altogether, this has resulted in entangled systems that need to be managed efficiently and in an autonomous way. In addition, the conjunction of the latest and powerful technologies based on Cloud, mobile and wireless infrastructures are currently bringing new dimensions of collaborative and networking applications a great deal by facing new issues and challenges. INCoS-2020 conference paid a special attention to Cloud Computing Services, Storage, Security and Privacy, Data Mining, Machine Learning and Collective Intelligence, Cooperative Communication and Cognitive Systems, Big Data Analytix, eLearning, Virtual Campuses and MOOCs, among others.

The aim of this conference is to stimulate research that will lead to the creation of responsive environments for networking and, at longer-term, the development of adaptive, secure, mobile, and intuitive intelligent systems for collaborative work and learning. As in all previous editions, INCoS-2020 counted on with the support and collaboration of a large and internationally recognized TPC covering all main themes of the conference.

The successful organization of the conference is achieved thanks to the great collaboration and hard work of many people and conference supporters. First, we would like to thank all the authors for their continued support to the conference by submitting their research work to the conference, for their presentations and discussions during the conference days. We would like to thank PC Co-Chairs, TPC members and external reviewers for their work by carefully evaluating the submissions and providing constructive feedback to authors. We would like to thank the track chairs for their work on setting up the tracks and the respective TPCs and also for actively promoting the conference and their tracks.

We would like to acknowledge the excellent work and support by the International Advisory Committee. Our gratitude and acknowledgment for the conference keynotes for their interesting and inspiring keynote speeches.

We greatly appreciate the support by Web Administrator Co-Chairs. We are very grateful to Springer as well as several academic institutions for their endorsement and assistance.

Finally, we hope that you will find these proceedings to be a valuable resource in your professional, research and educational activities.

INCoS-2020 Steering Committee Chair

Leonard Barolli, *Fukuoka Institute of Technology, Japan*

INCoS-2020 General Co-Chairs

Kin Fun Li, *University of Victoria, Canada*

Hiroyoshi Miwa, *Kwansei Gakuin University, Japan*

INCoS-2020 Program Co-Chairs

Alex Thomo, *University of Victoria, Canada*

Flora Amato, *University of Naples "Frederico II", Italy*

Omar Hussain, *UNSW Canberra, Australia*

NBiS-2020 & INCoS-2020 Keynote I



Prof. Arjan Durrezi, Indiana University Purdue University in Indianapolis, Indianapolis, Indiana, USA

Trustworthy Decision Making and Artificial Intelligence

Abstract: Algorithms and computers have been used for a long time in supporting decision making in various fields of human endowers. Examples include optimization techniques in engineering, statistics in experiment design, modeling of different natural phenomena, and so on. In all such uses of algorithms and computers, an essential question has been how much we can trust them, what are the potential errors of such models, what is the field range of their applicability? With time the algorithms and computers we use have become more powerful and more complex, and we call them today as Artificial Intelligence that includes various machine learning and other algorithmic techniques. But the increase of power and complexity of algorithms and computers and with extended use of them the question of how much we should trust them becomes more crucial. Their complexity might hide more potential errors and especially the interdependencies; their solution might be difficult to be explained, and so on. To deal with these problems, we have developed an evidence and measurement-based trust management system; our system can be used to measure trust in human to human, human to machine, and machine to machine interactions. In this talk, we will introduce our trust system and its validation on real stock market data. Furthermore, we will discuss the use of our trust system to build more secure computer systems, filter fake news on social networks and develop better collective decision making support systems in managing natural resources, as well as future potential uses.

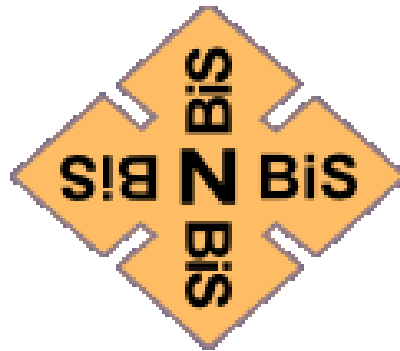
NBiS-2020 & INCoS-2020 Keynote II



Prof. Shengrui Wang, University of Sherbrooke, Sherbrooke, Quebec, Canada

Mining and Modeling Regime Shifts for Multiple Time Series Forecasting

Abstract: Time series are a type of time-dependent data found in many fields such as finance, medicine, meteorology, ecology and utility industry. In such fields, time series forecasting is an issue of great importance as it can help predict future index/equity values and behavioral changes in a stock market, health trajectories of a patient and probabilities of failure events such death and (re)-hospitalization, varying electricity consumption of individual households, etc. It also poses significant theoretical and methodological challenges. One such challenge is identification and prediction of a regime and regime shifts since most time series models, whether they are linear or non-linear, work well only within one regime. In this talk, I will introduce our recent work on building a novel framework to model time series interaction and evolution as an ecosystem. The focus of the talk is to show how to make use of the graph or network structures and community analysis approaches to account for interactions or interdependencies between time series. For this purpose, we build a time-evolving network graph from moving window segments of time series, where nodes represent time series profiles and links correspond to similarity between the time series. By using a community detection algorithm, we discover communities displaying similar behaviours, or regimes, and trace the discovered behaviours in the form of trajectories of structural changes in these communities. Such changes are considered as behaviour events that may appear, persist, or disappear w.r.t. a community, reflecting the survival of regimes and abrupt transition between regimes. Using such network structures for modelling the interactions allows also discovering "relational" features explaining why certain behaviours may persist longer than others. These relational features, together with behaviour profiles, constitute input to machine learning models for regime analysis and trajectory forecasting. In our work, we tackle the problem of learning regime shifts by modeling a time-dependent probability of transition between regimes, using a full time-dependent Cox-regression model. We evaluate the whole approach by testing it on both synthetic and real data sets and compare its performance with that of state-of-the-art learning algorithms.



NBiS-2020

Main Conference and Workshops Program

Monday, August 31, 2020

08:00 Registration

09:00-09:30 Opening Ceremony

09:30-10:30 Single Session: NBiS-2020 & INCoS-2020 Keynote I

NBiS-2020 & INCoS-2020 Keynote Talk I

Prof. Arjan Durrezi: Trustworthy Decision Making and Artificial Intelligence

10:30-11:00 Coffee Break

11:00-12:30 Parallel Sessions

NBiS-S1: Intelligent Systems and Artificial Intelligence**Chair: Kin Fun Li, University of Victoria, Canada**

1. Performance Evaluation of WMN-PSOSA-DGA Simulation System Considering Uniform and Chi-square Client Distributions
Admir Barolli, Shinji Sakamoto, Phudit Ampririt, Seiji Ohara, Leonard Barolli and Makoto Takizawa
2. Requirements for Trustworthy Artificial Intelligence – A Review
Davinder Kaur, Suleyman Uslu and Arjan Durrezi
3. Optimal Number of MOAP Robots for WMNs Using Elbow Theory
Kenshiro Mitsugi, Atushi Toyama, Keita Matsuo and Leonard Barolli
4. A Performance Evaluating Simulation for PSO Algorithm by Applying Traceroute Feature
Hsing-Chung Chen, Agung Mulyo Widodo, Bambang Irawan, Cahya Damarjati, Aristophane Nshimiyimana

WSSM-S1: Web Applications and Systems**Chair: Masaki Kohana, Chuo University, Japan**

1. Dialogbook: Simple e-Portfolio System for International Communication Learning
Jun Iio and Shigenori Wakabayashi
2. A Practical Implementation of Searchable Encrypted Audit Logging System
Yasuhiro Ohtaki and Kenta Togashi
3. Another HTML5 Implementation of Web-Com for Embedding Chalk Annotations and Talk Voices into HTML Documents
Koki Maruyama, Yasuhiro Ohtaki, Michitoshi Niibori, Tatsuhiko Yonekura and Masaru Kamada
4. Recovering Lost Connection for Web Browser Network
Masaki Kohana, Shinji Sakamoto, Shusuke Okamoto

INWC-S1: Mobile Computing and Communication**Chair: Makoto Ikeda, Fukuoka Institute of Technology, Japan**

1. Application of Fuzzy Logic for Event Evaluation in WSANs
Donald Elmazi, Miralda Cuka, Makoto Ikeda, Keita Matsuo, Leonard Barolli, Makoto Takizawa
2. Performance Evaluation of VegeCare Tool for Potato Disease Classification
Natwadee Ruedeeraman, Makoto Ikeda, Leonard Barolli
3. Effect of Parasitic Coil on Communication Performance on Table Type 13.56MHz RFID Reader
Kiyotaka Fujisaki and Yuki Yoshigai
4. Wavelength Tuning of Output Optical Signal Through Resonant Filter for WDM System by Periodic Structure Composed of Silica Glass
Hiroshi Maeda and Naoki Higashinaka

12:30-13:30 Lunch Break

13:30-15:00 Parallel Sessions

NBiS-S2: Cloud, Fog and Edge Computing**Chair: Makoto Takizawa, Hosei University, Japan**

1. A Fuzzy-based System for Assessment of Available Edge Computing Resources in a Cloud-Fog-Edge SDN-VANETs Architecture
Ermioni Qafzezi, Kevin Bylykbashi, Phudit Ampririt, Makoto Ikeda, Leonard Barolli, Makoto Takizawa
2. Topic-based Processing Protocol in a Mobile Fog Computing Model
Takumi Saito, Shigenari Nakamura, Tomoya Enokido, Makoto Takizawa
3. A Dynamic Network-based Fog Computing Model for Energy-efficient IoT
Yinzhe Guo, Takumi Saito, Shigenari Nakamura, Tomoya Enokido, Makoto Takizawa
4. Consideration of the Cloud Type Virtual Policy Based Network Management Scheme for the Whole Internet
Kazuya Odagiri, Shogo Shimizu, Naohiro Ishii

WSSM-S2: Web-based Computing and E-Learning Systems**Chair: Shusuke Okamoto, Seikei University, Japan**

1. A Web-based Attendance Management System with NFC Seat Identifiers
Kohei Takahashi, Michitoshi Niibori and Masaru Kamada
2. Preliminary Experiment for Location Tracking from Camera Image Using CNN
Shiori Kawakami, Shinji Sakamoto and Shusuke Okamoto
3. A Proposal of Children Learning System to Promote Self-directed Choosing of Learning Tasks and Analysis of Learning Data in a Programming Classroom
Yoshihiro Kawano, Yuka Kawano
4. An Environment for Computer Programming Classes under COVID-19 Situation
Shusuke Okamoto, Shinji Sakamoto and Masaki Kohana

ISSE-S1: Intelligent and Smart Systems**Chair: Takahiro Uchiya, Nagoya Institute of Technology, Japan**

1. A Grading System of Pot-Phalaenopsis Orchid using YOLO-V3 Deep Learning Model
Yi-Wei Chang, Yu-Kai Hsiao, Chien-Chuan Ko, Rong-Show Shen, Wei-Yang Lin, Keng-Pei Lin
2. Effect of Network Slice Duration for 5G Wireless Networks: A Fuzzy-Based Admission Control System Considering Software-Defined Network Approach
Phudit Ampririt, Seiji Ohara, Makoto Ikeda, Keita Matsuo, Leonard Barolli, Makoto Takizawa
3. Proposal of Container Management Mechanism on Multi-agent Framework
Yafei Zhou, Takahiro Uchiya, Ichi Takumi
4. Development of Indoor Evacuation Training System using VR HMD
Takahiro Uchiya, Ichi Takumi

15:00-15:30 Coffee Break

15:30-17:00 Parallel Sessions

NBiS-S3: Attack Detection and Secure Systems**Chair: Fang-Yie Leu, Tunghai University, Taiwan**

1. Detecting DoS and DDoS Attacks by using CuSum Algorithm in 5G Networks
Shih-Ting Chiu, Fang-Yie Leu
2. Secure Cognitive Protocols for Data Fusion in Transformative Computing
Lidia Ogiela, Makoto Takizawa, Urszula Ogiela
3. Comparison of OAuth/OpenID Connect Security in America and Japan
Takamichi Saito, Satoshi Shibata, and Tsubasa Kikuta
4. The Trade-Off Between the False-Positive Ratio and the Attack Cost of Slow HTTP DoS
Tetsuya Hirakawa and Toyoo Takata

ADPNA-S1: Distributed and Parallel Systems**Chair: Tomoya Enokido, Rissho University, Japan**

1. CySec: Cybersecurity Review Program for Professionals in Japan
Yoshio Kakizaki, Ryoichi Sasaki, Tomohide Okochi and Hiroshi Yasuda
2. Proposal of a Perimeter Line Management Method for Fog and Edge Computing with SDP Concept
Shigeaki Tanimoto, Yuzuka Sato, Prajak Chertchom, Hiroyuki Sato, Atsushi Kanai
3. Trusted Records Scheme in Scene Investigation
Yitao Yang, Yubao Wu, Xu An Wang
4. Energy-Efficient Migration of Virtual Machines
Naomichi Noaki, Takumi Saito, Dilawaer Duolikun, Tomoya Enokido, and Makoto Takizawa
5. An Opportunistic Communication Protocol to Reduce Energy Consumption of Nodes
Nanami Kitahara, Shigenari Nakamura, Takumi Saito, Tomoya Enomoto, and Makoto Takizawa

17:30-19:30 Welcome Reception Party

Tuesday, September 1, 2020**08:00 Registration****09:30-10:30 Single Session: NBiS-2020 & INCoS-2020 Keynote II****NBiS-2020 & INCoS-2020 Keynote Talk II**

Prof. Shengrui Wang: Container-leveraged Service Realization Challenges for Cloud-native Computing

10:30-11:00 Coffee Break**11:00-12:30 Parallel Sessions****NBiS-S4: Distributed and Parallel Computing**

Chair: Wendy Osborn, University of Lethbridge, Canada

1. Optimization of JavaScript Large-Scale Urban Simulations
Maria Patrou, Kenneth B. Kent and Dane Sheppard
2. Strategies for Alternate Group Trip Planning Queries in Location-Based Services
Wendy Osborn and Shahul Shaik
3. An Area-efficient FPGA Implementation of a Real-time Binary Object Detection System
Narges Attarmoghaddam and Kin Fun Li
4. The Bloom Clock to Characterize Causality in Distributed Systems
Ajay D. Kshemkalyani and Anshuman Misra

DEMoC-S1: Data Engineering and Mobile Computing

Chair: Yusuke Gotoh, Okayama University, Japan

1. A Scheduling Method for Division-based Broadcasting Considering Consumption Rate of Multiple Videos
Yusuke Gotoh and Kanto Nishino
2. Improvement and Evaluation of a Function for Tracing the Diffusion of Classified Information on KVM
Hideaki Moriyama, Toshihiro Yamauchi, Masaya Sato and Hideo Taniguchi
3. A Continuous Media Data Broadcasting Model for Orbiting Base Stations
Tomoki Yoshihisa, Yusuke Gotoh, and Akimitsu Kanzaki
4. A Method for Displaying Puncture Information in CT-guided Puncture Assistance System
Yusuke Gotoh, Manoka Yamashita, Koji Sakai, Koji Masui

12:30-13:30 Lunch Break**13:30-15:00 Parallel Sessions**

NBIS-S5: Security and Privacy**Chair: Hiroaki Kikuchi, Meiji University, Japan**

1. Address Usage Estimation Based on Bitcoin Traffic Behavior
Hiroki Matsumoto, Shusei Igaki, Hiroaki Kikuchi
2. Enhanced Secure Comparison Schemes Using Homomorphic Encryption
Lihua Wang, Tushar Kanti Saha, Yoshinori Aono, Takeshi Koshiba, Shiho Moriai
3. Malware Detection Using Machine Learning Models
Glauccio H.S. Carvalho, Isaac Woungang, Alagan Anpalagan, Issa Traore, Leonard Barolli
4. An Ensemble Deep Learning Technique to Detect COVID-19 Misleading Information
Mohamed K. Elhadad, Kin Fun Li, and Fayez Gebali

HETNET-S1: Heterogeneous Networking and Applications**Chair: Juggapong Natwichai, Chiang Mai University, Thailand**

1. An Integrated Online Learning Approach Using a Smartphone-based Active Learning System and a Web Video On-Demand System
Noriyasu Yamamoto
2. Effects of Early Update Cost in Cloud Object Storage Scheduling
Titipat Sukhvibul and Juggapong Natwichai
3. Construction and Application of Online and Offline Mixed Teaching Mode under the Background of "Internet + Education"
Ke Wang, Shuguang Liu, Xiaofeng Zhang
4. Robust Speaker Recognition based on Stacked Auto-encoders
Zhifeng Wang, Chunyan Zeng, Surong Duan, Hongjie Ouyang, Hongmin Xu
5. A Portal for Air Pollution Mitigation for Northern Thailand
Rattapol Pornprasit, Methasit Pengmatchaya, Waranya Mahanan, Paskorn Champrasert, and Juggapong Natwichai
6. A Comparison of Thai Sentence Boundary Detection Approaches Using Online Product Review Data
Pree Thiengburanathum

15:00-15:30 Coffee Break

15:30-17:00 Parallel Sessions

NBIS-S6: Algorithms and Systems**Chair: Naohiro Hayashibara, Kyoto Sangyo University, Japan**

1. The Antikythera Framework: A Novel Design Approach for Accommodating a Large Number of Web Services
Toshihiko Yamakami, Shunsuke Kirino, Masaki Takahashi
2. Community Mining and Cross-Community Discovery in Online Social Networks
Belkacem Chikhaoui, Jean Marie Tshimula, Shengrui Wang
3. Considerations for Using DPDK in a Hypervisor Virtual Environment
Souta Kawahara, Atsushi Kanai
4. A Cost Analysis of Routing Algorithms in Pedestrian-based Delay Tolerant Networks
Tomoyuki Sueda and Naohiro Hayashibara
5. The Energy-Efficient Object Replication Scheme by Omitting Meaningless Write Methods in Virtual Machine Environments
Tomoya Enokido and Makoto Takizawa

INVITE-S1: Multimedia Applications**Chair: Tomoyuki Ishida, Fukuoka Institute of Technology, Japan**

1. Implementation of a Mixed Reality Space Interior Layout System by Gesture Operation
Tomoyuki Ishida, Kazuma Iwama
2. Predicted Viewer System of Road State based on Crowd IoT Sensing toward Autonomous EV Driving
Yoshitaka Shibata, Akira Sakuraba, Yoshikazu Arai, Goshi Sato, Noriki Uchida
3. Construction of Information Presentation Environment Where Various Objects Talk Using Multiple IoT Speakers
Tetsuro Ogi, Keita Enomoto, Shohei Akita, Toshifumi Miyahashi, Takehito Akima, Takumi Sano
4. Implementation of a Traditional Craft Presentation System using Smart Glass and Augmented Reality
Tomoyuki Ishida, Yuki Sanefuji
5. Field Experiment on Cognitive Wireless V2X Communication over High-speed WLAN
Akira Sakuraba, Goshi Sato, Noriki Uchida, Yoshitaka Shibata

18:00-20:00 Banquet Party
.....**Wednesday, September 2, 2020****NBiS-2020 Organizing Committee Meeting and Discussion**



INCoS-2020

Main Conference and Workshops Program

Monday, August 31, 2020

08:00 Registration

09:00-09:30 Opening Ceremony

09:30-10:30 Single Session: NBiS-2020 & INCoS-2020 Keynote I

NBiS-2020 & INCoS-2020 Keynote Talk I

Prof. Arjan Durrezi: Trustworthy Decision Making and Artificial Intelligence

10:30-11:00 Coffee Break

11:00-12:30 Parallel Sessions

INCoS-S1: Intelligent Computing Systems**Chair: Leonard Barolli, Fukuoka Institute of Technology, Japan**

1. Performance Evaluation of WMNs by WMN-PSODGA Simulation System Considering Exponential Distribution of Mesh Clients and Different Router Replacement Methods
Seiji Ohara, Admir Barolli, Phudit Ampririt, Keita Matsuo, Leonard Barolli, Makoto Takizawa
2. An Integrated Fuzzy-based Simulation System for Driving Risk Management in VANETs Considering Road Condition as a New Parameter
Kevin Bylykbashi, Ermioni Qafzezi, Phudit Ampririt, Keita Matsuo, Leonard Barolli, Makoto Takizawa
3. Applying a Consensus Building Approach to Communication Projects in the Health Sector: The Momento Medico Case Study
Ilaria Avino, Giuseppe Fenza, Graziano Fuccio, Alessia Genovese, Vincenzo Loia, and Francesco Orciuoli
4. Precision Dosing Management with Intelligent Computing in Digital Health
Hong Lu, Sara Rosenbaum and Wei Lu

WIND-S1: Network Control and Scheduling**Chair: Masato Tsuru, Kyushu Institute of Technology, Japan**

1. Transmission Scheduling for Tandemly-connected Sensor Networks with Heterogeneous Packet Generation Rates
Ryosuke Yoshida, Masahiro Shibata and Masato Tsuru
2. P4-based Implementation and Evaluation of Adaptive Early Packet Discarding Scheme
Kazumi Kumazoe and Masato Tsuru
3. Matching based Content Discovery Method on Geo-Centric Information Platform
Kaoru Nagashima, Yuzo Taenaka, Akira Nagata, Hitomi Tamura, Kazuya Tsukamoto, Myung Lee

12:30-13:30 Lunch Break

13:30-15:00 Parallel Sessions

INCoS-S2: Big Data and Social Networking**Chair: Alex Thomo, University of Victoria, Canada**

1. Triangle Enumeration on Massive Graphs using AWS Lambda Functions
Tengkai Yu, Venkatesh Srinivasan, and Alex Thomo
2. C' Meal! The ChatBot for Food Information
Alessandra Amato and Giovanni Cozzolino
3. A Study on the Effect of Triads on the Wigner's Semicircle Law of Networks
Toyoaki Taniguchi and Yusuke Sakumoto
4. COVID-19-FAKES: A Twitter (Arabic/English) Dataset for Detecting Misleading Information on COVID-19
Mohamed K. Elhadad, Kin Fun Li, and Fayez Gebali
5. PageRank for Billion-Scale Networks in RDBMS
Aly Ahmed and Alex Thomo

WIND-S2: Information Network Design**Chair: Hiroyoshi Miwa, Kwansai Gakuin University, Japan**

1. SDN-based In-network Early QoE Prediction for Stable Route Selection on Multi-path network
Shunpei Shimokawa, Yuzo Taenaka, Kazuya Tsukamoto, Myung Lee
2. Reliable Network Design Considering Cost to Decrease Failure Probability of Simultaneous Failure
Yuma Morino and Hiroyoshi Miwa
3. Beacon-less Autonomous Transmission Control Method for Spatio-Temporal Data Retention
Ichiro Goto, Daiki Nobayashi, Kazuya Tsukamoto, Takeshi Ikenaga, Myung Lee
4. Smart Watering System Based On Framework of Low-Bandwidth Distributed Applications (LBDA) in Cloud Computing
Nurdiansyah Sirimorok, Mansur As, Kaori Yoshida and Mario Köppen

15:00-15:30 Coffee Break**15:30-17:00 Parallel Sessions****INCoS-S3: Blockchain Applications and Intelligent Decision Systems****Chair: Shinji Sakamoto, Seikei University, Japan**

1. A Secure Group Communication (SGC) Protocol for a P2P Group of Peers using Blockchain
Rui Iizumi, Takumi Saito, Shigenari Nakamura, Makoto Takizawa
2. Blockchain Architecture for Secured Inter-Healthcare Electronic Health Records Exchange
Oluwaseyi Ajayi, Meryem Abouali, Tarel Saadawi
3. Performance Evaluation of RIWM and RDVM Router Replacement Methods for WMNs by WMN-PSOHC Hybrid Intelligent System
Shinji Sakamoto, Admir Barolli, Phudit Ampririt, Leonard Barolli and Shusuke Okamoto
4. A Decision-making System based on Fuzzy Logic for IoT Node Selection in Opportunistic Networks Considering Node Betweenness Centrality as a New Parameter
Miralda Cuka, Donald Elmazi, Makoto Ikeda, Keita Matsuo, Leonard Barolli, Makoto Takizawa

BDS-S1: Intelligent Systems and Mobile Computing**Chair: Marcello Trovati, Edge Hill University, UK**

1. Optimal Number of MOAP Robots for WMNs Using Silhouette Theory
Atushi Toyama, Kenshiro Mitsugi, Keita Matsuo and Leonard Barolli
2. Performance Evaluation of a Recovery Method for Vehicular DTN Considering Different Reset Thresholds
Yoshiki Tada, Makoto Ikeda, and Leonard Barolli
3. Survey of UAV Autonomous Landing based on Vision processing
Liu Yubo, Bei Haohan, Li Wenhao, Huang Ying
4. Improved Sentiment Urgency Emotion Detection for Business Intelligence
Tariq Soussan, Marcello Trovati
5. Knowledge-Based Networks for Artificial Intuition
Olayinka Johnny and Marcello Trovati

17:30-19:30 Welcome Reception Party

Tuesday, September 1, 2020**08:00 Registration****09:30-10:30 Single Session: NBiS-2020 & INCoS-2020 Keynote II****NBiS-2020 & INCoS-2020 Keynote Talk II**

Prof. Shengrui Wang: Container-leveraged Service Realization Challenges for Cloud-native Computing

10:30-11:00 Coffee Break**11:00-12:30 Parallel Sessions****INCoS-S4: Semantics, Ontologies and Data Mining****Chair: Flora Amato, University of Naples “Frederico II”, Italy**

1. Semi-Automatic Knowledge Base Expansion for Question Answering
Alessandro Maisto, Giandomenico Martorelli, Antonietta Paone, Serena Pelosi
2. Mina: seMantic vIrtual assistant for domain oNtology based question-Answering
Nicola Fiore, Gaetano Parente, Michele Stingo, and Massimiliano Polito
3. SafeEat: Extraction of information about the presence of food allergens in recipes
Alessandra Amato and Giovanni Cozzolino
4. Data Mining on Open Public Transit Data for Transportation Analytics during Pre-COVID-19 Era and COVID-19 Era
Carson Leung, Yubo Chen, Siyuan Shang, Yan Wen, Connor C.J, Hryhoruk, Denis L. Levesque, Nicholas A. Braun, Nitya Seth, and Prakhar Jain

FINCoS-S1: Frontiers in Intelligent Networking and Collaborative Systems**Chair: Xu An Wang, Engineering University of CAPE, China**

1. Research on Foreign Anti-terrorism Intelligence Early Warning Based on Visual Measurement
Xiang Pan, Zhiting Xiao, Xuan Guo, Yuan Chen
2. Credit Rating based on Hybrid Sampling and Dynamic Ensemble
Shudong Liu, Jiamin Wei, Xu Chen, Chuang Wang, Xu An Wang
3. Low Infrared Emission Hybrid Frequency Selective Surface with Low-frequency Transmission and High-frequency Low Reflection in Microwave Region
Yiming Xu, Yu Yang, Xiao Li
4. Rapid Detection of Crowd Abnormal Behavior Based on the Hierarchical Thinking
Xiao Li, Yu Yang, Yiming Xu, Linyang Li, Chao Wang
5. Deep and Shallow Feature Fusion and Recognition of Recording Devices based on Attention Mechanism
Chunyan Zeng, Dongliang Zhu, Zhifeng Wang, and Yao Yang
6. Teaching Evaluation Index based on Analytic Hierarchy Process
Qiong Li, Yanyan Zhao, Jiangtao Li, Lili Su

12:30-13:30 Lunch Break**13:30-15:00 Parallel Sessions****INCoS-S5: Security for Wireless and Mobile Networks****Chair: Marek R. Ogiela, AGH University of Science and Technology, Poland**

1. Accelerated Neural Intrusion Detection for Wireless Sensor Networks
Tarek Batiha and Pavel Krömer
2. End-to-End Security for Connected Vehicles
Kazi J. Ahmed, Marco Hernandez, Myung Lee, Kazuya Tsukamoto
3. Eye Movement Patterns as a Cryptographic Lock
Marek R. Ogiela and Lidia Ogiela
4. Evolutionary Fuzzy Rules for Intrusion Detection in Wireless Sensor Networks
Tarek Batiha and Pavel Krömer

MIDAP-S1: Medical Image and Data Analysis and Processing**Chair: Jana Nowaková, VSB - Technical University of Ostrava, Czech Republic**

1. High-Dimensional Data Clustering Algorithm Based on Stacked-Random Projection
Yujia Sun, Jan Platoš
2. Adaptive Monitoring in Multiservice Systems
Lukáš Révay and Sanja Tomić
3. Towards Faster Matching Algorithm Using Ternary Tree in the Area of Genome Mapping
Rostislav Hřivňák, Petr Gajdoš and Václav Snášel
4. Preprocessing COVID-19 Radiographic Images by Evolutionary Column Subset Selection
Jana Nowaková, Pavel Krömer, Jan Platoš, Václav Snášel

15:00-15:30 Coffee Break**15:30-17:00 Parallel Sessions****INCoS-S6: Multimedia Computing and Energy-Efficient Systems****Chair: Hiroyoshi Miwa, Kwansai Gakuin University, Japan**

1. Gesture-based Human-machine Interface System by Using Omnidirectional Camera
Liao Sichao, Yasuto Nakamura, and Hiroyoshi Miwa
2. Method for Detecting Onset Times of Sounds of String Instrument
Kenta Kimoto and Hiroyoshi Miwa
3. Suggesting Cultural Heritage Points of Interest Through a Specialized Chatbot
Roberto Canonico and Giovanni Cozzolino and Giancarlo Sperli
4. Considering a Method for Generating Human Mobility Model by Reinforcement Learning
Yuutaro Iwai and Akihiro Fujihara
5. An Algorithm to Select an Energy-efficient Server for an Application Process in a Cluster of Servers
Kaiya Noguchi, Takumi Saito, Dilawaer Duolikun, Tomoya Enokido, Makoto Takizawa

18:00-20:00 Banquet Party

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Wednesday, September 2, 2020

NBiS-2020 Organizing Committee Meeting and Discussion

NBiS-2020 and INCoS-2020 Session Schedule
August 31st – September 2nd, 2020
University of Victoria, Victoria, Canada

Monday (August 31, 2020)		ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5
Slot	Time	Registration				
Opening	09:00 – 09:30	Opening Ceremony of NBiS-2020 and INCoS-2020				
Session 1	09:30 – 10:30	NBiS-2020 and INCoS-2020 Keynote I				
Coffee Break	10:30 – 11:00	Coffee Break				
Session 2	11:00 – 12:30	NBiS-S1	WSSM-S1	INWC-S1	INCoS-S1	WIND-S1
Lunch	12:30 – 13:30	Lunch Break				
Session 3	13:30 – 15:00	NBiS-S2	WSSM-S2	ISSE-S1	INCoS-S2	WIND-S2
Coffee Break	15:00 – 15:30	Coffee Break				
Session 4	15:30 – 17:00	NBiS-S3	ADPNA-S1		INCoS-S3	BDS-S1
Social Event	17:30 – 19:30	Welcome Reception Party				

Tuesday (September 1, 2020)		ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5
Slot	Time	Registration				
Session 1	09:30 – 10:30	NBiS-2020 and INCoS-2020 Keynote II				
Coffee Break	10:30 – 11:00	Coffee Break				
Session 2	11:00 – 12:30	NBiS-S4	DEMoC-S1		INCoS-S4	FINCoS-S1
Lunch	12:30 – 13:30	Lunch Break				
Session 3	13:30 – 15:00	NBiS-S5	HETNET-S1		INCoS-S5	MIDAP-S1
Coffee Break	15:00 – 15:30	Coffee Break				
Session 4	15:30 – 17:00	NBiS-S6	INVITE-S1		INCoS S6	
Social Event	18:00 – 20:00	Banquet Party				

Wednesday (September 2, 2020)		ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5
Slot	Time	NBiS-2020 and INCoS-2020 Steering Committee Meeting and Discussion				