PROGRAM GUIDE

NBiS-2019

The 22-nd International Conference on
Network-Based Information Systems

and

INCoS-2019

The 11-th International Conference on
Intelligent Networking and Collaborative Systems

September 5th - September 7th, 2019

Oita University, Japan

Supported by:

Kajima Foundation

Technically Co-sponsored by:

Oita University
Japan

Fukuoka Institute of Technology
Japan

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Welcome Message from the NBiS-2019 Steering Committee Co-Chairs

Welcome to the 22-nd International Conference on Network-Based Information Systems (NBiS-2019), which will be held at Oita University, Japan from September 5 to September 7, 2019.

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) and Bratislava, Slovakia (2018).

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. In conjunction with NBiS-2019 are held also 8 International Workshops where specific and hot topics are deeply discussed.

Many volunteer people have kindly helped us to prepare and organize NBiS-2019. First of all, we would like to thank General Co-Chairs, Program Committee Co-Chairs and Workshops Co-Chairs for their great efforts to make NBiS-2019 a very successful event. We would like to thank all NBiS-2019 Organizing Committee Members, Program Committee Members and other volunteers for their great help and support. We have special thanks to Finance Chair, Web Administrator Co-Chairs and the Local Organization Team at Oita University, Japan for their good arrangements. We would like to thank the Kajima Foundation, Japan for the financial support.

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

NBiS-2019 Steering Committee Co-Chairs

Leonard Barolli, *Fukuoka Institute of Technology (FIT), Japan*
Makoto Takizawa, *Hosei University, Japan*

Welcome Message from NBiS-2019 General Co-Chairs

We would like to welcome you to the 22-nd International Conference on Network-Based Information Systems (NBiS-2019), which will be held at Oita University, Japan from September 5 to September 7, 2019.

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-2019, we have continued these efforts as novel networking concepts emerge and new applications flourish. NBiS-2019 consists of the main conference and 8 workshops. We received 120 papers, and out of them 30 were accepted (25% acceptance ratio), which will be presented during the conference days.

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-2019 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 Committee 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-2019.

We would like to thank the Local Arrangements Chairs and Local Organization Team at Oita University, Japan for making good local arrangements for the conference.

We hope that you have an enjoyable and productive time during this conference, and have a great time in Oita, Japan.

NBiS-2019 General Co-Chairs

Hiroaki Nishino, *Oita University, Japan*
Kin Fun Li, *University of Victoria, Canada*
Chuan-Yu Chang, *National Yunlin University of Science and Technology, Taiwan*

Welcome Message from NBiS-2019 Program Committee Co-Chairs

Welcome to the 22-nd International Conference on Network-Based Information Systems (NBiS-2019), which will be held at Oita University, Japan from September 5 to September 7, 2019.

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-2019 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.

In this edition, 120 submissions were received from all over the world. Each submitted paper was peer-reviewed by Program Committee members and external reviewers who are experts in the subject area of the paper. Then, the Program Committee accepted 30 papers (25% acceptance ratio). In the conference program are also included the distinguished keynote addresses.

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 also would like to thank NBiS-2019 Workshops Chairs for organizing excellent workshops with NBiS-2019 conference.

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 and have a great time in Oita, Japan.

NBiS-2019 Program Committee Co-Chairs

Tomoya Enokido, *Rissho University, Japan*
Marek R. Ogiela, *AGH University of Science and Technology, Poland*
Isaac Woungang, *Ryerson University, Canada*

Welcome Message from NBiS-2019 Workshops Co-Chairs

Welcome to the NBiS-2019 Workshops to be held in conjunction with the 22-nd International Conference on Network-Based Information Systems (NBiS-2019) at Oita University, Japan from September 5 to September 7, 2019.

The goal of NBiS-2019 workshops is to provide a forum for international researchers and practitioners to exchange and share their new ideas, research results, and ongoing work on leading-edge topics in the different fields of network-based information systems and their applications. Some of the accepted workshops deal with topics that open up perspectives beyond the ordinary, thus, enriching the topics usually addressed by the NBiS-2019 conference.

For this edition, the following workshops will be held with NBiS-2019.

1. The 14-th International Workshop on Network-based Virtual Reality and Tele-existence (INVITE-2019)

2. The 13-th International Workshop on Advanced Distributed and Parallel Network Applications (ADPNA-2019)

3. The 10-th International Workshop on Heterogeneous Networking Environments and Technologies (HETNET-2019)

4. The 10-th International Workshop on Intelligent Sensors and Smart Environments (ISSE-2019)

5. The 10-th International Workshop on Trustworthy Computing and Security (TwCSec-2019)

6. The 9-th International Workshop on Information Networking and Wireless Communications (INWC-2019)

7. The 8-th International Workshop on Advances in Data Engineering and Mobile Computing (DEMoC-2019)

8. The 8-th International Workshop on Web Services and Social Media (WSSM-2019)

We would like to thank the research community for their great response to NBiS-2019 workshops. The excellent technical program of the workshops was the result of a professional work from workshop chairs, workshop program committees, reviewers, and authors.

We would like to give our special thanks to Prof. Leonard Barolli and Prof. Makoto Takizawa the Steering Committee Chairs of NBiS conference for their strong encouragement and guidance to organize the NBiS-2019 workshops. We would like to thank NBiS-2019 General Co-Chairs and Program Committee Co-Chairs for their advices to make possible organization of NBiS-2019 workshops.

We would like to express special thanks to NBiS-2019 Web Administration Chairs for their timely unlimited support for managing the conference systems. We also would like to thank NBiS-2019 Local Arrangement Co-Chairs and Local Organization Team at Oita University, Japan for making the local arrangement for the conference and workshops.

We wish all of you entertaining and rewarding experience in all workshops and NBiS-2019 conference

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Shunsuke Okamoto, *Seikei University, Japan*
Shih-Hao Chang, *Tamkang University, Taiwan*
Hiroaki Kikuchi, *Meiji University, Japan*

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Makoto Nakashima, Oita University, Japan

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Makoto Ikeda, Fukuoka Institute of Technology, Japan

Steering Committee Chair
Leonard Barolli, Fukuoka Institute of Technology, Japan

Welcome Message from the INCoS-2019 Organizing Committee

Welcome to the 11-th International Conference on Intelligent Networking and Collaborative Systems (INCoS-2019), which is held from 5-th to 7-th September 2019 at Oita University, Japan.

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-2019 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, Management of Virtual Organization and Enterprises, Big Data Analytics, 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.

This edition the conference received 107 submissions and based on the review results, we accepted 30 regular papers (28% acceptance ratio). Additionally, five workshops were organized in conjunction with 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 and foremost, 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 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 appreciate the work of PC Co-chairs and Workshops Co-Chairs for the successful organization of workshops in conjunction with main conference.

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 and the local organizing committee from Oita University, Japan, for excellent arrangements for the conference. 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-2019 General Co-Chairs

Hiroaki Nishino, *Oita University, Japan*
Leonard Barolli, *Fukuoka Institute of Technology, Japan*

INCoS-2019 Program Committee Co-Chairs

Hiroyoshi Miwa, *Kwansei Gakuin University, Japan*
Flora Amato, *University of Naples Federico II, Italy*

Message from INCoS-2019 Workshops Co-Chairs

Welcome to the Workshops of the 11-th International Conference on Intelligent Networking and Collaborative Systems (INCoS-2019), which is held from 5-th to 7-th September 2019 at Oita University, Japan.

In this edition of the conference, there are held five workshops, which complemented the INCoS main themes with specific themes and research issues and challenges, as follows.

1. The 11-th International Workshop on Information Network Design (WIND-2019)

2. The 7-th International Workshop on Frontiers in Intelligent Networking and Collaborative Systems (FINCoS-2019)

3. The 5-th International Workshop on Theory, Algorithms and Applications of Big Data Science (BDS-2019)

4. The 5-th International Workshop on Collaborative e-business Systems (e-Business-2019)

5. The 2-nd International Workshop on Machine Learning in Intelligent and Collaborative Systems (MaLICS-2019)

We would like to thank the workshop organizers for their great efforts and hard work in proposing the workshop, selecting the papers, the interesting programs and for the arrangements of the workshop during the conference days. We are grateful to the INCoS-2019 Conference Chairs for inviting us to be the workshops co-chairs of the conference.

We hope you will enjoy the workshops programs.

INCoS-2019 Workshops Co-Chairs

Masato Tsuru, *Kyushu Institute of Technology, Japan*
Jakub Nalepa, *Silesian University of Technology, Poland*

NBiS-2019 & INCoS-2019 Keynote I

Prof. Yoshihiro Okada, Kyushu University, Japan

3D Graphics Applications for Education and Visualization

Abstract: In this talk, Prof. Okada introduces his research activities about 3D graphics applications. He has been studying development environments for 3D graphics applications since 1993. In 1995, he and his laboratory professor proposed a development system for 3D graphics applications called IntelligentBox. In the first half of this talk, he introduces IntelligentBox and its several example applications especially for education and visualization. As education applications, there are a collaborative dental training system, Tai Chi-based physical therapy game and so on. As visualization applications, there are a room layout system, Time-tunnel: a visual analytics tool for multi-dimensional data, Treecube: a visualization tool for browsing 3D multimedia data, and so on. Currently, Prof. Okada works as a director of ICER(Innovation Center for Educational Resources) of Kyushu University. In the second half of this talk, he introduces development activities of ICER for e-learning materials using 3D graphics and VR/AR, e.g., web-based interactive educational materials for Japanese history and IoT security, and serious games for medical education.

NBiS-2019 & INCoS-2019 Keynote II

Prof. Tarek Saadawi, City University of New York, USA

Secure Resilient Edge Cloud Designed Network

Abstract: IoT systems have put forth new requirements in all aspects of their existence: a diverse QoS requirements, resiliency of computing and connectivity, and the scalability to support massive number of end devices in a plethora of envisioned applications. The trustworthy IoT/cyber physical system (CPS) networking for smart and connected communities will be realized by distributed secure resilient Edge Cloud (EC). This distributed EC system will be a network of geographically distributed EC nodes, brokering between end-devices and Backend Cloud (BC) servers. This paper addresses three main topics in secure resilient cloud designed network; 1) resource management in mobile cloud computing; 2) information management in dynamic distributed databases; 3) biological-inspired intrusion detection system (IDS). A focus in the presentation will be on the biological-inspired (IDS).

NBiS-2019 & INCoS-2019 Keynote III

Prof. JongWon Kim, Gwangju Institute of Science & Technology, South Korea

Container-leveraged Service Realization Challenges for Cloud-native Computing

Abstract: Cloud-native computing, employing container-based microservices architecture, is accelerating its adoption for agile and scalable service deployment over worldwide multi-cloud infrastructure. In order to transparently enable diversified inter-connections for container-based cloud-native computing, by leveraging SDN/NFV technology, we need to tie distributed IoT things through multi-site edge clouds to hyper-scale core clouds. Thus, in this talk, we first attempt to relate the open-source-driven development for CNI (Container Networking Interface) and CSI (Container Storage Interface) to the required container-enabled cloud-native computing/storage with end-to-end (i.e., IoT–SDN/NFV–Cloud) inter-connections. Then, selected container-leveraged service realization challenges such as multi-tenant/multi-cluster Kubernetes orchestration, pvc(physical+virtual+containerized) harmonization, kernel-friendly accelerated and secured networking, and network-aware service meshes will be briefly discussed.
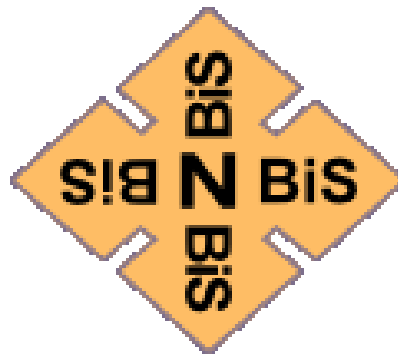
NBiS-2019
Main Conference and Workshops Program

Thursday, September 5, 2019

08:00 Registration

09:00-09:30 Opening Ceremony

09:30-10:30 Single Session: NBiS-2019 & INCoS-2019 Keynote I

NBiS-2019 & INCoS-2019 Keynote Talk I

Prof. Yoshihiro Okada: 3D Graphics Applications for Education and Visualization

10:30-11:00 Coffee Break

11:00-12:00 Single Session: NBiS-2019 & INCoS-2019 Keynote II

NBiS-2019 & INCoS-2019 Keynote Talk II

Prof. Tarek Saadawi: Secure Resilient Edge Cloud Designed Network

12:00-13:00 Lunch Break

13:00-15:00 Parallel Sessions

NBiS-S1: Network Protocols and Applications

Chair: Tomoya Enokido, Rissho University, Japan

1. An Energy-Efficient Process Replication Algorithm with Multi-Threads Allocation
   Tomoya Enokido, Dilawaer Duolikun, Makoto Takizawa

2. Alternative Paths Reordering Using Probabilistic Time-Dependent Routing
   Martin Golasowski, Jakub Beránek, Martin Šurkovský, Lukáš Rapant, Daniela Szturcová, Jan Martinovič and Kateřina Slaninová

3. A SOA Based SLA Negotiation and Formulation Architecture for Personalized Service Delivery in SDN
   Shuraia Khan, Farookh Khadeer Hussain

4. User Oriented Protocols for Data Sharing and Services Management
   Lidia Ogiela, Makoto Takizawa, Urszula Ogiela

5. Evaluation of an OI (Operation Interruption) Protocol to Prevent Illegal Information Flow in the IoT
   Shigenari Nakamura, Tomoya Enokido, Makoto Takizawa

NBiS-S2: Security and Privacy

Chair: Mirang Park, Kanagawa Institute of Technology, Japan

1. Data Relation Analysis Focusing on Plural Data Transition for Detecting Attacks on Vehicular Network
   Jun Yajima, Takayuki Hasebe, and Takao Okubo

2. Gait-based Authentication for Smart Locks Using Accelerometers in Two Devices
   Kazuki Watanabe, Makoto Nagatomo, Kentaro Aburada, Naonobu Okazaki, Mirang Park

3. Automatic Vulnerability Identification and Security Installation with Type Checking for Source Code
   Shun Hinatsu, Koichi Shimizu, Takeshi Ueda, Benoît Boyer, and David Mentré

4. Application of Perceptual Features for User Authentication in Distributed Systems
   Marek R. Ogiela and Lidia Ogiela

5. Blockchain-based Malware Detection Method Using Shared Signatures of Suspected Malware Files
   Ryusei Fuji, Shotaro Usuzaki, Kentaro Aburada, Hisaaki Yamaba, Tetsuro Katayama, Mirang Park, Norio Shiratori and Naonobu Okazaki

WSSM-S1: Web Applications and Systems

Chair: Masaki Kohana, Chuo University, Japan

1. Web Service for Searching Halal Compliant Restaurants
   IMAMA, Masaki Kohana, Masaru Kamada

2. A Real-time Programming Battle Web Application by using WebRTC
   Ryoya Fukutani, Shusuke Okamoto, Shinji Sakamoto and Masaki Kohana

3. Development of Goals Achievement Sharing System based on Approach Goals in Positive Psychology
   Yoshihiro Kawano

INVITE-S1: Multimedia Applications

Chair: Tomoyuki Ishida, Fukuoka Institute of Technology, Japan

1. Proposal of a High-Presence Japanese Traditional Crafts Presentation System Integrated with Different Cultures
   Yangzhicheng Lu, Tomoyuki Ishida, Akihiro Miyakwa, Yoshitaka Shibata, Hiromasa Habuchi

2. Proposal of Interactive Information Sharing System using Large Display for Disaster Management
   Ryo Nakai, Tomoyuki Ishida, Noriki Uchida, Yoshitaka Shibata, Hiromasa Habuchi

3. A TEFL Virtual Reality System for High-Presence Distance Learning
   Steven H. Urueta, Tetsuro Ogi

4. A Trial Development of 3D Statues Map with 3D Point Server
   Hideo Miyachi

5. Driving Simulator System for Disaster Evacuation Guide based on Road State Information Platform
   Yoshitaka Shibata, Akira Sakuraba

15:00-15:30 Coffee Break

15:30-17:30 Parallel Sessions

NBiS-S3: Cloud, Fog and Edge Computing

Chair: Tomoya Enokido, Rissho University, Japan

1. Evaluation of Data and Subprocess Transmission Strategies in the Tree-Based Fog Computing Model
   Ryuji Oma, Shigenari Nakamura, Dilawaer Duolikun, Tomoya Enokido, Makoto Takizawa

2. Earthquake and Tsunami workflow leveraging the modern HPC/Cloud environment in the LEXIS project
   Thierry Goubier, Andrea Ajmar, Carmine D'Amico, Paul Dubrulle, Susanna Grita, Stephane Louise, Jan Martinovič, Tomáš Martinovič, Natalja Rakowsky, Paolo Savio, Danijel Schorlemmer, Alberto Scionti and Olivier Terzo

3. Multi-Cloud System for Content Sharing Using RAID-Like Fragmentation
   Takumi Murakami and Shinji Sugawara

4. Performance Evaluation of WMNs by WMN-PSOHC System Considering Random Inertia Weight and Linearly Decreasing Vmax Replacement Methods
   Shinji Sakamoto, Seiji Ohara, Leonard Barolli and Shusuke Okamoto

5. Implementation of a Fuzzy-based Simulation System and a Testbed for Improving Driving Conditions in VANETs Considering Drivers's Vital Signs
   Kevin Bylykbashi, Ermioni Qafzezi, Makoto Ikeda, Keita Matsuo, Leonard Barolli

NBiS-S4: Distributed and Parallel Computing

Chair: Wendy Osborn, University of Lethbridge, Canada

1. Position Follow-up Control for Hand Delivery of Object between Moving Robot Arms of Remote Robot Systems with Force Feedback
   Qin Qian, Yutaka Ishibashi, Pingguo Huang, and Yuichiro Tateiwa

2. A Mechanism of Window Switching Prediction Based on User Operation History to Facilitate Multitasking
   Keizo Sato, Shotaro Imada, Shinya Mazume, and Makoto Nakashima

3. Exploring Bit Arrays for Join Processing in Spatial Data Streams
   Wendy Osborn

4. From Ivory Tower to Democratization and Industrialization: A Landscape View of Real-world Adaptation of Artificial Intelligence
Toshihiko Yamakami

5. VLSI Implementation of K-Best MIMO Detector with Cost-Effective Pre-Screening and Fast Sorting Design
Jheng-Jhan He and Chih-Peng Fan

WSSM-S2: Social Networking

Chair: Shusuke Okamoto, Seikei University, Japan

1. Implementation of Interactive Tutorial for IslayPub by Hooking User Events
Daisuke Tanaka, Masaki Kohana, Michitoshi Niibori, Yasuhiro Ohtaki, Shusuke Okamoto and Masaru Kamada

2. A Smart Lock Control System with Home Situation
Katsumi Ohkura and Masaki Kohana

3. Card Price Prediction of Trading Cards using Machine Learning Methods
Hiroki Sakaji, Akio Kobayashi, Masaki Kohana, Yasunao Takano and Kiyoshi Izumi

4. Kawaii in Tweets: What Emotions Does the Word Describe in Social Media?
Jun Iio

TwCSec-S1: Secure Systems and Applications

Chair: Leonard Barolli, Fukuoka Institute of Technology, Japan

1. Analysis of Actual Propagation Behavior of WannaCry within an Intranet (Extended Abstract)
Takanori Oikawa, Masahiko Takenaka, Yuki Unno

2. Proposal and Evaluation of Authentication Method having Shoulder-Surfing Resistance for Smartwatches using Shift Rule
Makoto Nagatomo, Kazuki Watanabe, Kentaro Aburada, Naonobu Okazaki and Mirang Park

3. Evaluation of manual alphabets based gestures for a user authentication method using s-EMG
Hisaaki Yamaba, Shotaro Usuzaki, Kayoko Takatsuka, Kentaro Aburada, Tetsuro Katayama, Mirang Park, Naonobu Okazaki

4. Analysis of the Reasons Affecting the Simulation Results of SAR Imaging
Xing-Xiu Song

5. Finite Element Simulation of blasting robote with ANSYS
Xing-Xiu Song

18:00-20:00 Welcome Reception Party

Oita University.

Friday, September 6, 2019

08:00 Registration

09:00-10:00 Single Session: NBiS-2019 & INCoS-2019 Keynote III

NBiS-2019 & INCoS-2019 Keynote Talk III

Prof. JongWon Kim: Container-leveraged Service Realization Challenges for Cloud-native Computing

10:00-10:30 Coffee Break

10:30-12:30 Parallel Sessions

NBiS-S5: IoT Applications and Frameworks

Chair: JongWon Kim, Gwangju Institute of Science & Technology (GIST), Korea

1. Draft Design of Li-Fi based Acquisition Layer of DataLake Framework for IIoT & Smart Factory
   ByungRae Cha, Sun Park, Byeong-Chun Shin, JongWon Kim

2. Data Exportation Framework for IoT Simulation Based Devices
   Yahya Al-Hadhrami, Nasser Al-Hadhrami, Farookh Khadeer Hussain

3. Meal Information Recognition Based on Smart Tableware Using Multiple Instance Learning
   Liyang Zhang, Kohei Kaiya, Hiroyuki Suzuki and Akio Koyama

4. Web-based Interactive 3D Educational Material Development Framework and Its Authoring Functionalities
   Daiki Hirayama, Wei Shi and Yoshihiro Okada

5. Opportunistic Communication by Pedestrians with Roadside Units as Message Caches
   Tomoyuki Sueda and Naohiro Hayashibara

NBiS-S6: Multimedia Systems and Applications

Chair: Nobuo Funabiki, Okayama University, Japan

1. A Proposal of Recommendation Function for Solving Element Fill-in-Blank Problem in Java Programming Learning Assistant System
   Nobuo Funabiki, Shinpei Matsumoto, Su Sandy Wint, Minoru Kuribayashi and Wen-Chun Kao

2. 2D Color Image Enhancement Based on Conditional Generative Adversarial Network and Interpolation
   Yen-Ju Li, Chun-Hsiang Chang, Chitra Meghala Yelamandala, Yu-Cheng Fan

3. A VR System for Alleviating a Fear of Heights Based on Vital Sensing and Placebo Effect
   Iku Kitanosono, Toshiyuki Haramaki, Tsuneo Kagawa, Hiroaki Nishino

4. Development of Borehole Imaging Method with using visual-SLAM
   Tsuneo Kagawa

5. A Novel Hybrid Recommendation System Integrating Content-Based and Rating Information
   Tan Nghia Duong, Viet Duc Than, Tuan Anh Vuong, Trong Hiep Tran, Quang Hieu Dang, Duc Minh Nguyen, and Hung Manh Pham

HETNET-S1: Heterogeneous Networking and Applications

Chair: Juggapong Natwichai, Chiang Mai University, Thailand

1. A Model for Mobile Fog Computing in the IoT
   Kosuke Gima, Ryuji Oma, Shigenari Nakamura, Tomoya Enokido, Makoto Takizawa

2. Converting Big Video Data into Short Video: Using 360-Degree Cameras for Searching Students Location and Judging Students Learning Style
   Noriyasu Yamamoto

3. Crowdsourcing Platform for Healthcare: Cleft Lip and Cleft Palate Case Studies
   Krit Khwanngern, Juggapong Natwichai, Suriya Sitthikham, Watcharaporn Sitthikamtiub, Vivatchai Kaveeta, Arakin Rakchittapoke, and Somboon Martkamjan

4. Jaw Surgery Simulation in Virtual Reality for Medical Training
   Krit Khwanngern, Narathip Tiangtae, Juggapong Natwichai, Aunnop Kattiyanet, Vivatchai Kaveeta, Suriya Sitthikham, and Kamolchanok Kammabut

ISSE-S1: Deep Learning and Smart Environments

Chair: Chuan-Yu Chang, National Yunlin University of Science and Technology, Taiwan

1. Fusion Method of Depth Images and Visual Images for Tire Inspection
   Chien-Chou Lin, Chun-Cheng Chang, Ching-Lung Chang, Chuan-Yu Chang

2. Learning depth from monocular sequence with convolutional LSTM network
   Chia-Hung Yeh, Yao-Pao Huang, Chih-Yang Lin, and Min-Hui Lin

3. Two-Dimensional Inductance Plane Sensor for Smart Home Door Lock
   Wen-Shan Lin, Chao-Ting Chu, and Chian C. Ho

4. Agricultural Pests Damage Detection Using Deep Learning
   Ching-Ju Chen, Jian-Shiun Wu, Chuan-Yu Chang, Yueh-Min Huang

12:30-13:30 Lunch Break

13:30-15:30 Parallel Sessions

ADPNA-S1: Distributed and Parallel Systems

Chair: Tomoya Enokido, Rissho University, Japan

1. Estimation method of Traffic Volume Using Big-Data
   Kazuki Someya, Ryozo Kiyohara, Masashi Saito

2. Experimental Evaluation of Publish/Subscribe-based Spatio-Temporal Contents Management on Geo-Centric Information Platform
   Kaoru Nagashima, Yuzo Taenaka, Akira Nagata, Katsuichi Nakamura, Hitomi Tamura, Kazuya Tsukamoto

3. DTN Sub-ferry Nodes Placement with Consideration for Battery Consumption
   Kazunori Ueda

4. Concept Proposal of Multi-layer Defense Security Countermeasures Based on Dynamic Reconfiguration Multi-perimeter Lines
   Shigeaki Tanimoto, Yuuki Takahashi, Ayaka Takeishi, Sonam Wangyal, Tenzin Dechen, Hiroyuki Sato, Atsushi Kanai

5. Fault Detection of Process Replicas on Reliable Servers
   Hazuki Ishii, Ryuji Oma, Shigenari Nakamura, Tomoya Enokido, Makoto Takizawa

6. Deep Recurrent Neural Networks for Wi-Fi based Indoor Trajectory Sensing
   Hao Li, Joseph K. Ng, and Junxing Ke

INWC-S1: Mobile Computing and Communication

Chair: Makoto Ikeda, Fukuoka Institute of Technology, Japan

1. Performance Evaluation of VegeCare Tool for Tomato Disease Classification
   Natwadee Ruedeeniraman, Makoto Ikeda, Leonard Barolli

2. Performance Analysis of WMNs by WMN-PSODGA Simulation System Considering Load Balancing: A Comparison Study for Exponential and Weibull Distribution of Mesh Clients
   Seiji Ohara, Admir Barolli, Shinji Sakamoto and Leonard Barolli

3. Evaluation of 13.56 MHz RFID System Considering Tag Magnetic Field Intensit
   Yuki Yoshigai and Kiyotaka Fujisaki

4. Numerical Analysis of Fano Resonator in 2D Periodic Structure for Integrated Microwave Circuit
   Hiroshi Maeda, Naoki Higashinaka and Akihito Ochi

DEMoC-S1: Data Engineering and Mobile Computing

Chair: Yusuke Gotoh, Okayama University, Japan

1. Evaluation of I/O Performance Regulating Function with a Virtual Machine
   Takashi Nagao, Nasanori Tanabe, Kazutoshi Yokoyama, Hideo Taniguchi

2. A Continuous Media Data Broadcasting Model for Base Stations Moving Straight
   Tomoki Yoshihisa, Yusuke Gotoh, and Akimitsu Kanzaki

3. A Support System for Second Tourism
   Yusuke Gotoh

4. Omotenashi Robots: Generating Funny Dialog using Visitor Geographical Information
   Kazuki Haraguchi, Satoshi Aoki, Tomohiro Umetani, Tatsuya Kitamura, and Akiyo Nadamoto

ISSE-S2: Intelligent and Smart Environments

Chair: Takahiro Uchiya, Nagoya Institute of Technology, Japan

1. A Research on Constructing the Recognition System for the Dynamic Pedestrian Traffic Signals through Machine Vision
   Chien-Chung Wu, Yi-Chieh Hsug

2. Wearable EMG Gesture Signal Acquisition Device Based on Single-Chip Microcontroller
   Wen-Shan Lin, Chao-Ting Chu, and Chian C. Ho

3. Ring-based Routing for Industrial Wireless Sensor Networks
   Ching-Lung Chang, Hao-Ting Lee and Chuan-Yu Chang

4. Proposal of Research Information Collection System
   Takahiro Uchiya, Ryoa Sugisaki, Ichi Takumi

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18:00-20:00 Banquet Party

Rembrandt Hotel Oita
`https://rembrandt-group.com/oita/oita_english/e_stay_o`
Address: 9-20, Tamuro-machi, Oita City, Oita, Japan
Note: It takes 8 min by walk to go from JR Oita Station.

Saturday, September 7, 2019

NBiS-2019 Organizing Committee Meeting and Discussion

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INCoS-2019
Main Conference and Workshops Program

Thursday, September 5, 2019

08:00 Registration
09:00-09:30 Opening Ceremony

09:30-10:30 Single Session: NBiS-2019 & INCoS-2019 Keynote I

NBiS-2019 & INCoS-2019 Keynote Talk I

 Prof. Yoshihiro Okada: 3D Graphics Applications for Education and Visualization

10:30-11:00 Coffee Break
11:00-12:00 Single Session: NBiS-2019 & INCoS-2019 Keynote II

NBiS-2019 & INCoS-2019 Keynote Talk II

 Prof. Tarek Saadawi: Secure Resilient Edge Cloud Designed Network

12:00-13:00 Lunch Break

13:00-15:00 Parallel Sessions

INCoS-S1: Distributed Computing and Event Management

Chair: Fang-Yie Leu, Tunghai University, Taiwan

1. Impact of Automation to Event Management Efficiency
   Peter Balco, Andrea Studeničova

2. Data and Subprocess Transmission on the Edge Node of TWTBFC Model
   Yinzhe Guo, Ryuji Oma, Shigenari Nakamura, Dilawaer Duolikun, Tomoya Enokido, Makoto Takizawa

3. Event Management Service System
   Vladyslav Berezhetskyi, Artur Tomczak, Daniel Soliwoda, Emiljana Hoti

4. A Hierarchical Group of Peers in Publish/Subscribe Systems
   Takumi Saito, Shigenari Nakamura, Tomoya Enokido, Makoto Takizawa

5. A Novel Bounded-Error Piecewise Linear Approximation Algorithm for Streaming Sensor Data in Edge Computing
   Jeng-Wei Lin, Shih-wei Liao, Fang-Yie Leu

INCoS-S2: Machine Learning and Intelligent Systems

Chair: Kin Fun Li, University of Victoria, Canada

1. A Machine Learning Approach to Fake News Detection Using Knowledge Verification and Natural Language Processing
   Marina Danchovsky Ibrishimova, Kin Fun Li

2. Performance Analysis of WMNs by WMN-PSOHC-DGA Simulation System Considering Linearly Decreasing Inertia Weight and Linearly Decreasing Vmax Replacement Methods
   Admir Barolli, Shinji Sakamoto, Seiji Ohara, Leonard Barolli, Makoto Takizawa

3. A Fuzzy-based Decision System for Sightseeing Spots Considering Noise Level as a New Parameter
   Yi Liu, Leonard Barolli

4. Algorithm Using Deep Learning for Recognition of Japanese Historical Characters in Photo Image of Historical Book
   Liao Sichao, Hiroyoshi Miwa

5. A Remote Puppet Control System for Humanoid Communication Robot
   Toshiyuki Haramaki, Hiroaki Nishino

WIND-S1: Control and Error Correction Methods

Chair: Masato Tsuru, Kyushu Institute of Technology, Japan

1. On-demand Transmission Interval Control Method for Spatio-Temporal Data Retention
   Shumpei Yamasaki, Daiki Nobayashi, Kazuya Tsukamoto, Takeshi Ikenaga, Myung Lee

2. SDN-based Time-domain Error Correction for In-Network Video QoE Estimation in Wireless Networks
   Shumpei Shimokawa, Takuya Kanaoka, Yuzo Taenaka, Kazuya Tsukamoto, Myung Lee

3. On Retrieval Order of Statistics Information from OpenFlow Switches to Locate Lossy Links by Network Tomographic Refinement
   Takemi Nakamura, Masahiro Shibata, Masato Tsuru

4. Real-time Multi-resource Allocation via a Structured Policy Table
   Arslan Qadeer, Myung J. Lee, Kazuya Tsukamoto

15:00-15:30 Coffee Break

15:30-17:30 Parallel Sessions

INCoS-S3: Methods and Algorithms for Collaborative Systems

Chair: Hiroaki Nishino, Oita University, Japan

1. Network Design Method by Link Protection Considering Probability of Simultaneously Links Failure
   Keyaki Uji, Hiroyoshi Miwa

2. Short-term Solar Power Forecasting using SVR on Hybrid PV Power Plant in Indonesia
   Prasetyo Aji, Kazumasa Wakamori, Hiroshi Mineno

3. User-Density Dependent Autonomous Clustering for MANET Based on the Laplace Equation
   Rio Kawasaki, Chisa Takano, Masaki Aida

4. Optical Axis Estimation Method Using Binocular Free Space Optics
   Kouhei Yamamoto, Rintaro Simogawa, Kiyotaka Izumi, Takeshi Tsujimura

5. A Method for Detecting and Alerting the Presence of a Reverse Running Vehicle
   Tsukasa Kato, Hiroaki Nishino

INCoS-S4: IoT and Vehicular Networks

Chair: Akio Koyama, Yamagata University, Japan

1. Development and Evaluation of IoT/M2M Application Using Real Object Oriented Model
   Hiroyuki Suzuki, Liyang Zhang, Akio Koyama

2. A Wheelchair Management System Using IoT Sensors and Agile-Kanban
   Takeru Kurita, Keita Matsuo, Leonard Barolli

3. Performance Evaluation of V2V and V2R Communication based on 2-wavelength Cognitive Wireless Network on Road State Information GIS Platform
   Akira Sakuraba, Yoshitaka Shibata, Goshi Sato, Noriki Uchida

4. Enhancing Security of Cellular IoT with Identity Federation
   Bernardo Santos, Bruno Dzogovic, Boning Feng, Van Thuan Do, Niels Jacot, Thanh Van Do

5. A Message Relaying Method with a Dynamic Timer Considering Non-signal Duration from Neighboring Nodes for Vehicular DTN
   Shogo Nakasaki, Makoto Ikeda, Leonard Barolli

WIND-S2: Information Network Design

Chair: Hiroyoshi Miwa, Kwansei Gakuin University, Japan

1. Network Design Method Resistant to Cascade Failure Considering Betweenness Centrality
   Yuma Morino, Hiroyoshi Miwa

2. Efficient Migration of Large-memory VMs Using Private Virtual Memory
   Yuji Muraoka, Kenichi Kourai

3. Transmission Control Method to Realize Efficient Data Retention in Low Vehicle Density Environments
   Ichiro Goto, Daiki Nobayashi, Kazuya Tsukamoto, Takeshi Ikenaga, Myung Lee

4. Problem of Determining Weights of Edges for Reducing Diameter
   Kaito Miyanagi, Hiroyoshi Miwa

18:00-20:00 Welcome Reception Party

Oita University.

Friday, September 6, 2019

08:00 Registration

09:00-10:00 Single Session: NBiS-2019 & INCoS-2019 Keynote III

NBiS-2019 & INCoS-2019 Keynote Talk II

Prof. JongWon Kim: Container-leveraged Service Realization Challenges for Cloud-native Computing

10:00-10:30 Coffee Break

10:30-12:30 Parallel Sessions

INCoS-S5: Social Networking and Active Learning Systems

Chair: Toshihiko Yamakami, ACCESS, Japan

1. Effects of Truss Structure of Social Network on Information Diffusion among Twitter Users
   Nako Tsuda, Sho Tsugawa

2. A 2-Dimensional Technology and Real-world Interaction View Approach
   Toshihiko Yamakami

3. Method for Extracting Positions of Players from Video of Lacrosse Game
   Miki Takagi, Hiroyoshi Miwa

4. Visualization of Users Raking in Online Dating Service
   Jana Nowaková, Martin Hasal, Václav Snášel

5. A Robot TA System Promoting Students' Active Participation in Lectures
   Masashi Kato, Ryoichi Nagata, Hiroaki Nishino

INCoS-S6: Secure Systems

Chair: Hiroyoshi Miwa, Kwansei Gakuin University, Japan

1. CAPTCHA Recognition Based on Kohonen Maps
   Yujia Sun, Jan Platoš

2. Digital University Admission Application System with Study Documents Using Smart Contracts on Blockchain
   Kosuke Mori, Hiroyoshi Miwa

3. Reversible Data Hiding Algorithm in Homomorphic Encrypted Domain Based on EC-EG
   Neng Zhou, Han Wang, Mengmeng Liu, Yan Ke, Minqing Zhang

4. Proposing a Blockchain-based Open Data Platform and Its Decentralized Oracle
   Akihiro Fujihara

5. A New Fair Electronic Contract Signing Protocol
   Xiao Haiyan, Wang Lifang, Wei Yuechuan

MaLICS-S1: Machine Learning in Intelligent and Collaborative Systems

Chair: Jakub Nalepa, Silesian University of Technology & Future Processing, Poland

1. Survey on Blockchain-based Electronic Voting
   Shuai Xiao, Xu An Wang, Wei Wang, Han Wang

2. Optimization of Maintenance Costs of Video Systems Based on Cloud Services
   Dominika Karyś, Anna Pietrzyk, Rafał Kowalski, Peter Vesely, Andrea Studenicova

3. Movies Recommendation System
   Adrianna Frykowska, Izabela Zbieć, Patryk Kacperski, Peter Vesely, Andrea Studenicova

4. An Application-driven Heterogeneous Internet of Things Integration Architecture
   Changhao Wang, Shining Li, Yan Pan, Bingqi Li

12:30-13:30 Lunch Break

13:30-15:30 Parallel Sessions

e-Bussines-S1: e-Business Systems

Chair: Natalia Kryvinska, Comenius University in Bratislava, Slovakia

1. Bonus Programs for CRM in Retail Business
   Wolfgang Neussner, Natalia Kryvinska, Erich Markl

2. Bus Ticket Reservation System Agile Methods of Projects Management
   Mateusz Grzelak, Łukasz Napierała, Łukasz Napierała, Vincent Karovič, Iryna Ivanochko

3. Virtual Teaching in an Engineering Context as Enabler for Internationalization Opportunities
   Corinna Engelhardt-Nowitzki, Dominik Pospisil, Richard Otrebski, Sabine Zangl

4. Diagnosing the Administration Systems as a Prerequisite for Enterprises Business Processes Reengineering
   Oleg Kuzmin, Vadym Ovcharuk, Volodymyr Zhezhukha, Dhruv Mehta, Jan Gregus

5. Product Lifecycle Management Service System
   Dariusz Woźniak, Babak Gohardani, Emil Majchrzak, Emiljana Hoti, Oksana Urikova

6. Crowdfunding – An Innovative Corporate Finance Method and Its Decision-making Steps
   Valerie Busse, Michal Gregus

FINCoS-S1: Intelligent Networking and Collaborative Systems

Chair: Aneta Poniszewska-Marańda, Lodz University of Technology, Poland

1. Cloud CRM System for Mobile Virtual Network Operators
   Maria Jedrzejewska, Adrian Zjawiński, Vincent Karovič, Iryna Ivanochko

2. A Basic Framework of Blockchain-based Decentralized Verifiable Outsourcing
   Han Wang, Xu An Wang, Wei Wang, Shuai Xiao

3. An Efficient Mobile Cloud Service Model or Tactical Edge
   Du Bo, Shan Nanliang, Zhou Sha

4. Benefits from Engineering Projects Implementation
   Oleg Kuzmin, Volodymyr Zhezhukha, Nataliia Gorodyska, Eleonora Benova

5. Building Microservices Architecture for Smart Banking
   Aneta Poniszewska-Marańda, Peter Vesely, Oksana Urikova, Iryna Ivanochko

BDS-S1: Big Data Science

Chair: Marcello Trovati, Edge Hill University, UK

1. GRNN Approach Towards Missing Data Recovery between IoT Systems
   Ivan Izonin, Natalia Kryvinska, Pavlo Vitynskyi, Roman Tkachenko, Khrystyna Zub

2. Research and Application of Big Data Correlation Analysis in Education
   Du Bo, Li Ai, Yuan Chen

3. Towards a Computational Model of Artificial Intuition and Decision Making
   Olayinka Johnny, Marcello Trovati, Jeffrey Ray

4. Twitter Analysis for Business Intelligence
   Tariq Soussan, Marcello Trovati

18:00-20:00 Banquet Party

Rembrandt Hotel Oita
`https://rembrandt-group.com/oita/oita_english/e_stay_o`
Address: 9-20, Tamuro-machi, Oita City, Oita, Japan
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Saturday, September 7, 2019

INCoS-2019 Organizing Committee Meeting and Discussion

Time Table

NBiS-2019 and INCoS-2019 Session Schedule
September 5th – 7th , 2019
Oita University, Oita, Japan

Thursday (September 5, 2019)		ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7
Slot	Time	Registration						
Session 1	09:00 – 9:30	Opening Ceremony of NBiS-2019 and INCoS-2019						
Session 2	09:30 – 10:30	NBiS-2019 and INCoS-2019 Keynote I						
Coffee Break	10:30 – 11:00	Coffee Break						
Session 3	11:00 – 12:00	NBiS-2019 and INCoS-2019 Keynote Ⅱ						
Lunch	12:00 – 13:00	Lunch Break						
Session 4	13:00 – 15:00	NBiS S1	NBiS S2	WSSM S1	INVITE S1	INCoS S1	INCoS S2	WIND S1
Coffee Break	15:00 – 15:30	Coffee Break						
Session 5	15:30 – 17:30	NBiS S3	NBiS S4	WSSM S2	TwCSec S1	INCoS S3	INCoS S4	WIND S2
Social Event	18:00 – 20:00	Welcome Reception Party						

Friday (September 6, 2019)		ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7
Slot	Time	Registration						
Session 1	09:00 – 10:00	NBiS-2019 and INCoS-2019 Keynote Ⅲ						
Coffee Break	10:00 – 10:30	Coffee Break						
Session 2	10:30 – 12:30	NBiS S5	NBiS S6	HETNET S1	ISSE S1	INCoS S5	INCoS S6	MaLICS S1
Lunch	12:30 – 13:30	Lunch Break						
Session 3	13:30 – 15:30	ADPNA S1	INWC S1	DEMoC S1	ISSE S2	e-Business S1	FINCoS S1	BDS S1
Social Event	18:00 – 20:00	Banquet Party						

Saturday (September 7, 2019)		ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7
Slot	Time	NBiS-2019 and INCoS-2019 Steering Committee Meeting and Discussion						

Floor Plan

NBiS / INCoS parallel session floor plan

INCoS
Room 5

INCoS
Room 6

INCoS
Room 7

NBiS
Room 3

NBiS
Room 4

Room 27

Room 26

Room 25

Room 23

Room 24

Room 28

**Coffee
Break**

EV

EV

2F

Lunch (Sep.5 and Sep.6)
and Reception (Sep.5)

B-Forêt

NBiS Room 3,4

INCoS Room 5 ～ 7

NBiS
Room 1

NBiS
Room 2

Room 13

Room 14

EV

EV

1F

Registration
and Keynote

Hall 1

Hall 2

Univ.
Coop

Family
Mart

EV

train station

Main Street