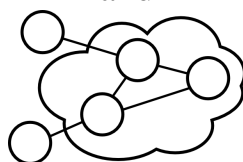


# PROGRAM GUIDE



## **BWCCA-2021**

The 16-th International Conference on  
Broad-Band and Wireless Computing, Communication and Applications  
and



## **3PGCIC-2021**

The 16-th International Conference on  
P2P, Parallel, Grid, Cloud and Internet Computing  
Virtual Conference (Online Presentation)  
October 28<sup>th</sup> - October 29<sup>th</sup>, 2021  
Fukuoka Institute of Technology (FIT), Fukuoka, Japan

# TABLE OF CONTENTS

BWCCA-2021 Organizing Committee . . . . .	3
Welcome Message from the BWCCA-2021 International Conference Organizers . . . . .	4
BWCCA-2021 International Conference Organizers . . . . .	4
3PGCIC-2021 Conference Organizing Committee . . . . .	5
Message from the 3PGCIC-2021 Organizing Committee . . . . .	6
BWCCA-2021 & 3PGCIC-2021 Keynote I . . . . .	7
BWCCA-2021 & 3PGCIC-2021 Keynote II . . . . .	8
BWCCA-2021 Main Conference and Workshops Program . . . . .	9
Thursday, October 28, 2021 . . . . .	9
BWCCA-2021 Keynote I . . . . .	9
Parallel Sessions . . . . .	10
BWCCA-S1: Wireless Mesh Networks . . . . .	10
RVI3C-S1: Robot and Vehicle Control and Communication . . . . .	10
Parallel Sessions . . . . .	10
BWCCA-S2: Vehicular Network Applications . . . . .	10
MAPWC-S1: Methods and Protocols for Wireless Communication . . . . .	11
Parallel Sessions . . . . .	11
BWCCA-S3: Energy Efficient Systems and Traffic Management . . . . .	11
NGWMN-S1: Network Security and Reliability . . . . .	11
Friday, October 29, 2021 . . . . .	12
Parallel Sessions . . . . .	12
BWCCA-S4: Secure Systems . . . . .	12
Parallel Sessions . . . . .	12
BWCCA-S5: Intelligent Systems and Machine Learning . . . . .	12
Parallel Sessions . . . . .	12
CWECS-S1: Resource Management Systems . . . . .	12
BWCCA-2021 Keynote II . . . . .	13
3PGCIC-2021 Main Conference and Workshops Program . . . . .	14
Thursday, October 28, 2021 . . . . .	14
3PGCIC-2021 Keynote I . . . . .	14
Parallel Sessions . . . . .	14
3PGCIC-S1: Cloud Computing and Secure Systems . . . . .	15
Parallel Sessions . . . . .	15
DEM-S1: Distributed Embedded Systems and Reinforcement Learning . . . . .	15
Friday, October 29, 2021 . . . . .	15
Parallel Sessions . . . . .	15
3PGCIC-S2: Vehicular Networks and Applications . . . . .	16
3PGCIC-S3: Web and Multimedia Applications . . . . .	16

Parallel Sessions . . . . .	16
3PGCIC-S4: Intelligent and Cognitive Systems . . . . .	16
Parallel Sessions . . . . .	17
SiPML-S1: Machine Learning and Intelligent Algorithms . . . . .	17
MWVRTA-S1: Multimedia and Virtual Reality Technologies and Applications . .	17
3PGCIC-2021 Keynote II . . . . .	17
Additional information . . . . .	18

## **BWCCA-2021 Organizing Committee**

### **Honorary Chair**

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Kangbin Yim, *SCH University, South Korea*

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Ermioni Qafzezi, *Fukuoka Institute of Technology, Japan*

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Elis Kulla, *Okayama University of Science, Japan*

### **Steering Committee Chair**

Leonard Barolli, *Fukuoka Institute of Technology, Japan*



## **Welcome Message from the BWCCA-2021 International Conference Organizers**

Welcome to the 16-th International Conference on Broadband and Wireless Computing, Communication and Applications (BWCCA-2021), which will be held in conjunction with 3PGCIC-2021 International Conference from October 28 to October 30, 2021, at Fukuoka Institute of Technology, Fukuoka, Japan.

This International Conference is a forum for sharing ideas and research work in the emerging areas of broadband and wireless computing. Information networks of today are going through a rapid evolution. Different kinds of networks with different characteristics are emerging and they are integrating in heterogeneous networks. For these reasons, there are many interconnection problems which may occur at different levels of the hardware and software design of communicating entities and communication networks. These kinds of networks need to manage an increasing usage demand, provide support for a significant number of services, guarantee their QoS, and optimize the network resources.

The success of all-IP networking and wireless technology has changed the ways of living the people around the world. The progress of electronic integration and wireless communications is going to pave the way to offer people the access to the wireless networks on the fly, based on which all electronic devices will be able to exchange the information with each other in ubiquitous way whenever necessary.

The aim of this conference is to present the innovative research and technologies as well as developments related to broadband networking, and mobile and wireless communications.

The organization of an International Conference requires the support and help of many people. A lot of people have helped and worked hard to produce a successful BWCCA-2021 technical program and conference proceedings. First, we would like to thank all authors for submitting their papers, Program Committee Members and reviewers who carried out the most difficult work by carefully evaluating the submitted papers.

We thank Web Administrators Co-Chairs and Finance Chair for their excellent work. We would like to express our gratitude to Prof. Makoto Takizawa, Hosei University, Japan as Honorary Chair of BWCCA-2021 for his support and help. We give special thanks to Keynote Speakers of BWCCA-2021 and local arrangement team.

We hope you will enjoy the conference proceedings.

## **BWCCA-2021 International Conference Organizers**

### **BWCCA-2021 Steering Committee Chair**

Leonard Barolli, *Fukuoka Institute of Technology, Japan*

### **BWCCA-2021 General Co-Chairs**

Tomoya Enokido, *Rissho University, Japan*

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Fang-Yie Leu, *Tunghai University, Taiwan*

### **BWCCA-2021 Program Committee Co-Chairs**

Naohiro Hayashibara, *Kyoto Sangyo University, Japan*

Lidia Ogiela, *Pedagogical University of Krakow, Poland*

Kangbin Yim, *SCH University, South Korea*

### **3PGCIC-2021 Conference Organizing Committee**

#### **Honorary Chair**

Makoto Takizawa, *Hosei University, Japan*

#### **General Co-Chairs**

Tomoki Yoshihisa, *Osaka University, Japan*

Flora Amato, *University of Naples Federico II, Italy*

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

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Yusuke Gotoh, *Okayama University, Japan*

Omar Hussain, *University of New South Wales, Canberra, Australia*

Juggapong Natwichai, *Chiang Mai University, Thailand*

#### **Workshops Co-Chairs**

Peter Hellinckx, *University of Antwerp, Belgium*

Tomoyuki Ishida, *Fukuoka Institute of Technology, Japan*

Santi Caballe, *Open University of Catalonia, Spain*

#### **Finance Chair**

Makoto Ikeda, *Fukuoka Institute of Technology, Japan*

#### **Web Administrator Co-Chairs**

Phudit Ampirit, *Fukuoka Institute of Technology, Japan*

Kevin Bylykbashi, *Fukuoka Institute of Technology, Japan*

Ermioni Qafzezi, *Fukuoka Institute of Technology, Japan*

#### **Local Organizing Co-Chairs**

Elis Kulla, *Okayama University of Science, Japan*

Akimitsu Kanzaki, *Shimane University, Japan*

#### **Steering Committee Chair**

Leonard Barolli, *Fukuoka Institute of Technology, Japan*

## Message from the 3PGCIC-2021 Organizing Committee

Welcome to the 16-th International Conference on P2P, Parallel, Grid, Cloud and Internet Computing (3PGCIC-2021), which will be held in conjunction with BWCCA-2021 International Conference from October 28 to October 30, 2021, at Fukuoka Institute of Technology, Fukuoka, Japan.

P2P, Grid, Cloud and Internet computing technologies have been established as breakthrough paradigms for solving complex problems by enabling large-scale aggregation and sharing of computational, data and other geographically distributed computational resources.

*Grid Computing* originated as a paradigm for high performance computing, as an alternative to expensive supercomputers. The Grid computing domain has been extended to embrace different forms of computing, including Semantic and Service-oriented Grid, Pervasive Grid, Data Grid, Enterprise Grid, Autonomic Grid, Knowledge and Economy Grid.

*P2P Computing* appeared as the new paradigm after client-server and web-based computing. These systems are evolving beyond file sharing towards a platform for large scale distributed applications. P2P systems have as well inspired the emergence and development of social networking, B2B (Business to Business), B2C (Business to Consumer), B2G (Business to Government), B2E (Business to Employee) and so on.

*Cloud Computing* has been defined as a computing paradigm where the boundaries of computing are determined by economic rationale rather than technical limits. Cloud computing is a multi-purpose paradigm that enables efficient management of data centres, timesharing, and virtualization of resources with a special emphasis on business model. Cloud Computing has fast become the computing paradigm with applications in all application domains and providing utility computing at large scale.

Finally, *Internet Computing* is the basis of any large-scale distributed computing paradigms; it has very fast developed into a vast area of flourishing field with enormous impact on today's information societies. Internet-based computing serves thus as a universal platform comprising a large variety of computing forms.

The aim of the 3PGCIC conference is to provide a research forum for presenting innovative research results, methods and development techniques from both theoretical and practical perspectives related to P2P, Grid, Cloud and Internet computing.

Many people have helped and worked hard to produce a successful 3PGCIC-2021 technical program and conference proceedings. First, we would like to thank all the authors for submitting their papers, the PC members, and the reviewers who carried out the most difficult work by carefully evaluating the submitted papers.

We thank Web Administrators for their excellent work and support with the Web Submission and Management System of conference. We are grateful to Prof. Makoto Takizawa, Hosei University, Japan as Honorary Chair of the conference for his support and encouragement. Our special thanks also go to Keynote Speakers.

We hope you will enjoy the conference proceedings.

### 3PGCIC-2021 Organizing Committee

#### 3PGCIC-2021 Steering Committee Chair

Leonard Barolli, *Fukuoka Institute of Technology, Japan*

#### 3PGCIC-2021 General Co-Chairs

Tomoki Yoshihisa, *Osaka University, Japan*

Flora Amato, *University of Naples Federico II, Italy*

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

#### 3PGCIC-2021 Program Committee Co-Chairs

Yusuke Gotoh, *Okayama University, Japan*

Omar Hussain, *University of New South Wales, Australia*

Juggapong Natwichai, *Chiang Mai University, Thailand*

## BWCCA-2021 & 3PGCIC-2021 Keynote I



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

**Title: Developing Trustworthy Artificial Intelligence**

**Abstract:** In this talk, we will discuss how to develop Trustworthy Artificial Intelligence solutions. In particular, we will focus on designing and testing metrics for standardization and use of Trustworthy Artificial-based solutions. Our metrics use the human in the loop approach and employ our trust management system. We will provide examples of the use of our Trustworthy Acceptance and Trustworthy Explainability in the fields of Artificial Intelligence solutions, including natural source management and medical diagnosis.

**Bio:** **Arjan Durrezi** is a Professor of Computer Science at Indiana University Purdue University in Indianapolis, Indiana. In the past, he held positions at LSU and The Ohio State University. His research interests include trustworthy Artificial Intelligence and decision making, networking, and security. In particular, he is interested in investigating, managing, and using trust among various interacting actors, such as humans-machines, or machines-machines, to develop better decision-making systems in important fields such as security, healthcare, networks, finance, managing physical and computing resources, and so on. Such work uses his newly developed trust management framework based on measurement theory, already validated, and can easily be applied to various applications. He has published about 100 articles in journals and over 200 articles in conference proceedings and seven book chapters. His research has been funded by NSF, USDA, and other industry sources.

## BWCCA-2021 & 3PGCIC-2021 Keynote II



**Prof. Chuan-Yu Chang, National Yunlin University of Science and Technology (YunTech), Taiwan**

**Title: Pandemic Prevention by Technology - The Contactless Healthcare via The IoT Platform**

**Abstract:** With the change in global population structure and increased frequency of epidemic and pandemic outbreaks, the application of digital technology is crucial to epidemic-prevention measures. In the COVID-19 outbreak, the number of confirmed cases has exceeded 166 million around the world, with the death toll reaching 3.46 million. Frontline medical personnel stick to their positions, face the COVID-19 and significant stress every day, and are also exposed to high risk environments in the long term. In this speech, I will introduce the contactless healthcare devices we developed for all the frontline medical personnel. Industrial Technology Research Institute (ITRI), and Taipei Medical University Hospital (TMUH) jointly developed a contactless remote monitoring system The Contactless Healthcare Connected IoT Platform. The IoT Gateway is used to integrate many technologies, providing patients with contactless, round-the-clock, real-time monitoring of their vital signs to achieve the goal of Contactless and Considerate. Pandemic prevention by technology can reduce infection risks during patient care.

**Bio:** **Chuan-Yu Chang** is currently the Deputy General Director of Service Systems Technology Center, Industrial Technology Research Institute (ITRI), Taiwan. He is also a Distinguished Professor at the Department of Computer Science and Information Engineering, National Yunlin University of Science and Technology (YunTech), Taiwan. He was the Chair of Department of Computer Science and Information Engineering (YunTech) from 2009 to 2011. From 2011 to 2019, he served as the Dean of Research and Development, Director of Incubation Center for Academia-Industry Collaboration and Intellectual Property (YunTech). His current research interests include computational intelligence and their applications to medical image processing, automated optical inspection, emotion recognition, and pattern recognition. In the above areas, he has more than 300 publications in journals and conference proceedings. He is an IET Fellow, a Life Member of IPPR, TAAI, and a senior Member of IEEE. From 2015-2017, he was the chair of IEEE Signal Processing Society Tainan Chapter and the Representative for Region 10 of IEEE SPS Chapters Committee. He is currently the President of Chinese Image Processing and Pattern Recognition Society, and the President of Taiwan Association for Web Intelligence Consortium.



# **BWCCA-2021**

## **Main Conference and Workshops Program**

**Thursday, October 28, 2021**

### **BWCCA-2021 Keynote I**

**10:30-11:30 (Japan time zone: UTC+9)**

**03:30-04:30 (Europe time zone: UTC+2)**

#### **BWCCA-2021 Keynote Talk I**

**Prof. Arjan Durrresi:** Developing Trustworthy Artificial Intelligence

## Parallel Sessions

**13:00-14:30 (Japan time zone: UTC+9)**

**06:00-07:30 (Europe time zone: UTC+2)**

### **BWCCA-S1: Wireless Mesh Networks**

**Session Chair: Makoto Ikeda, Fukuoka Institute of Technology, Japan**

1. A Comparison Study of Chi-square and Uniform Distributions of Mesh Clients by WMN-PSODGA Simulation System for RIWM and LDIWM Router Replacement Methods  
*Admir Barolli, Kevin Bylykbashi, Ermioni Qafzezi, Shinji Sakamoto, Leonard Barolli*
2. Performance Evaluation of WMNs by WMN-PSOHC Hybrid Simulation System Considering Different Number of Mesh Routers and Chi-square Distribution of Mesh Clients  
*Shinji Sakamoto, Yi Liu, Leonard Barolli, Shusuke Okamoto*
3. Evaluation of Focused Beam Routing Protocol for Different Applications of Underwater Sensor Networks  
*Elis Kulla, Keita Matsuo, Leonard Barolli*
4. A Simulation System for Mesh Router Placement in WMNs Considering Coverage Construction Method and Simulated Annealing  
*Aoto Hirata, Tetsuya Oda, Nobuki Saito, Tomoya Yasunaga, Kengo Katayama, Leonard Barolli*

### **RVI3C-S1: Robot and Vehicle Control and Communication**

**Session Chair: Keita Matsuo, Fukuoka Institute of Technology, Japan**

1. Design and Implementation of a Control Interface for Indoor Position Detection of Moving Omnidirectional Access Point Robot Using Super Sonic Signals  
*Kenshiro Mitsugi, Atushi Toyama, Keita Matsuo, Elis Kulla, Leonard Barolli*
2. An Intelligent Fallen Object Detection System for Safe Driving  
*Shota Uchimura, Yoshiki Tada, Makoto Ikeda, Leonard Barolli*
3. A Simulation System for Optimal Positions of MOAP Robots Using Elbow and Silhouette Theories: Simulation Results Considering Minimum Transmission Power of MOAP Robots  
*Keita Matsuo, Kenshiro Mitsugi, Atushi Toyama, Elis Kulla, Leonard Barolli*
4. Proposal of Indoor Navigation System Using Mixed Reality Technology  
*Takahiro Uchiya, Yudai Furuta, Ichi Takumi*

## Parallel Sessions

**15:00-16:30 (Japan time zone: UTC+9)**

**08:00-09:30 (Europe time zone: UTC+2)**

### **BWCCA-S2: Vehicular Network Applications**

**Session Chair: Naohiro Hayashibara, Kyoto Sangyo University, Japan**

1. Performance Evaluation of V2X Communication for Road State Information Platform based on 5G and High-Speed LAN  
*Yoshitaka Shibata, Akira Sakuraba*
2. On the Latency of Nomadic Lévy Walk based Message Ferry Routing in Delay Tolerant Networks  
*Koichiro Sugihara, Naohiro Hayashibara*

3. In-vehicle Network IDS Using Message Time Interval Infrastructure  
*Chanmin Kim, Insu Oh, Yeji Koh, Myungsu Kim, Kangbin Yim*
4. A Fuzzy-based System for Assessment of Quality of Service Communication Links in SDN-VANETs  
*Ermioni Qafzezi, Kevin Bylykbashi, Phudit Ampririt, Makoto Ikeda, Keita Matsuo, Leonard Barolli*

### **MAPWC-S1: Methods and Protocols for Wireless Communication**

#### **Session Chair: Elis Kulla, Okayama University of Science, Japan**

1. An Adaptive Anti-packet Recovery Method for Vehicular DTN: Performance Evaluation Considering Shuttle Buses and Roadside Units Scenario  
*Masaya Azuma, Shota Uchimura, Yoshiki Tada, Makoto Ikeda, Leonard Barolli*
2. Proposal of Vehicular Real-time Sensing Method for Amount of Snow Accumulation on the Road  
*Akira Sakuraba, Yoshitaka Shibata, Mamoru Ohara*
3. Numerical Analysis of Electromagnetic Wave Propagation in Photonic Crystal Waveguide with Stubs for Wavelength Filtering  
*Hiroshi Maeda*
4. Evaluating the Impact of Node Density and Area Shape in Underwater Wireless Sensor Networks  
*Elis Kulla, Kuya Shintani, Keita Matsuo*

### **Parallel Sessions**

**17:00-18:30 (Japan time zone: UTC+9)**

**10:00-11:30 (Europe time zone: UTC+2)**

### **BWCCA-S3: Energy Efficient Systems and Traffic Management**

#### **Session Chair: Tomoya Enokido, Risho University, Japan**

1. An Energy-Efficient Process Replication by Differentiating Starting Time of Process Replicas in Virtual Machine Environments  
*Tomoya Enokido, Dilawaer Duolikun, Makoto Takizawa*
2. Traffic Reduction for Information Flow Control in the IoT  
*Shigenari Nakamura, Tomoya Enokido, Makoto Takizawa*
3. An Energy-Efficient Algorithm to Make Virtual Machines Migrate in a Server Cluster  
*Dilawaer Duolikun, Tomoya Enokido, Leonard Barolli, Makoto Takizawa*
4. Effects of Buffer Management Considering Time Continuity on Disaster Information on DTN based Information Sharing System  
*Tetsuya Shigeyasu, Shogo Utahara*

### **NGWMN-S1: Network Security and Reliability**

#### **Session Chair: Kangbin Yim, Soonchunhyang University, South Korea**

1. Improving Peer Reliability in P2P Networks: Implementation of an Integrated Simulation System Considering Fuzzy Logic and NS-3  
*Yi Liu, Shinji Sakamoto, Leonard Barolli*
2. Vulnerability Analysis of a Secure USB Memory: Based on a Commercial Product D  
*Wontae Jung, Kangbin Yim, Kyungroul Lee*
3. SPEC: Frame Filtering for CAN protocol on ECU  
*Munkhdelgerekh Batzorig, Insu Oh, Chanmin Kim, Yeji Koh, Kangbin Yim*
4. A Concept of IDS for CAN Protocol Based on Statics Theory  
*Md Rezanur Islam, Insu Oh, Munkhdelgerekh Batzorig, Seoyeon Kim, Kangbin Yim*



**Friday, October 29, 2021****Parallel Sessions****10:00-11:30 (Japan time zone: UTC+9)****03:00-04:30 (Europe time zone: UTC+2)****BWCCA-S4: Secure Systems****Session Chair: Vamsi Paruchuri, University of Central Arkansas, USA**

1. Toward Automated Audit of Client-side Vulnerability Against Cross-site Scripting  
*Mamoru Mimura, Takumi Yamasaki*
2. Single Sign-on using Contactless Smart cards and Fingerprint Authentication  
*Sriram Bobba, Vamsi Paruchuri*
3. Blockchain-Based Identity Management for Personal Data: A survey  
*Mekhled Alharbi, Farookh Khadeer Hussain*
4. Fusion Techniques for Strong Data Protection  
*Urszula Ogiela, Makoto Takizawa, Lidia Ogiela*

**Parallel Sessions****13:00-14:30 (Japan time zone: UTC+9)****06:00-07:30 (Europe time zone: UTC+2)****BWCCA-S5: Intelligent Systems and Machine Learning****Session Chair: Yoshihiro Okada, Kyushu University, Japan**

1. A Machine Learning Based Network Intrusion Detection System with Applying Different Algorithm in Multiple Stages  
*Seiichi Sasa, Hiroyuki Suzuki, Akio Koyama*
2. Malware Classification Based On Graph Neural Network Using Control Flow Graph  
*Rongze Xia, Baojiang Cui*
3. Hand Gesture Input Interface of IntelligentBox Using Leap Motion Controller and Its Application Example  
*Takumi Takeshita, Kosuke Kaneko, Yoshihiro Okada*
4. Predictive Intelligence Approaches for Security Technologies  
*Urszula Ogiela, Marek R. Ogiela*

**Parallel Sessions****15:00-16:30 (Japan time zone: UTC+9)****08:00-09:30 (Europe time zone: UTC+2)****CWECS-S1: Resource Management Systems****Session Chair: Fang-Yie Leu, Tunghai University, Taiwan**

1. Project Management Mechanism based on Burndown Chart to Reduce the Risk of Software Project Failure  
*Sen-Tarnng Lai, Heru Susanto, Fang-Yie Leu*

2. The Implementation of Dynamical Shortest Path and Resource Management for Network Slicing in 5G Networks  
*Pei-Hua Yu, Heru Susanto, Li-Xuan Liu, Shang-Jie Wu, Fang-Yie Leu*
3. Compare Encoder-Decoder, Encoder-Only, and Decoder-Only Architectures for Text Generation on Low-Resource Datasets  
*Pei-Xuan Cai, Yao-Chung Fan, Fang-Yie Leu*
4. Efficient Execution of Malleable Applications in Desktop Grids using Credit Damping  
*Lung-Bin Chen, Fang-Yie Leu*

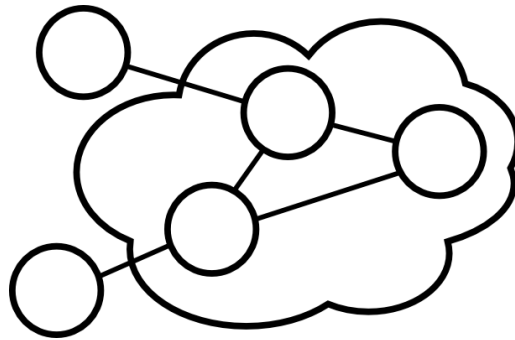
### **BWCCA-2021 Keynote II**

**17:00-18:00 (Japan time zone: UTC+9)**

**10:00-11:00 (Europe time zone: UTC+2)**

#### **BWCCA-2021 Keynote Talk II**

**Prof. Chuan-Yu Chang:** Pandemic Prevention by Technology - The Contactless Healthcare via The IoT Platform



## **3PGCIC-2021**

### **Main Conference and Workshops Program**

**Thursday, October 28, 2021**

#### **3PGCIC-2021 Keynote I**

**10:30-11:30 (Japan time zone: UTC+9)**

**03:30-04:30 (Europe time zone: UTC+2)**

#### **3PGCIC-2021 Keynote Talk I**

**Prof. Arjan Durrresi:** Developing Trustworthy Artificial Intelligence

#### **Parallel Sessions**

**15:00-16:30 (Japan time zone: UTC+9)**

**08:00-09:30 (Europe time zone: UTC+2)**

**3PGCIC-S1: Cloud Computing and Secure Systems****Session Chair: Farookh Khadeer Hussain, University of Technology Sydney, Australia**

1. Fuzzy Randomized Load Balancing for Cloud Computing  
*Saurabh Sagar, Mushtaq Ahmed and Mohammed Yaseen Husain*
2. The Comparative Study of Algorithms in Building the Green Mobile Cloud Computing Environment  
*Nicholas Dominic, Jonathan Sebastian Prayoga, Daniel Kumala, Nico Surantha and Benfano Soewito*
3. Efficient Federated Learning Framework Based on Multi-Key Homomorphic Encryption  
*Qian Zhang, Shan Jing, Chuan Zhao, Bo Zhang, Zhenxiang Chen*
4. Blockchain-based Pharmaceutical Supply Chain: A Literature Review  
*Abeer Mirdad and Farookh Khadeer Hussain*
5. Wearable Internet-of-Things Device for COVID-19 Detection, Monitoring and Prevention: A Review  
*Nico Surantha, Gary Nico, Michael Henry, Wiryanata Chandra and Benfano Soewito*

**Parallel Sessions****17:00-18:30 (Japan time zone: UTC+9)****10:00-11:30 (Europe time zone: UTC+2)****DEM-S1: Distributed Embedded Systems and Reinforcement Learning****Session Chair: Peter Hellinckx, University of Antwerp, Belgium**

1. Mixed Cooperative-Competitive Communication Using Multi-Agent Reinforcement Learning  
*Astrid Vanneste, Wesley Van Wijnsberghe, Simon Vanneste, Kevin Mets, Siegfried Mercelis, Steven Latre and Peter Hellinckx*
  2. Learning to Communicate with Reinforcement Learning for an Adaptive Traffic Control System  
*Simon Vanneste, Gauthier de Borrekens, Stig Bosmans, Astrid Vanneste, Kevin Mets, Siegfried Mercelis, Steven Latre and Peter Hellinckx*
  3. Lane Marking Detection Techniques for Autonomous Driving  
*Ahmed N. Ahmed, Ali Anwar, Sven Eckelmann, Toralf Trautmann, Steven Latre and Peter Hellinckx*
  4. Quality-Aware Compression of Point Clouds with Google Draco  
*Jens de Hoog, Ahmed N. Ahmed, Ali Anwar, Steven Latre and Peter Hellinckx*
  5. Transfer Learning in Autonomous Driving Using Real-World Samples  
*Arne Troch, Jens de Hoog, Simon Vanneste, Dieter Balemans, Steven Latre and Peter Hellinckx*
  6. Autonomous Building Control Using Offline Reinforcement Learning  
*Jorren Schepers, Reinout Eyckerman, Furkan Elmaz, Wim Casteels, Steven Latre and Peter Hellinckx*
- 

**Friday, October 29, 2021****Parallel Sessions****10:00-11:30 (Japan time zone: UTC+9)****03:00-04:30 (Europe time zone: UTC+2)**

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**3PGCIC-S2: Vehicular Networks and Applications****Session Chair: Shinji Sakamoto, Kanazawa Institute of Technology, Japan**

1. A Transfer Learning-based Object Detection and Annotation System: Performance Evaluation for Vehicle Objects from Onboard Camera  
*Yoshiki Tada, Masahiro Miwata, Shota Uchimura, Makoto Ikeda and Leonard Barolli*
2. A LiDAR Based Mobile Area Decision Method for TLS-DQN: Improving Control for AAV Mobility  
*Nobuki Saito, Tetsuya Oda, Aoto Hirata, Chihiro Yukawa, Elis Kulla and Leonard Barolli*
3. An Efficient Machine Learning System for Connected Vehicles  
*Tomoki Yoshihisa*
4. A Fuzzy-based System for Deciding Driver Impatience in VANETs  
*Kevin Bylykbashi, Ermioni Qafzezi, Phudit Ampirit, Makoto Ikeda, Keita Matsuo and Leonard Barolli*
5. Object Tracking by Google Cloud API and Data Alignment for Front/Rear Car DVR Footages  
*Walter Balzano, Leonard Barolli and Francesco Zangrillo*

**3PGCIC-S3: Web and Multimedia Applications****Session Chair: Mario A. R. Dantas, Federal University of Juiz de Fora, Brazil**

1. A Scientific Model to Support Industrial Data Management Process Using Virtualized Environments  
*Laercio Pioli Jr., Thiago G. Thome, Julia X. M. Nunes, Douglas D. J. de Macedo, Paulo Cesar. R. de L. Junior and Mario A. R. Dantas*
2. An Investigation of Suitable Data Transfer Range for Web-based Virtual World Applications  
*Masaki Kohana, Shinji Sakamoto and Shusuke Okamoto*
3. Metis - An Approach Utilized as Differentiated Authenticity Tool in an IIoT Infrastructure  
*Felipe S. Costa, Mario A. R. Dantas, Jose M. N. David, Regina M. M. B. Villela and Mattheus S. Santos*
4. Using Photo Images with Deep Residual Network for PM2.5 Value Estimation  
*Anupam Kamble and Paskorn Champrasert*
5. An Investigation of Covid-19 Papers for a Content-based Recommendation System  
*Leonard Barolli, Francesco Di Cicco, Mattia Fonisto*

**Parallel Sessions****13:00-14:30 (Japan time zone: UTC+9)****06:00-07:30 (Europe time zone: UTC+2)****3PGCIC-S4: Intelligent and Cognitive Systems****Session Chair: Tomoki Yoshihisa, Osaka University, Japan**

1. A Comparison Study of LDIWM and LDVM Router Replacement Methods for WMNs by WMN-PSODGA Hybrid Simulation System Considering Boulevard Distribution of Mesh Clients  
*Peng Xu, Admir Barolli, Phudit Ampirit, Shinji Sakamoto, Elis Kulla and Leonard Barolli*
2. Modern Cognitive Solutions for Advanced Information Processing  
*Urszula Ogiela, Makoto Takizawa and Lidia Ogiela*
3. An Intelligent System for Admission Control in 5G Wireless Networks Considering Fuzzy Logic and SDNs: Effects of Service Level Agreement on Acceptance Decision  
*Phudit Ampirit, Ermioni Qafzezi, Kevin Bylykbashi, Makoto Ikeda, Keita Matsuo and Leonard Barolli*
4. Performance Analysis of RIWM and LDVM Router Replacement Methods for WMNs by WMN-PSOSA-DGA Hybrid Simulation System Considering Stadium Distribution of Mesh Clients  
*Admir Barolli, Shinji Sakamoto, Leonard Barolli and Makoto Takizawa*

### Parallel Sessions

**15:00-16:30 (Japan time zone: UTC+9)**

**08:00-09:30 (Europe time zone: UTC+2)**

#### **SiPML-S1: Machine Learning and Intelligent Algorithms**

**Session Chair: Ricardo Rodrguez Jorge, Jan Evangelista Purkyn University, Czech Republic**

1. A Takagi-Sugeno Fuzzy-based Adaptive Transmission Method in Wireless Sensor Networks  
*Daisuke Nishii, Makoto Ikeda and Leonard Barolli*
2. Crack Detection from Weld Bend Test Images Using R-CNN  
*Shigeru Kato, Takanori Hino, Shunsaku Kume and Hajime Nobuhara*
3. A Modified Version of K-Means Algorithm  
*Mexicano A., Carmona J.C., Cervantes S., Cervantes J.A., López S. and Rodríguez R.*
4. Neural Network with L-M Algorithm for Arrhythmia Disease Classification  
*Ricardo Rodrguez Jorge, Jir Bla and Jir Skvor*

#### **MWVRTA-S1: Multimedia and Virtual Reality Technologies and Applications**

**Session Chair: Tomoyuki Ishida, Fukuoka Institute of Technology, Japan**

1. Study on Virtual Disaster Control Headquarters System  
*Rihito Fuchigami and Tomoyuki Ishida*
2. Study on Interior Layout Experience System using Mixed Reality Technology  
*Reiya Yahada and Tomoyuki Ishida*
3. Extension of Annotation Function in Collaborative Composition System  
*Meguru Yamashita, Kiwamu Satoh and Akio Doi*
4. An Approach for Composing Facial Expressions by Collecting Face Images on a Video  
*Kaoru Sugita and Kohei Soejima*

### **3PGCIC-2021 Keynote II**

**17:00-18:00 (Japan time zone: UTC+9)**

**10:00-11:00 (Europe time zone: UTC+2)**

#### **3PGCIC-2021 Keynote Talk II**

**Prof. Chuan-Yu Chang:** Pandemic Prevention by Technology - The Contactless Healthcare via The IoT Platform

**Online Meeting Schedule for BWCCA-2021 and 3PGCIC-2021**  
28 October to 29 October, 2021

1 <sup>st</sup> day: Thursday, 28 October, 2021	Room #1 Meeting ID: 842 8227 4349		Room #2 Meeting ID: 816 4396 6828		Room #3 Meeting ID: 883 1155 3471	
	Session title	Session Chair	Session title	Session Chair	Session title	Session Chair
<b>Slot 1</b> 10:30-11:30 (GMT+9:00) 03:30-04:30(UTC+2)	<b>BWCCA-2021 and 3PGCIC-2021 Keynote #1: Prof. Arjan Durresi</b> Meeting ID: 842 8227 4349					
<b>Slot 2</b> 13:00-14:30 (GMT+9:00) 06:00-07:30(UTC+2)	BWCCA-S1	Makoto Ikeda, JP	RVI3C-S1	Keita Matsuo, JP		
<b>Slot 3</b> 15:00-16:30 (GMT+9:00) 08:00-09:30(UTC+2)	BWCCA-S2	Naohiro Hayashibara, JP	MAPWC-S1	Elis Kulla, JP	3PGCIC-S1	Farookh Khadeer Hussain, Australia
<b>Slot 4</b> 17:00-18:30 (GMT+9:00) 10:00-11:30(UTC+2)	BWCCA-S3	Tomoya Enokido, JP	NGWMN-S1	Kangbin Yim, South Korea	DEM-S1	Peter Hellinckx, Belgium
2 <sup>nd</sup> day: Friday, 29 October, 2021	Room #1 Meeting ID: 842 8227 4349		Room #2 Meeting ID: 816 4396 6828		Room #3 Meeting ID: 883 1155 3471	
	Session title	Session Chair	Session title	Session Chair	Session title	Session Chair
<b>Slot 1</b> 10:00-11:30 (GMT+9:00) 03:00-04:30(UTC+2)	BWCCA-S4	Vamsi Paruchuri, USA	3PGCIC-S2	Shinji Sakamoto, JP	3PGCIC-S3	Mario A. R. Dantas, Brazil
<b>Slot 2</b> 13:00-14:30 (GMT+9:00) 06:00-07:30(UTC+2)	BWCCA-S5	Yoshihiro Okada, JP			3PGCIC-S4	Tomoki Yoshihisa, JP
<b>Slot 3</b> 15:00-16:30 (GMT+9:00) 08:00-09:30(UTC+2)	CWECS-S1	Fang-Yie Leu, Taiwan	MWVRTA-S1	Tomoyuki Ishida, JP	SiPML-S1	Ricardo Rodriguez Jorge, Czech Republic
<b>Slot 4</b> 17:00-18:00 (GMT+9:00) 10:00-11:00(UTC+2)	<b>BWCCA-2021 and 3PGCIC-2021 Keynote #2: Prof. Chuan-Yu Chang</b> Meeting ID: 842 8227 4349					

### Additional information

The session schedules indicated in the program are based on the GMT+9:00 time zone.