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https://www.ieice.org/cs/pub/global_news.html

Greetings from the New President

Tomoaki Ohtsuki
President, IEICE Communications Society
Professor, Keio University



It is my great honor to serve as the President of IEICE Communications Society (IEICE-CS), which is the largest society in IEICE and has over 11,000 members from more than 50 countries. First, I would like to express my gratitude to all members who are supporting IEICE-CS through various activities including publications and conferences voluntarily. I promise to do my best to support all to promote our activities further.

I would like to introduce some of our activities first. IEICE-CS has three peer-reviewed monthly journals: two Transactions on Communications, for papers in English and Japanese, and Communications Express, for letters in English. In our English transaction about half of the accepted papers are from outside of Japan. IEICE-CS also has a quarterly global newsletter (that you are reading now) and a quarterly magazine in Japanese. As for conferences, IEICE-CS supports several international conferences in cooperation with sister societies overseas and holds many domestic conferences with 20 regular and 6 ad-hoc technical committees (TCs). The TC conferences highlight a wide range of research, and provide places where our members can present their ideas, exchange technical information, and enjoy academic discussions. The TC conferences also publish online technical reports without peer-review for such information exchange and discussion. If you subscribe to a TC, you can enjoy online technical reports of the TC.

As I mentioned, those activities are supported by all our members voluntarily. Including those activities, IEICE-CS has made a great contribution to society in many aspects, such as research and development, education and human resource development, and so on. To continuously contribute to society when industry and social structures change and globalization continues, coordination with various fields beyond the boundaries of information and communication technology (ICT) that IEICE-CS is mainly contributing, is necessary. For instance, artificial intelligence (AI) is attracting a great interest in various fields, and is now getting to play a more and more important role in various fields. AI is also attracting great interests in communications, such as in communication technologies themselves and in their applications. On the other hand, ICT is also playing a great role for AI. To exploit AI technologies in various fields, it is needed in general to sense environments, to collect sensed data through communications, to analyze the collected sensed data to obtain useful information, and to activate actuators based on the obtained information through communications. We

refer to those environments as “Ambient Intelligence” where the environments themselves have the above intelligence. ICT is essential to realize Ambient Intelligence to contribute to not only AI and various fields but also society itself. As I mentioned, to continuously support and contribute to our society, we need to have coordination with various fields beyond the boundaries of ICT, that is, need to have diversity. We have many TCs that cover various fields, however, they do not cover whole areas. Each TC holds TC conferences with not only other TCs belonging to the IEICE but also those belonging to some societies other than the IEICE. IEICE-CS itself is also now trying to enhance collaboration with other societies in some fields, such as the Japan Society of Mechanical Engineers, about autonomous vehicles and Japan Society of Civil Engineers, about infrastructure monitoring. I am planning to support and promote those activities to contribute to our society more.

In addition, global cooperation across countries and fields is also very important. Now many our members in countries other than Japan are supporting our various activities, such as conferences, publication of the Transactions, and so on. We also have the IEICE international sections in several countries. However, there is still a large room where oversea members can support and also IEICE-CS needs those supports. I hope to make use of my abundant academic societies / international experience by strengthening diversity. I am planning to prepare frameworks to promote those international activities more.

At last I would like to mention one of the most important missions of IEICE-CS, that is, educating young people, including students, in ICT fields. By attending our various activities, such as domestic, international, and TC conferences, and also tutorials, they can get various knowledge and experiences. Thorough discussion with senior researchers and engineers from industries and academia, they can get good advices. IEICE-CS continuously provide those valuable opportunities. IEICE and IEICE-CS are also now considering to extend those activities even to younger students such as high school students. Fortunately, we had some high school students who presented their research results at the IEICE domestic conferences and TC conferences last year. We support those activities more and more.

I promise to do my best to further improve activities in IEICE-CS and increase their value for IEICE-CS members. I always welcome your requests and comments for improving your academic life.

Technologies for Interworking Between Cellular and WLAN Systems

Daisuke Nojima and Akira Yamada
Research Laboratories, NTT DOCOMO, INC.



1. Introduction

Recently, the use of smartphones and tablets has become popular, and the associated volume of mobile data traffic is growing at an explosive rate. In particular, Wireless Local Area Networks (WLANs) have been used in various scenarios as a means of offloading traffic to reduce the burden on cellular systems resulting in a greatly increased volume of WLAN traffic [1]. Due to the increasing number of tourists to Japan [2], local governments and service providers have proceeded to deploy free hotspots and WLAN services for tourists.

Unlike cellular systems, areas in which WLANs can be used are limited, and it is necessary to switch to cellular systems when communicating in an area where WLAN systems cannot be used. In addition, there are too many Access Points (APs) in urban area for mobile internet access, and therefore, dense WLAN deployment is anticipated that users may not be happy to use a WLAN network [3].

Various technologies have been implemented and standardized for handover between cellular systems such as Long Term Evolution (LTE) and WLANs that do not degrade the Quality of Experience (QoE) or incur communication disconnections. Furthermore, due to the increase in the volume of cellular traffic, various techniques that simultaneously use both licensed bands that require a radio station license such as cellular systems and unlicensed bands that do not require a license such as WLAN systems have been discussed to increase the capacity of cellular systems.

In this paper, we explain technologies for interworking between cellular and WLAN systems.

2. Interworking Between Cellular and WLAN Systems

2.1 Handover and Simultaneous Communication

When both cellular and WLAN systems are simultaneously available to the handset, there are two possible ways of using handover: the first is for each interface as shown in Fig. 1 and the second is for simultaneous communication using both interfaces as shown in Figs. 2 and 3. For example, if a user remains in an area for an extended period of time where a WLAN AP is installed, handover of the interface either to the cellular system or WLAN system on the handset is required. However, when moving in and out of a WLAN area repeatedly, it is desirable to perform simultaneous communication in both the cellular and WLAN systems

to abate the degradation in the Quality of Service (QoS) of the WLAN.

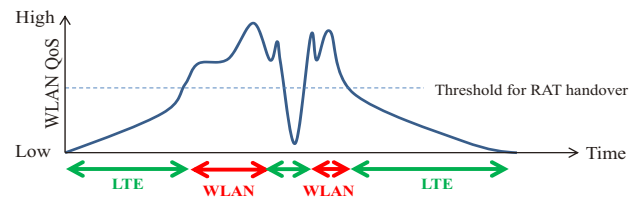


Fig. 1 Handover between cellular and WLAN systems.

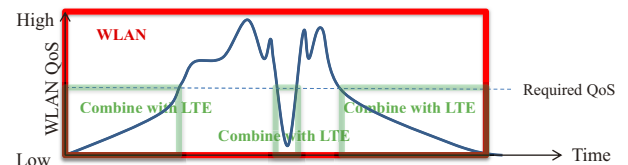


Fig. 2 Simultaneous communication between cellular and WLAN systems (to complement QoS).

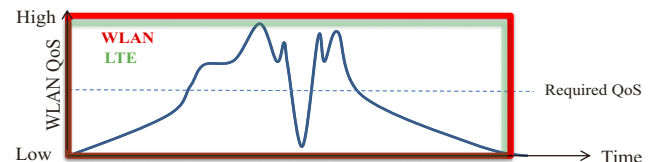


Fig. 3 Simultaneous communication between cellular and WLAN systems (to increase capacity).

2.2 Interworking Technologies

(a) Interworking on Radio Access Network (RAN) Level

These technologies provide simultaneous communication using both the licensed and unlicensed bands to achieve higher throughput and a higher level of user experience.

(b) Radio Access Technology (RAT) selection in heterogeneous networks

These technologies provide selection mechanisms for the optimal RAT between cellular and WLAN systems to achieve a higher level of user experience.

(c) Interworking on Core Network (CN) Level

These technologies provide cellular-like services, e.g., voice/video call service and mobile IP access service, under WLAN access through integration with an Evolved Packet Core (EPC) that accommodates the evolved NodeBs (eNBs).

In this paper, we summarize the current standardization trends on interworking between cellular and WLAN systems such as seamless handover and simultaneous communication technologies.

3. Interworking on RAN Level

There are several standardized technologies that are implemented by utilizing a combination of frequency bands or unlicensed bands in wireless communication methods.

3.1 Aggregation in Handset

There are some solutions that can use both cellular and WLAN systems at the application level in the handset. For example, based on the range request of Hypertext Transfer Protocol (HTTP), contents are requested by different HTTP range requests in cellular and WLAN systems, and as shown in Fig. 4 the contents are combined in a handset that implements both cellular and WLAN interfaces.

This solution has already been implemented by some handset vendors. This is because this solution can be implemented through installed software in the handset, and there is no need to implement additional function at the contents server [4,5]. However, in using this approach it might be difficult to consider the quality of wireless networks in cellular and WLAN systems for high efficiency resource scheduling. In addition, the throughput performance is limited due to software processing.

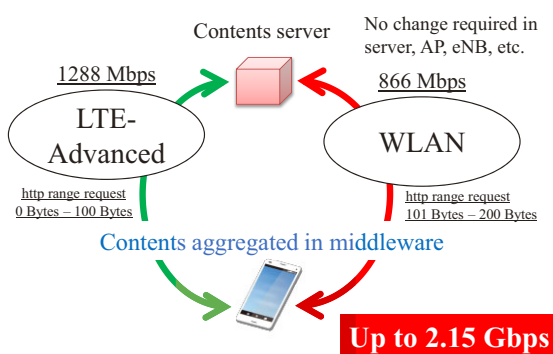


Fig. 4 Example: Aggregation in application layer.

3.2 Multi-path TCP (MPTCP)

MPTCP enables simultaneous use of several interfaces such as cellular and WLAN systems in the transport layer to maximize the throughput performance and stabilize the communication quality.

An Internet Engineering Task Force (IETF) working group has been formed to standardize a multipath protocol for the transport layer [6]. In order to allow a handset that supports MPTCP to enable the MPTCP capability with a server that does not support MPTCP, a network deployed MPTCP proxy in the middle of the network could be used to enable the MPTCP capability.

Currently, MPTCP has already been deployed by South Korean operators [7], and has already been implemented in the Siri application of iPhones and iPads from iOS7 [8].

3.3 LTE-WLAN Aggregation (LWA)

The 3rd Generation Partnership Project (3GPP) standardized LWA in 3GPP Release 13 to provide traffic aggregation of a single bearer over licensed bands that are being used by the LTE system and unlicensed bands that are being used by WLAN systems in the Packet Data Convergence Protocol (PDCP) layer.

This solution uses the 3GPP Evolved Universal Terrestrial Radio Access (E-UTRAN) as an anchor point where the WLAN is connected to the eNB. In LWA, the new Xw interface is terminated at the WLAN Termination (WT), which is a newly defined 3GPP logical node that can control the WLAN system [9].

LWA has been enhanced in 3GPP Release 14 as part of Enhanced LWA, which adds uplink aggregation, support for the 60-GHz band, and other enhancements [9].

3.4 Licensed-Assisted Access (LAA)

LAA is a technology that enables mobile operators that have access to a licensed band to complement it with an unlicensed band that is being used by WLAN systems. LAA aggregates the unlicensed band in the 5-GHz band as a dedicated Secondary Cell (SCell) with an existing licensed band as carrier aggregation, and performs simultaneous communication over both bands.

In 3GPP Release 13, the Listen-Before-Talk (LBT) procedure on an unlicensed band is defined as a mechanism by which equipment applies a Clear Channel Assessment (CCA) check before using the channel [10]. The CCA utilizes at least energy detection to determine the presence or absence of other signals on a channel in order to determine if a channel is occupied or clear, respectively.

LAA was standardized in 3GPP Release 13 for downlink aggregation, and was enhanced in 3GPP Release 14 as Enhanced LAA, which adds uplink aggregation. In order to perform scheduling in the wireless physical layer, in using this approach it might be easy to consider the quality of wireless networks in cellular and WLAN systems for high efficiency resource scheduling.

As of October 2018, LTE-LAA has already been deployed in parts of 20 cities by AT&T [11].

| | (1) Aggregation in Handset | (2) Multi-path TCP (MPTCP) | (3) LTE/Wi-Fi aggregation (LWA) | (4) Licensed Assisted Access using LTE (LAA) |
|----------|--|---|---|---|
| Overview | | | | |
| | <ul style="list-style-type: none"> Contents requested based on HTTP range request in LTE and Wi-Fi ✓ Ex. HTTP Req: <ul style="list-style-type: none"> LTE: 0-100 Bytes Wi-Fi: 101 Bytes – 200 Bytes | <ul style="list-style-type: none"> Contents requested based on MPTCP in LTE and Wi-Fi If contents server does not support MPTCP, proxy server is necessary in core NW | <ul style="list-style-type: none"> Contents separated into LTE and Wi-Fi inside eNB PDCP frame transmitted above IEEE802.11 | <ul style="list-style-type: none"> Contents separated inside eNB (PCell) Carrier aggregation using licensed and unlicensed bands |
| Status | <ul style="list-style-type: none"> Some handset vendors already implemented | <ul style="list-style-type: none"> South Korea operators (KT, SKT) already commercialized Supported from iOS7 | <ul style="list-style-type: none"> Standardized in 3GPP Rel. 13 Enhanced in 3GPP Rel. 14 | <ul style="list-style-type: none"> Standardized in 3GPP Rel. 13 Enhanced in 3GPP Rel. 14 AT&T already commercialized |

Fig. 5 Comparison of interworking technologies.

Figure 5 shows a comparison of interworking technologies for unlicensed and licensed bands. We assume that the throughput performance of LAA is improved compared to LWA, MPTCP, and aggregation in the handset. This is because the aggregation layer is the closest to the wireless physical layer in these methods. However, we assume that the implementation cost of aggregation in the handset is the lowest among these methods. This is because this approach can be implemented in software in order to place the aggregation layer closest to the application layer.

There are some interworking technologies such as MulteFire [12] for standalone LTE in an unlicensed band, LTE-U [13] for duty cycle-based fair access solution, and LTE WLAN Radio Level Integration with IPsec Tunnel (LWIP) for aggregation using IPsec tunneling. In addition, the IEEE 1932.1 [14] WG has been formed to standardize licensed and unlicensed frequency spectrum interoperability in wireless mobile networks. Finally, Table 1 gives a summary of interworking technologies as discussed in Section 3.

Table 1 Summary of interworking technologies.

| Combination of frequency bands | | |
|--------------------------------|--|------------------------------|
| | Utilize both unlicensed and licensed bands | Utilize unlicensed band only |
| Cellular | LAA LTE-U | MulteFire |
| WLAN | LWA LWIP MPTCP | IEEE802.11 |

4. RAT Selection in Heterogeneous Networks

4.1 Access Network Discovery & Selection Function (ANDSF)

The 3GPP has standardized ANDSF to assist handsets in terms of access network selection and traffic steering between cellular and WLAN systems [15]. The access network selection procedure specifies a prioritized list of selected WLANs. The traffic steering procedure specifies mobile operator-defined rules that determine how the handset should route traffic across cellular and WLAN systems. Figure 6 shows an overview of the ANDSF.

Regarding the distribution of the ANDSF policy, the handset connects to the ANDSF server deployed in the mobile operator network over the S14 interface using the Extensible Markup Language (XML) over the HTTPS protocol based on Open Mobile Alliance-Device Management (OMA-DM). The rules for the ANDSF policy have a number of validity conditions, e.g., a particular RAT may be valid or applicable only in a specific location, date, or time.

ANDSF servers and clients have already been developed by some software vendors, and have been commercially deployed by some mobile operators [16].

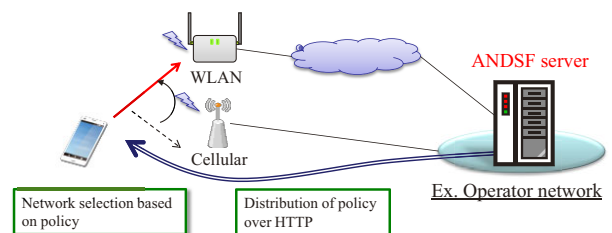


Fig. 6 Overview of ANDSF.

4.2 Hotspot 2.0

Hotspot 2.0 is a technical specification specified by the Wi-Fi Alliance (WFA) to make the process of connecting to hotspots easier and more secure with seamless authentication and encryption between handsets and APs. The WFA operates the Passpoint program to validate the Hotspot 2.0 technical specification through networks, chipsets, and handset vendors.

Figure 7 shows an overview of Hotspot 2.0. There are mainly two certification programs called Passpoint Release 1 and Release 2. Passpoint Release 1 supports capabilities for automatic WLAN network discovery, selection, and secure connection based on the Access Network Query Protocol (ANQP). Passpoint Release 2 supports capabilities for managing the user account and credentials such as user registration and for device provisioning managed by the Online Signup (OSU) server. There are many advantages to using Hotspot 2.0 as shown in Fig. 8.

In addition, the WFA specified the Wi-Fi Vantage certification program for WLAN operators to maintain WLAN network quality [17]. This program includes a number of certifications such as Passpoint and Wi-Fi certified ac. The Wireless Broadband Alliance (WBA) has developed certification programs such as the Next Generation Hotspot (NGH) and the Interoperability Compliance Program (ICP) to take advantage of Hotspot 2.0 and accelerate roaming services among WLAN operators.

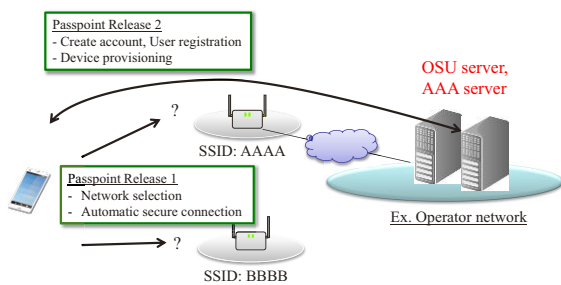


Fig. 7 Overview of Hotspot 2.0.

| | Regular public Wi-Fi | Hotspot 2.0 |
|----------------------|--|---|
| | <p>Hotspot 2.0 unsupported</p> <p>Requires manual setting of Wi-Fi</p> | <p>Hotspot 2.0 supported</p> <p>No manual setting of Wi-Fi required</p> |
| 1. AP selection | Manual (Need to select network) | Automatic (Provide optimized network) |
| 2. User registration | Unsecure user information | Secure user information (Using OSU server) |
| 3. Device settings | Manual (Need to input ID/Password) | Automatic (ID/Password provided on device) |
| 4. Connection | Leverage WPA2 Personal for authentication and encryption | Leverage WPA2 Enterprise for authentication and encryption |

Fig. 8 Advantages of Hotspot 2.0.

5. Interworking on CN Level

5.1 S2a Mobility Over GTP (SaMOG)

In Release 12, the 3GPP standardized an interworking architecture that enables handsets to improve integration with the EPC over a trusted WLAN architecture via SaMOG. Figure 9 shows an architecture for integrating a cellular system for interworking with a WLAN system [18,19].

The S2a interface is defined between the cellular system and trusted non-3GPP access network, which means a controlled WLAN system by a mobile operator such as the carrier Wi-Fi.

The S2b interface is defined between the cellular system and an untrusted non-3GPP access network, which means an uncontrolled WLAN system by a mobile operator such as a home Wi-Fi or public Wi-Fi. In order to ensure security, the handset must establish an IPsec tunnel towards a security gateway in an untrusted non-3GPP access network.

SaMOG enables seamless handover between the cellular system and WLAN system using the same IP address when moving in and out of the WLAN area.

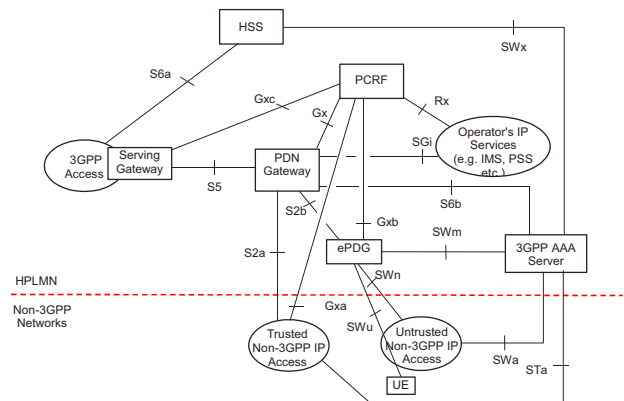


Fig. 9 Architecture for integration with cellular system.

5.2 Wi-Fi Calling

Wi-Fi calling is a technology that allows the use of a regular cellular phone number to make and receive voice/video calls and send text messages over a WLAN network using natively built-in dialer support in handsets.

There are several benefits when using Wi-Fi calling for users. For example, when cellular coverage is limited or unavailable, Wi-Fi calling makes it possible to expand and complement coverage using a WLAN network. Wi-Fi calling is currently deployed by US operators, e.g., AT&T, Verizon, T-Mobile, and Sprint.

Figure 10 shows a network architecture for Wi-Fi calling. The Virtual Private Network (VPN) client establishes the IPsec tunnel over an untrusted WLAN to the enhanced Packet Data Gateway (ePDG). In Wi-Fi calling, the WLAN system connects to the EPC assuming untrusted non-3GPP access using the S2b interface defined by the 3GPP.

An IPsec client must be installed on the handset side and the ePDG on the CN side must be developed for Wi-Fi calling deployment.

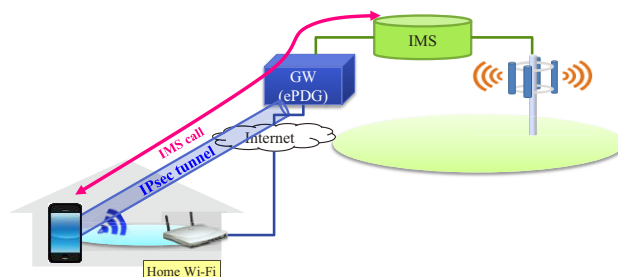


Fig. 10 Wi-Fi calling network architecture.

6. Conclusion

In this paper, we summarized current standardization trends on interworking between cellular and WLAN systems for achieving higher throughput and a higher level of user experience. To address better traffic offloading, standard organizations are working on developing standards for interworking using both licensed and unlicensed bands.

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This paper is based on “Technologies for Interworking Between Cellular and WLAN Systems” [20], by the same authors, which appeared in the IEICE Communications Society Magazine, Copyright(C)2017.

Expanding International Community – from All Sections Meeting –

Kohei Shiomoto
Vice President, IEICE Communications Society
Tokyo City University



1. International Sections

The International Sections Representatives are appointed at each major regional area (city) outside Japan. The sections representatives act as liaisons between IEICE and the members in their respective sections through (a) planning and implementing “lecture meeting or workshop” in each area, (b) publicizing activities of the IEICE on the occasions of such lecture meetings or workshops, and (c) attending an annual “All Sections Meeting” in Japan.

Currently twelve sections are approved: Bangkok, Beijing, Europe, Indonesia, Korea-Communication, Korea-Electronics, Korea-Information, Malaysia, Shanghai, Singapore, Taipei, and Vietnam. For more detail please refer to the following URL:

http://www.ieice.org/eng/activities/international_sections.html

2. All Sections Meeting

This year we had All Sections Meeting (ASM) on March 20 2019 at Waseda University collocated with the General Conference with the following agenda: (1) Opening remarks (Haruko Kawahigashi, Director of IEICE), (2) Message from the President (Makoto Ando, President of IEICE), (3) Current situation of IEICE (Hideo Kuwahara, Vice-President of IEICE), (4) Activities reports from International Sections (Representatives from International Sections), (5) Follow-up of the previous ASM (Kazue Sako, Vice President of IEICE), (6) Discussion, (7) Group Photograph, and (8) Closing remarks (Yukitoshi Sanada, Director of IEICE). Please see a group photo in Figure 1.



Fig. 1 All Sections Meeting Group Photo.

3. Activities Reports from International Sections

Annual activity reports from the International Sections (Bangkok, Beijing, Europe, Indonesia, Korea-Information, Malaysia, Shanghai, Singapore, Taipei, and Vietnam) are received. Representatives from International Sections attended the All Sections Meeting to report the status of the sections, activities & sponsored lectures, membership development, and requests and action items to the IEICE.

They promote organizing international conferences in sections and submitting papers to the IEICE Transactions. They promote to facilitate collaboration between members in sections. Collaboration across multiple universities and companies are on-going in the International Sections.

They promote education activities in sections. They provide various educational program including a course on writing quality paper, teacher training program, etc. They host sponsored-lecture tour. They promote educational program in senior high school.

They promote ICT technical activities in the areas of ICT smart society, AI, IoT, Optical&Wireless, cyber security, cryptography and information security, robotics automation, 5G, AI data science, LSI, cognitive networks and energy harvesting, smart cities, environment pollution monitoring, 3D systems and applications, etc.

For details of the 2017 reports from International Sections, please refer to the following archives (the 2018 edition will appear):

http://www.ieice.org/eng/activities/international_sections/2017report.html

4. What is the Next Step?

A lot of impressive activities are underway in the International Sections. It is important for all members of the IEICE Communications Society (IEICE-CS) to understand the details of those activities to facilitate international collaboration in research and education. We cordially invite the members in the International Sections to contribute articles to the Global Newsletter to communicate with all members of the IEICE-CS.

For the submission guideline for IEICE-CS GLOBAL NEWSLETTER, please refer to the following URL:

http://www.ieice.org/cs/pub/global_howto.html

IEICE Fellow Conferred on 10 IEICE-CS Members

Yohei Koga
 Director of Planning and Member Activities,
 IEICE Communications Society



1. Introduction

The title of IEICE Fellow is conferred on IEICE members who are recognized as having made a significant contribution to the institute in academic, technical or related fields. In 2018, IEICE Fellow is conferred on 31 IEICE members including 10 from Communications Society (CS) who are listed in Table 1.

2. The Conferment Ceremony

On 21st March during IEICE General Conference 2019 in Tokyo, the 19th Fellow Conferment Ceremony was held (Fig.1). In the Ceremony, Prof. Makoto Ando, the president of IEICE handed a fellow badge and a certification plate to each new Fellow.

3. Next Fellow Conferment Ceremony

The next ceremony is going to be held in Hiroshima, March, 2020.

| | |
|-------------------|---|
| Yoshiaki KIRIHA | Research and Institute Activities on Networking Architecture and Its Operations |
| Fujio KUROKAWA | A Study on Switching Power Supply Control for Electronics, Information and Communications System |
| Kouichi GENDA | Research of High-speed Packet Switching Systems and Network Resource Optimization Technologies |
| Kei SAKAGUCHI | Research on Millimeter-wave Heterogeneous Cellular Networks |
| Toshinori SUZUKI | Research and Development of Interference Suppression Technologies to Enhance Spectrum Efficiency for Mobile Communication Systems |
| Akira HIRANO | Research and Development of High-speed Optical Transmission Link Design |
| Atsushi HIRAMATSU | Research and Development of Neural-Network-based Adaptive Traffic Control and Broadband Optical Switching System |
| Takeo FUJII | For Contributions to Research on Cognitive Radio for Recognition of Wireless Environment and Spectrum Sharing |
| Hiroyoshi YAMADA | Application of Array Signal Processing to Antenna and Remote Sensing |

Table 1 New IEICE Fellows from Communications Society.

| Name | Contribution contents |
|----------------|--|
| Shoji KASAHARA | Applied Probability Based Study on Performance Modeling of Information Systems |



Fig. 1 Photo in the Fellow Conferment Ceremony with Prof. M. Ando, President of IEICE and Prof. S. Urushidani, President of IEICE Communications Society.

Report on the IEICE Welcome Party

Yohei Koga, Yoshitaka Enomoto, Motoharu Matsuura,
Yoshiteru Takeshima, Takashi Sugihara, and Akira Yamada
IEICE-CS Directors, Planning and Member Activities



1. About Welcome Party

Welcome Party is one of IEICE-CS major activities held at every IEICE General Conference. The objective of having this party is to provide young engineers especially students with a good opportunity to meet and talk friendly with experienced researchers and engineers in various organizations.

It had been held at the IEICE Society Conferences in September from 2008 to 2011. However, considering school year in Japan (starting in April), in 2013, we moved it at General Conferences in March so that it can help students to think about their possible engineering carrier just before starting their new school year.

2. Welcome Party at 2019 General Conference

The Welcome Party was held on 19th March 2019, the first day of IEICE General Conference at Waseda University in Tokyo, Japan.

We held it with Engineering Sciences Society (ESS), NOLTA Society (NLS), Information and Systems Society (ISS), and Electronics Society (ES). We had 329 participants including 90 students. This was the largest number of participants in the past. Many foreign students also attended this party.



Fig. 1 Presentation from CS President, Prof. Urushidani.



Fig. 2 Presentation from Prof. Shiokawa and Prof. Inamori.



Fig. 3 Students of IEICE Student Activity Committee, Tokyo Section.

The first part of the party began with a welcome message from IEICE president, Prof. Makoto Ando. CS President, Prof. Shigeo Urushidani introduced of Communication Society (Fig. 1). Editor-in-Chief, Transactions on Communications (JPN edition), Prof. Shigeki Shiokawa called for a paper submission and Prof. Mamiko Inamori reported on the activity of IEICE-CS Technical Committees (Fig. 2). Student Activity Committee, Tokyo section presented their activity (Fig. 3).

After all speeches, all participants enjoyed food and drinks (Fig. 4) as well as free talk and discussion at the poster panels (Fig. 5).



Fig. 4 Enjoying food and drinks in floors.



Fig. 5 Talk and discussion at poster panels.

The 38 poster panels were prepared by companies, national institutes, Societies, Technical Committees, Membership and Service Committee, and Student Activity Committee, Tokyo Section. Of course, Communication Society exhibited the poster panel (Fig. 6). The poster panels from Societies and Technical Committees are shown follows.

**Engineering Sciences Society (ESS)/
NOLTA Society (NLS)**

- Acoustics and Ultrasonics Sub-Society
- Fundamentals Review
- NOLTA Society

Communications Society (CS)

- Communication Society
- Optical Fiber Technology (OFT)
- Sensor Network and Mobile Intelligence (SeMI)
- Information and Communication Management (ICM)
- Network Systems (NS)
- Communication Systems (CS)
- Optical Communication Systems (OCS)
- Energy Engineering (EE)
- Editorial Committee of the Transactions on Communications (JPN edition)

Electronics Society (ES)

- Electronics Society
- Magnetic Recording & Information Storage (MRIS)

Information and Systems Society (ISS)

- Life Intelligence and Office Information Systems (LOIS)

Membership and Service Committee

- Platinum club

Student Activity Committee

- Tokyo Section

Finally, IEICE President-Elect, Prof. Masataka Nakazawa gave closing address and closed the Welcome Party.



Fig. 6 Communication Society (CS) poster panel.

3. Conclusion and Acknowledgements

The Welcome Party was successfully held with over 300 participants. The next Welcome Party will be held in March 2020 at the IEICE General Conference at Hiroshima University in Hiroshima, Japan. We expect many people to participate in next Welcome Party.

We would like to thank all participants, especially from companies, national institutes, Societies, Technical Committees, Membership and Service Committee, and Student Activity Committee, Tokyo Section that gave speeches and/or prepared poster panels. We also thank Prof. Nozomu Togawa and Prof. Shinichi Oishi of Waseda University for supporting Welcome Party.

Report on 35th NS/IN Research Workshop

Seiichiro Mochida[†], Kazuaki Ueda^{††}, Shingo Kashima[†],
 Nobutaka Matsumoto^{††}, Kenji Ishida^{†††}, Takuji Kishida^{††††},
 Kenichi Kashibuchi[†], Yosuke Tanigawa^{†††††}, Kenichi Matsui[†],
 Akihiro Nakao^{††††††}, and Yoshikatsu Okazaki[†]



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^{††††}NTT Advanced Technology Corp., ^{†††††}Osaka Pref. Univ., ^{††††††}The Univ. of Tokyo

1. Introduction

The 35th NS/IN Research Workshop took place in Okinawa, Japan, on March 4, 2019. The workshop was sponsored by the IEICE Communications Society, the technical committee on Network Systems (NS) and Information Networks (IN) of the IEICE Communications Society. The workshop was also supported by the Study Group of “Thinking Network”, led by Prof. Akihiro Nakao, the Univ. of Tokyo. The workshop’s aim was to discuss the technical direction and research topics about network technologies accelerated by Artificial Intelligence (AI) and Big Data. A record showing of 187 participants testified to the success of the workshop (Fig. 1). The overall theme was “The era of new ICT infrastructure derived by Network, Data, and AI”. The workshop featured one invited talk session and one panel session.



Fig. 1 Audience-filled hall.

2. Invited Speakers

The general chair of the workshop, Mr. Yoshikatsu Okazaki (NTT Corp.), invited 6 distinguished experts in AI, Big Data, and network (Fig. 2). These speakers addressed the latest researches, issues for practical use, policies regarding network technologies accelerated by AI and Big Data. Figures 3 to 8 show photographs of the speakers.

- Mr. Shinichiro Takahashi (Ministry of Internal Affairs and Communications) presented government’s expectations for utilization of AI technologies for advancement of communication infrastructure.



Fig. 3 Invited speaker: Mr. Takahashi.

- Mr. Hironobu Kouno (NTT docomo, Inc.) presented vision and efforts of innovations derived by AI and Big Data from the viewpoint of a service provider.



Fig. 2 Opening speech of the workshop Mr. Okazaki.



Fig. 4 Invited speaker: Mr. Kouno.

- Mr. Masanori Miyazawa (KDDI Corp.) presented the research and development activities about utilizing AI in operation and management of communication infrastructure and introduced the trend of related standardization activities.



Fig. 5 Invited speaker: Mr. Miyazawa.

- Dr. Takaya Miyazawa (National Institute of Information and Communications Technology) introduced network resource control technologies advanced by AI in the era of network virtualization.



Fig. 6 Invited speaker: Dr. Miyazawa.

- Mr. Taro Ogawa (Hitachi, Ltd.) introduced the activities of utilizing AI technologies for network provisioning automation reflecting high level service requirements.



Fig. 7 Invited speaker: Mr. Ogawa.

- Dr. Hideyuki Shimonishi (NEC Corp.) presented the system for flexible network design, provisioning and optimization derived by AI technologies.



Fig. 8 Invited speaker: Dr. Shimonishi.

3. Panel Session

After the invited talks, the panel session was held (Fig. 9). The session was moderated by the general chair, Mr. Okazaki and Prof. Nakao. All of the above invited speakers were invited as panelists. In this session, the future visions and the challenges of application and deployment of AI and Big Data technologies on the new ICT infrastructure were discussed.



Fig. 9 Panel discussion.

4. Conclusion

This year’s workshop invited key persons to speak on the application and expansion of network technologies innovated by AI and Big Data. The audience filled the hall as shown in Fig. 1. We believe that the presentations given by the invited speakers and the subsequent panel discussion provided fruitful insight into research and development.

The technical committee on IN and NS plans to hold next year’s workshop in March 2020. Finally, we would like to express our gratitude to the workshop committee members, particularly to Yousuke Yoshiura (NEC Corp.), Yuta Kobayashi (TOSHIBA Corp.), Satoru Nishimaki (FUJITSU LABORATORIES Ltd.), Daisuke Mashimo, Dai Akashi (Hitachi, Ltd.), Takeshi Suehiro (Mitsubishi Electric Corp.), Hirofumi Noguchi, Shiro Mizuno, Shinya Kawano, and Syunsuke Honma (NTT Corp.) who made this workshop possible.

Annual Report of Technical Committee on Information Networks (IN)

Kazuaki Ueda[†], Nobutaka Matsumoto[†], Seiichiro Mochida^{††}
and Shingo Kashima^{††}

[†]KDDI Research, Inc., ^{††}NTT Corporation



1. Introduction

The technical committee on Information Networks (IN) is one of technical committees of the Communications Society of the IEICE [1]. The IN addresses a broad spectrum of issues associated with information networks and provides a forum for researchers and engineers to discuss various research and development topics. The chairman is Mr. Takuji Kishida of NTT Advanced Technology Corporation. The vice chairman is Prof. Kenji Ishida of Hiroshima City University. The secretaries are Mr. Nobutaka Matsumoto, Mr. Kazuaki Ueda of KDDI Research, Inc. and Mr. Shingo Kashima, Mr. Seiichiro Mochida of NTT Corporation. This document presents the IN’s annual report for activities from April 2018 to March 2019.

2. IN Activities

The IN is one of the most active technical committees of the IEICE Communications Society. The IN held eighteen days technical meetings from April 2018 to March 2019, some of which are co-organized with another institute (IEE) or other technical committees in IEICE (RCS, NV, CCS, NetSci, ASN, CS, NS, ICTSSL, CNR, MoNA, IA, and ICN). Many researchers participated in the meetings and reported their latest technical research and development results. The venues and the main topics of each meeting are shown in Table 1.

Each technical report is submitted in a paper and published as a Technical Report of the IEICE. Authors of selected papers have received the 25th Information Networks Research Awards, and the young first authors (32 years old or less) of selected papers have received the 4th Young Researcher Awards of Information Networks in March 2019 (Fig. 1 and 2).

This year, the following three excellent papers were selected from 107 papers for the 25th Information Networks Research Awards.

- Yasuhiro Ikeda, Keisuke Ishibashi, Yusuke Nakano, Keishiro Watanabe, and Ryoichi Kawahara, “Retraining anomaly detection model using Autoencoder.”
- Tatsuya Yoshimoto, Hiroshi Yoshida, Takaharu Innami, Kazunori Ohashi, Hiroshi Huruya, and Naoki Mori, “Improving Efficiency of Remote Construction by Adaptive Remote Control.”

- Tomoki Ito, Misao Kataoka, Hirofumi Noguchi, Yoji Yamato, and Tsutomu Murase, “Network Architecture with Categorizing Metadata by Locality and Lifetime for IoT Database Management.”



(Center) Y. Ikeda.

(Center) H. Yoshida, and T. Yoshimoto.



(Center) T. Ito, and T. Murase.

Fig. 1 Winners of IN Research Award in 2018

(Left) T. Kishida (Chairman),
(Right) K. Ishida (Vice chairman).

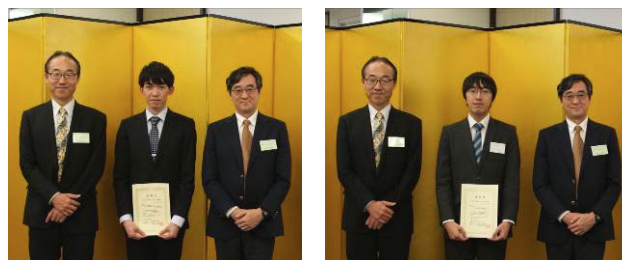


Fig. 2 Winners of Young Researcher Award of IN in 2018.

(Center in the left picture) T. Ito, (Center in the right picture) S. Yasuda, (Left) T. Kishida (Chairman), (Right) K. Ishida (Vice chairman).

In addition, two young authors won the 4th Young Researcher Awards of Information Networks. The selected papers are as follows.

- Tomoki Ito, Hirofumi Noguchi, Yoji Yamato, and Tsutomu Murase, “Offload Control Method for

Meta Data Management considering Short Lifetime and Locality of IoT Data.”

- Shinya Yasuda, Yuichi Ohsita, Taichi Kumagai, Hiroshi Yoshida, Kozo Satoda, and Masayuki Murata, “Experimental Realization of Wireless Remote Control of a Robot Using Environment Sensors.”

From this year, IN started to commend Distinguished Contributions Award. The awardees are Prof. Takuo Suganuma and Prof. Norio Shiratori with their great support on workshops at Tohoku University for long years, co-awarded by the technical committee on Network Systems (NS) and IN (Fig. 3).

3. Reference

- [1] Technical Committee on Information Networks
<http://www.ieice.org/cs/in/eng/>



Fig. 3 Awardee of Distinguished Contributions Award of NS and IN in 2018.

(From left to right) T. Kishida (Chairman of IN), Y. Okazaki (Chairman of NS), S. Izumi (on behalf of the awardees), and K. Ishida (Vice chairman of IN).

Table 1 Technical meeting schedule.

| Date | Venue | Main topics | Num. of reports | Num. of participants each day |
|-----------------|---|--|-----------------|-------------------------------|
| May 10-11 2018 | Keio Univ. (Yokohama) | Ad-Hoc/Sensor Networks/MANET, Mobile Networks, M2M/IoT Communications, Wi-Fi, IEEE802.15 (ZigBee) and others | 4 | 58, 46 |
| Jun. 14-15 | Toyama Prefecture Education and Culture Center (Toyama) | Home Networking, Green ICT, Smart Grid, Energy Saving, Anti-Troubles/BCP, Data Analyzing/Processing Platform, Big Data and others | 4 | 51, 41 |
| Aug. 1-2 | Kitayuzawa Mori-no-Soraniwa (Date) | Network Science, NGN/NwGN/Future Networks, Cloud/SDN/Virtualization, Contents Distribution, etc. | 8 | 38, 38 |
| Sep. 6-7 | Research Institute of Electrical Communication, Tohoku Univ. (Sendai) | Session Management (SIP/IMS), Interoperability/Standardization, NGN/NwGN/Future Networks, Cloud/Data Center Networks, SDN (OpenFlow, etc.)/NFV, IPv6, Machine Learning, etc. | 12 | 77, 59 |
| Oct. 18-19 | Takamatsu Chamber of Commerce and Industry (Takamatsu) | Network Reliability, Security/Privacy, Authentication/Identification Management, Web Services/SOA/ROA, SNS, Anti-Cyber Attack, Anti-Disaster/Failure, Resilience, etc. | 3 | 49, 56 |
| Nov. 15-16 | Karatsu Civic Exchange Plaza (Karatsu) | M2M, IoT, Self Organization, Autonomous Distributed Control, Car Area Network, Car-Car network, Car-Road Network, ITS, Big Data Analysis, Cyber Physical System (CPS), Mobile Virtualization, Mobile Application, Cloud Robotics Service, etc. | 2 | 68, 45 |
| Dec. 13-14 | Hiroshima Univ. (Hiroshima) | Performance Analysis and Simulation, Robustness, Traffic and Throughput Measurement, Quality of Service (QoS) Control, Congestion Control, Overlay Network/P2P, IPv6, Multicast, Routing, DDoS, etc. | 13 | 44, 43 |
| Jan. 21-22 2019 | WINC AICHI (Nagoya) | Contents Distribution, Social Networking Services, Data Analytics and Processing Platform, Big Data, etc. | 12 | 26, 17 |
| Mar. 4-5 | Okinawa Convention Center (Ginowan) | General Topics and Workshop | 73 | 179, 242 |

Annual Report of Technical Committee on Information and Communication Management (ICM)

Haruo Oishi (NTT), ICM Secretary
 Masaharu Hattori (KDDI Research), ICM Secretary
 Zhu Yuncheng (Hitachi), ICM Assistant



1. Introduction

The technical committee on Information and Communication Management (ICM) is a technical committee of the Communications Society of the IEICE [1]. This article briefly reports the last year’s activities of ICM, and introduces the upcoming English session.

2. Activities

The ICM held two-day technical meetings 5 times from May 2018 to March 2019. The venues and the main topics of each meeting are shown in Table 1. In addition, 4 special sessions were sponsored by ICM as shown in Table 2.

Of particular note, in the English session in 2018 IEICE Society Conference at Kanazawa University, the number of papers reached 30 in total. This session was hosted and presented entirely in English. The purpose of this session is to promote the globalization of IEICE by providing the participants staying in Japan or joining from overseas with more opportunities for presentations and discussions in English.

Table 1. ICM Technical Meetings in 2018.

| No | Date | Venue | Main Topics | Joint |
|----|------------|---|--|-----------------------|
| 1 | May 17-18 | Toyama Chamber of Commerce and Industry (Toyama) | Service Management, Operation/Administration, Security Management, etc. | IPSI-IOT IPSI-CSEC |
| 2 | Jul. 5-6 | Aomori Tourist Information Center, ASPAM (Aomori) | Management Function, Management Theory, etc. | - |
| 3 | Nov. 15-16 | Kanazawa Institute of Technology (Kanazawa) | Network Quality, Network Management and Measurement, Network Virtualization | CQ NS NV |
| 4 | Jan. 24-25 | Kagoshima Prefectural Culture Center (Kagoshima) | Applications and Research Opportunities of Life Log, Office Information System and Business Management | LOIS |
| 5 | Mar. 7-8 | EEF Information Plaza (Kumejima) | Element Management, Management Functionalities, Operations and Management Technologies, etc. | - |

Table 2. Special Sessions by ICM in 2018.

| Title | Date | Remarks | Theme |
|--|----------|--|---|
| English Session | Sept. 11 | As one of the symposium sessions in IEICE Society Conference | Network and Service Design, Control and Management |
| ICM 20 th Anniversary Symposium | Oct. 12 | A Symposium the 20 th Anniversary of Technical Committee on ICM and TM (Telecommunication Management) | History and Future prospects of ICM at 20 th Anniversary |
| ICM Workshop | Mar. 7 | Held in conjunction with ICM Technical Committee Meeting | How reliable is the fully automated IT that AI leads? |



Fig. 1 The panel session at Kumejima.

ICM 20th Anniversary Symposium was held in Tokyo. In the symposium, four invited speakers presented and discussed the history and future prospects of ICM.

Furthermore, ICM Workshop 2019 was held in Kumejima (Okinawa pref.). In the panel session, five invited speakers presented and discussed the theme, to the obvious interest of the approximately 59 attendees. A banquet was held to promote social intercourse, and at the same time, to celebrate the ICM annual award winners in 2018.

3. Awards and Upcoming Event

The winners are shown in Table 3. The English Session Encouragement Award is given to the author of the best papers of the English session every year. ICM committee is now calling for submission for the upcoming English session. The deadline is early in July.

4. Reference

[1] ICM, <http://www.ieice.org/~icm/eng/>

Table 3. Winners of ICM Awards in 2018.

| Award | Winners | Title |
|-------------------------------------|---|--|
| Research Award | Tatsuya Sato | Smart-Contract-based System Operations Execution Method for Permissioned Blockchain Systems |
| | Takayuki Nagai | Investigation and Evaluation of Traceability Management System Using Blockchain |
| | Yuji Saitoh, Tetsuya Uchiumi, Yukihiro Watanabe | Trend analysis method of operational data based on component decomposition using Non-negative Matrix Factorization |
| | Hiroshi Katada, Takumi Miyoshi | Adaptive Ad Hoc Routing Inspired by True Slime Mold |
| English Session Encouragement Award | Ping Du | Towards Application Specific RAN Slicing Through In-Network Deep Learning |
| | Kazuyuki Yamashita | A Study on Robustness of Complex Networks against Non-Adversely Node Removals |

Report on NS English Session at 2019 IEICE General Conference –BS-4 Composite Information Communication Technologies and Applications for Future Network Systems–



Taku Yamazaki*, Yosuke Tanigawa**, Kenichi Kashibuchi***, Kenichi Matsui***, Akihiro Nakao****, and Yoshikatsu Okazaki****
 *Shibaura Inst. of Tech., **Osaka Pref. Univ.,
 NTT Corp., *The Univ. of Tokyo

1. Introduction

The 2019 IEICE General Conference was held at Waseda University in Tokyo, Japan, on March 19-22, 2019. In the general conference, the IEICE Technical Committee on Network Systems (NS) [1] organized the full English symposium session entitled “Composite Information Communication Technologies and Applications for Future Network Systems” as one of the seven symposium sessions hosted by IEICE Communications Society.

The technical committee on NS has been organizing the full English session since 2005 in order to promote the globalization of IEICE. The session makes a good opportunity for the attendees in Japan or from overseas to make presentations and discuss in English.

2. Topics and Statistics

In this year, 44 papers were presented in the English session, which enabled to provide the session during whole of four-days conference period.

The papers were classified into 13 sub-sessions based on the research topics. They include various recent research topics such as future network architectures, network virtualization technologies, wired/wireless networking, machine learning, and so on.

Table 1 and Fig. 1 show the recent themes in the past three years and the transition of the number of submissions from 2005 to 2019 of the English session. Although the number of submissions tends to decrease in recent years, that of this year was increased. We consider that the continuous encouragement activities for academic organizations play an important role since many academic organizations in Japan have become globalized to put an enormous effort into globalization in recent years. Therefore, we also expect that the submissions from academic organizations in Japan will further increase from now on.

Figure 2 is a photograph of the English session. Many attendees participated to the session and they discussed the presentations every day. The discussions between speakers and attendees were very active and they exchanged opinions each other in detail from various perspectives. They frequently continued discussion even during the break periods.

Table 1 NS English Session in the Past Three Years.

| Year | Theme |
|------|---|
| 2017 | Advanced Technologies in Communication, Networking, and its Innovative Application for Future Information Network Society |
| 2018 | Innovative Information Communication Technologies for Future Network System Supporting Information-oriented Industry |
| 2019 | Composite Information Communication Technologies and Applications for Future Network Systems |

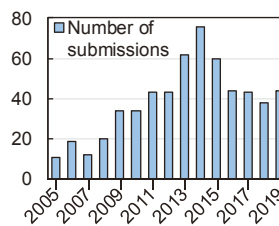


Fig. 1 Transition of the number of submissions.



Fig. 2 Photograph of 2019 NS English Session.

3. Conclusion

NS English Session was very successful thanks to many excellent papers and very active discussions. We believe that this activity was fruitful for all participants and contributed to the globalization of IEICE.

It is one of our hopes to keep to provide the English session during whole of the conference period, but this becomes difficult if the number of submissions decreases. Hence, we will continue to encourage submissions particularly for Japanese and overseas students as a first step to international conferences.

In addition, NS awards a prize to the selected papers in each year to encourage their continuous activities [2].

Finally, we would like to give special thanks to Prof. Yoshiaki Tanaka, for great contributions to the devoted invitation activities utilizing his nation-wide academic authority and human relations.

4. References

[1] IEICE Technical Committee on Network Systems web site, <http://www.ieice.org/~ns/eng/>.
 [2] Y. Okazaki, et al., “Report on the 2018 NS English Session Awards and Award Ceremony,” *IEICE Global NewsLetter*, vol. 43, no. 1, pp. 14–15, March 2019.

Report on Japan-Africa Conference on Electronics, Communications, and Computations 2018 (JAC-ECC2018)

Osamu Muta
Kyushu University



1. Introduction

The Japan-Africa Conference on Electronics, Communications, and Computations 2018 (JAC-ECC2018) was held during December 16-18, 2018 at Egypt-Japan University of Science and Technology (E-JUST), Alexandria, Egypt. Organized through international collaboration between Kyushu University in Japan and E-JUST in Egypt [1], the conference was also technically co-sponsored by the Technical Committee of Communication Systems in IEICE Communications Society [2] (IEICE-CS), and IEEE Egypt Section [3].

As an international conference addressing the fields of electronics, communications, and computer engineering, JAC-ECC stands out among other conferences in the engineering field, offering its unique value. The conference features formulation of academic and human network among international researchers from academia and industry in Japan, the Middle East, and Sub-Saharan Africa. This year, more than 200 participants, including 12 from Japan, attended the conference. Other participants from Egypt, Libya, Pakistan, Canada, the United Arab Emirates and South Africa also took part.

This report briefly provides historical background and an overview of JAC-ECC2018 while introducing its special invited sessions related to information communications technologies (ICT) in Japan, co-organized by IEICE-CS and JAC-ECC committee. For this IEICE special session, the Technical Committee of Radio Communication Systems of the IEICE Communications Society also cooperated.

2. JAC-ECC History and Overview

In 2012, Kyushu University and E-JUST co-organized an international conference called the international Japan-Egypt Conference on Electronics, Communications and Computers (JEC-ECC). Since then, it has been held four times: once in Japan (Fukuoka in 2015) and the rest in Egypt (2012, 2013, and 2016). Most articles presented at JEC-ECC have been published in the IEEE Xplore online library of the Institute of Electrical and Electronics Engineers (IEEE).

As an advanced edition of JEC-ECC, a renewed international conference, JAC-ECC was organized in 2017. Unlike the previous four conferences, JAC-ECC (with “A” for Africa in place of “E” for Egypt) was organized as a platform for extending collaboration



Fig. 1 Conference venue (E-JUST campus).



Fig. 2 Opening session.

among international researchers in Japan and Middle-Eastern/African countries. The second edition of JAC-ECC (i.e., the Sixth Edition Conference in total) was held at E-JUST campus in 2018 (Fig. 1).

JAC-ECC2018 includes four main technical tracks:

- Communications
- Electronics, Microwave and Antennas
- Signal Processing
- Computing

The JAC-ECC technical program committee (TPC) peer-reviewed all submitted articles. Contributing to the peer-review process, the TPC was supported by experts in the fields of electronics, communications, and computers from Australia, Canada, China, Egypt, Japan, India, Kuwait, Malaysia, New Zealand, South Africa, South Korea, Sweden, and the United States. They collectively conducted a total of 314 reviews.

In JAC-ECC2018, the technical program committee received 92 submissions from Egypt, Japan, Canada, France, Belgium, Sweden, Saudi Arabia, and Nigeria. After peer-review by international TPC members, among the submissions, 45 papers were accepted with a 49% acceptance ratio. The accepted papers were presented in oral sessions and were published on IEEE Xplore similarly to other international conferences in the same research field.



Fig. 3 (a) Poster session (b) Oral session.



Fig. 4 Organizing committee members and participants.

In the technical program of JAC-ECC, we had 11 regular technical sessions and 3 IEICE invited sessions. Furthermore, we had keynote sessions for seven invited speakers, all of whom were leading researchers in engineering fields in Egypt. Figure 2 presents a photograph of the JAC-ECC opening ceremony held on the first day of the conference. Figures 3(a) and 3(b) respectively show oral presentations and poster presentations in technical sessions of the conference. Figure 4 depicts our organizing committee members, IEICE invited presenters, and conference participants.

3. IEICE Special Invited Session

In JAC-ECC2018, we organized special invited sessions on ICT technologies in Japan in cooperation with Technical Committee of Communication Systems and that of Radio Communication Systems in IEICE Communications Society. To this session, we invited three outstanding Japanese researchers who are members of IEICE and experts in ICT. Impressive invited talks presented topics such as fifth-generation (5G) wireless access and related technologies, internet-of-things (IoT) technologies, and information centric networking (ICN) [4-6] as well as a brief introduction of IEICE activities. Each presentation had 35 min for a presentation and 5 min for questions. Invited presenters for the special session were the following (Fig. 5).

- Prof. Hidenori Nakazato (Waseda University)
- Prof. Fumiaki Maehara (Waseda University)
- Prof. Tetsuya Yokotani (Kanazawa Inst. of Tech.)

During the conference, we had an IEICE booth for advertising our activities, as depicted in Fig. 6. In this booth, we provided some brochures as handouts for participants, such as “IEICE Oversea Membership Application Form” and “Introduction to IEICE”.



(a) Prof. Maehara (b) Prof. Nakazato (c) Prof. Yokotani
Fig. 5 Presenters in IEICE special invited session.



Fig. 6 IEICE booth and participants.

We received many queries from participants related to IEICE activities and ways to join IEICE. We also discussed possible future activities with JAC-ECC committee members for cooperation with IEICE Communications Society.

4. Conclusion

JAC-ECC 2018 was the sixth edition of the conference including the past four editions of JEC-ECC organized by international collaboration of Kyushu University and E-JUST in cooperation with IEICE Communications Society. Details and venues of the next edition of the conference, JAC-ECC, have not been determined yet. For additional information, please visit our conference site [1]. We welcome your submission to the conference. Finally, we would like to express our gratitude to all speakers, participants, and committee members for their contributions to the conference.

5. References

- [1] JAC-ECC2018 website:
<https://sites.google.com/a/ejust.kyushu-u.ac.jp/jac-ecc-2018/>
- [2] IEICE Communications Society website:
<http://www.ieice.org/cs/>
- [3] IEEE Egypt Section website:
<http://www.ieee.org/eg/>
- [4] H. Nakazato, “IoT Networks and Their Federation,” Invited presentation at JAC-ECC2018, Dec. 2018.
- [5] F. Maehara, “R&D activities for 5G in IEICE technical committee on radio communication systems in FY2017,” Invited presentation at JAC-ECC2018, Dec. 2018.
- [6] T. Yokotani, “Networking Technologies for IoT,” Invited tutorial at JAC-ECC2018, Dec. 2018.

Report on 2018 Asia-Pacific Microwave Conference (APMC 2018)

Masataka Ohira[†], Hirokazu Kamoda^{††}, and Toshio Ishizaki^{†††}

General Affair Committee Chair[†], Publicity Committee Chair^{††}, General Chair of APMC 2018 Steering Committee^{†††}

Saitama University[†], Japan Broadcasting Corporation^{††}, Ryukoku University^{†††}



1. Introduction

The 2018 Asia-Pacific Microwave Conference (APMC 2018) [1] was successfully held at Kyoto International Conference Center (ICC Kyoto), Kyoto, Japan, on November 6-9, 2018. The series of APMC began in 1986 and the APMC 2018 was the commemorative 30th conference. The APMC 2018 was organized and sponsored by IEICE Electronics Society. It was technically sponsored by IEEE MTT-S and AP-S, EuMA, URSI, and many other organizations including Technical Committees in IEICE Communication Society, and financially supported by many corporations and subsidizing institutions. Also, it was supported by the Ministry of Internal Affairs and Communications. This report briefly summarizes the technical and social activities in APMC 2018.

2. Overview of APMC 2018

After the start in 1986, the APMC is the largest microwave event of its kind in the Asia-Pacific region. It provides a broad forum for participants from both academia and industries to exchange information, share research results, and discuss collaborations in the fields of not only microwave but also millimeter wave and even to the far infrared and optical waves.

The key concept of APMC 2018 is “Harmonious World Connected by Microwaves.” It expresses our deep wishes that not only countries, but also various academic fields and their applications are connected by microwave technology, to sympathize and harmonize each other for creating happiness and prosperity of human society.

The APMC 2018 offered technical sessions, interactive forums, opening and closing sessions, award ceremony, workshops, short courses, student and young engineer design competitions, exhibition, university poster exhibition, and social programs including events on young professionals and women in engineering/women in microwaves, welcome reception, banquet, and flower arrangement workshop.

The APMC 2018 attracted 864 paper submissions from 47 countries all over the world, which is the record in the history of APMCs held in Japan, and has

accepted 541 papers. 982 peoples have registered from 43 countries to attend the APMC 2018.

3. Committee Members

The APMC 2018 could not succeed without hard works of committee members (Fig. 1) as volunteers. Prof. Ikuo Awai, Ryutech, served as the Chair of APMC 2018 Organizing Committee, which consisted of 39 members from industrial and academic organizations. The APMC 2018 Steering Committee consisting of 9 committees with 55 members was led by the General Chair, Prof. Toshio Ishizaki, Ryukoku University. The paper submission and review, the



(a)

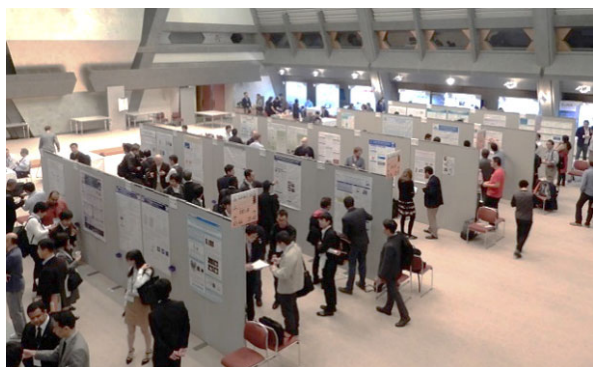


(b)

Fig. 1 (a) APMC 2018 panel with key concept and design at the entrance of ICC Kyoto. (b) APMC 2018 Steering Committee members at ICC Kyoto.



(a)



(b)

Fig. 2 (a) Technical session. (b) Interactive Forum and Exhibition.

technical program, and the related technical events were organized by the Technical Program Committee (TPC) led by the TPC Chair, Prof. Atsushi Sanada, Osaka University.

4. Workshops/Short Courses and Technical Sessions

The APMC 2018 offered 71 high-quality technical sessions in 7 parallel tracks, focusing on topical areas of microwave science and technologies including 5G, wireless power transfer (WPT), millimeter-waves, terahertz waves, and microwave heating and chemistry.

On the first day (Nov. 6), the APMC 2018 offered 9 cutting-edge workshops and 4 intensive short courses in the focused areas. Following three days (Nov. 7-9) provided 12 special sessions, 54 oral sessions, and 5 interactive forums including 9 invited talks by distinguished speakers in the field. The photographs of a technical session and interactive forum are given in Fig. 2(a) and (b), respectively.

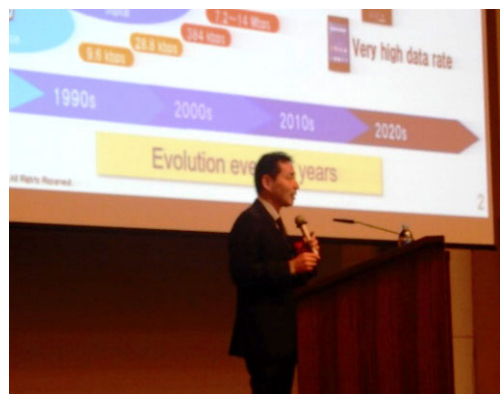
The digest of workshops/short courses and the conference proceedings of APMC 2018 were distributed online to registered attendees. In addition, the first mobile app in the APMC history was released to browse the technical program directly from smartphones or tablets. The papers presented at the APMC 2018 were already included in IEEE Xplore [2] while the IEICE owns the copyright of each paper.

5. APMC 2018 Opening

The APMC 2018 Opening was held in the afternoon on the second day (Nov. 7). The APMC 2018 Opening



(a)



(b)

Fig. 3 APMC 2018 Opening. (a) Special talk by Prof. Tatsuo Itoh, UCLA. (b) Keynote address by Mr. Takehiro Nakamura, NTT DOCOMO INC.

began with a welcome address by Prof. Awai and a brief introduction of events from Prof. Ishizaki, followed by congratulatory addresses from invited representatives. Then, a brief report on paper review results of APMC 2018 was provided by Prof. Sanada.

The APMC Opening also included a special talk entitled “Birth and Growth of APMC” celebrating 30th APMC by Prof. Tatsuo Itoh, UCLA (Fig. 3(a)), and a keynote address entitled “The future outlook and applications opened up by 5G” by Mr. Takehiro Nakamura, NTT DOCOMO, INC. (Fig. 3(b)), envisioning frontiers in upcoming 5G technologies. The two impassioned talks attracted about 500 attendees’ interest.

6. APMC 2018 Closing and Award Ceremony

The APMC 2018 Closing and Award Ceremony were held with about 180 attendees on the last day (Nov. 9) after all the technical sessions. The APMC 2018 Closing started with a series of omnibus talks on unique microwave activities from Kansai area in microwave meteorological radar sensing technologies, microwave medical applications, and microwave heating and chemistry, followed by the Award Ceremony. APMC 2018 Prizes and APMC 2018 Student Prizes were awarded to four papers and four students, which were selected by APMC 2018 Award Committee, respectively.

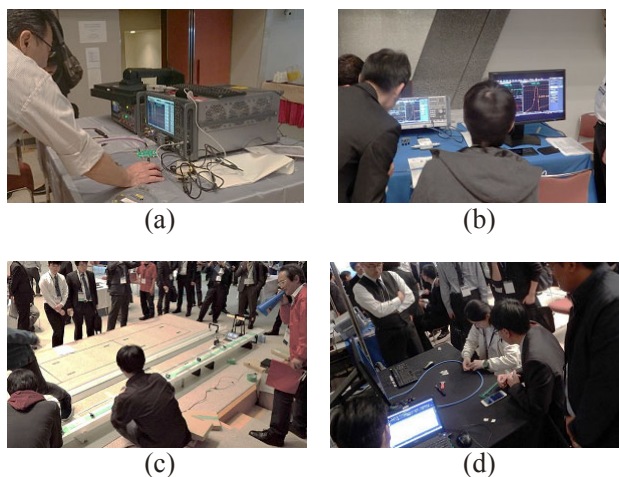


Fig. 4 APMC Student and Young Engineer Design Competition. (a) Track A, (b) Track B, (c) Track C, and (d) Track D.

7. Young Professionals and Women In Engineering /Women In Microwaves

A special panel session on Women in Engineering/Women in Microwaves (WIE/WIM) was held on the second day (Nov. 7) to discuss topics on “Women’s Excellent Talent in Engineering.” Also, Young Professionals (YP) and Women in Engineering/Women in Microwaves reception was held in the evening on the same day. The reception included a special talk, introducing potential carrier plans and professional networks in the microwave community to young professionals.

8. APMC Student and Young Engineer Design Competitions

As shown in Fig. 4, APMC Student and Young Engineer Design Competitions (SDC) were held on the third day (Nov. 8) to encourage future microwave engineers. The competitions consist of four design tracks of (A) a high-efficiency power amplifier design, (B) a printed-circuit-board bandpass filter design, (C) a WPT mini 4WD race, and (D) a delay-transmission-line miniaturization challenge. The SDC committee in TPC received 50 entries from all over the world, and finally total 38 teams challenged the competitions. The top teams in each track were awarded after the competitions.

9. Exhibition/University Poster Exhibition

The APMC 2018 Exhibition took place in the same room as the SDC on Nov. 7-9. 16 corporations as well as 4 academic societies had their exhibition booths. In addition, the APMC 2018 University Poster Exhibition was held in front of the exhibition room for 32 university laboratories from 13 countries to present their latest research results.

10. Social Events

The APMC 2018 also offered attendees original and fascinating events in addition to above-mentioned ones; the Welcome Reception (Fig. 5), the Banquet (Fig. 6),



Fig. 5 One scene at Welcome Reception.



Fig. 6 “Kanpai” Ceremony at Banquet.

and the Flower Arrangement Workshop. In the Welcome Reception, which was held in ICC Kyoto on the evening of Nov. 6, Japanese drum performance and maiko/geiko (traditional Japanese female performers) welcomed and entertained all the participants. The Banquet was held on Nov. 8 at the SODOH Higashiyama Kyoto with an excursion to Kodaiji temple. On the third day (Nov. 8), furthermore, the Flower Arrangement Workshop provided a hands-on activity for “Ikebana,” the Japanese art of flower arrangement.

11. Conclusion

APMC 2018 was the commemorative 30th APMC. We believe that the participants enjoyed technical discussions and social events in historical city Kyoto to celebrate the long lasting APMC. Finally, we would like to express our gratitude to the authors, the reviewers, the attendees, and the technical and financial sponsors for their contributions to APMC 2018. The next APMC in Japan will be held at Tokyo in 2022 [3]. We hope continued supports and look forward to meeting many researchers in APMC 2022 as well.

12. References

- [1] 2018 Asia-Pacific Microwave Conference (APMC 2018) Website: available on <http://www.apmc2018.org/>
- [2] Conference proceedings of APMC 2018 in IEEE Xplore: available on <https://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8599618>
- [3] Portal website of APMCs: available on <http://apmc-conf.org/>

Report on the 1st International Conference on Artificial Intelligence in Information and Communication (ICAIC) 2019

*Yeong Min Jang, *Takeo Fujii, *Dong Seog Han, **Sang-Chul Kim
*Organizing Chairs of ICAIC 2019, ** TPC Chair of ICAIC 2019



1. Introduction

The 1st International Conference on Artificial Intelligence in Information and Communication (ICAIC) 2019 was held at Okinawa, Japan, from February 11 to 13, 2019. This conference was supported by Korean Institute of Communications and Information Sciences (KICS) and technically cosponsored by the IEEE Communication Society and IEICE Communication Society.

2. Organization

The organizing committee of ICAIC 2019 was formed with the Pascal Lorenz (Univ. of Haute Alsace, France), Ilyoung Chong (HUFS, Korea), Rami Langar (UPEM, France), Hsi-Pin Ma (National Tsing Hua Univ., Taiwan), Joel Rodrigues (Inatel, Brazil), Yeong Min Jang (Kookmin Univ., Korea), Takeo Fujii (Univ. of Electro-Comms, Japan), Dong Seog Han (Kyungpook National Univ., Korea). The technical program was organized by Technical Program Committee Chairs, Sang-Chul Kim (Kookmin Univ., Korea), Benaoumeur Senouci (ECE Paris, France), Takaya Yamazato (Nagoya University, Japan). More than 195 technical program committee (TPC) members were involved in the review process.

3. Conference Program

The conference consists of one opening session, one keynote speech, and 21 technical sessions. The opening session was started with a brief introduction by Prof. Yeong Min Jang (Organizing Chair), following with one welcome address by Prof. Pascal Lorenz (Honorary Conference Chairs, University of Haute Alsace, France).

After that, one keynote speech from Prof. Tomoaki Ohtsuki (Keio University, Japan) was delivered. In the technical sessions, we had 121 presentations (selected from 278 submissions) with approximately 181 participants from more than 24 countries of the world, such as Korea, China, Japan, Taiwan, United Kingdom, USA, and so on. With regard to these technical sessions, there were 21 sessions including 3 poster sessions and the program covers a variety of topics on artificial intelligence and deep learning and their applications to wireless and wired communication and networking technologies such as cognitive radios, wireless sensor networks, Internet of Things (IoT), broadband wireless communications, future network issues, mobile



Fig. 1 After Opening Session.

multimedia networking, Big data, Cloud computing, and other important technologies.

The Welcome Reception and Banquet were held at Pacific Hotel Okinawa. At the banquet, Prof. Yeong Min Jang (Kookmin Univ., Korea) delivered a banquet speech. The best and excellent paper award ceremony was held simultaneously during the banquet session.

- Best Paper Award

- “A Machine-Learning-Based Channel Assignment Algorithm for IoT,” Jing Ma (Tokyo U of Science, Japan), Tomoya Nagatsuma (Tokyo U of Science, Japan), Song-Ju Kim (Tokyo U of Science, Japan), and Mikio Hasegawa (Tokyo U of Science, Japan).



Fig. 2 Best Paper Award.

- Excellent Paper Awards
 - “Achievable Throughput of Multiband Wireless LAN using Simultaneous Transmission over Multiple Primary Channels Assisted by Idle Length Prediction Based on PNN,” Kazuto Yano (ATR, Japan), Naoto Egashira (ATR, Japan), Julian Webber (ATR, Japan), Makoto Usui (ATR, Japan), and Yoshinori Suzuki (ATR, Japan)
 - “Machine Learning-Based Beamforming in Two-User MISO Interference Channels,” Hyung Jun Kwon (HUFS, Korea), Jung Hoon Lee (HUFS, Korea), and Wan Choi (KAIST, Korea)

4. Conclusion

We believe that ICAIIC 2019 was a truly successful conference in the area of artificial intelligence and deep learning and their applications to networking. On behalf of the organizing committee, we would like to thank our sponsors, KICS, IEEE Communications Society, and IEICE-CS for their kind support to this successful event.

Report on 24th IEEE Asia-Pacific Conference on Communications (APCC 2018)

Xiaofeng Tao, Yu Chen, Shijuan Wu
Beijing University of Posts and Telecommunications



1. Introduction

The 24th IEEE Asia-Pacific Conference on communications (APCC 2018) was held in Ningbo, China, from the 12th to the 14th of November, 2018 [1]. The conference venue was Ningbo University Central Library at the main campus of Ningbo University.

APCC'18 was hosted by Beijing University of Posts and Telecommunications (BUPT) and Ningbo University. It is technically sponsored by the IEEE Communications Society (ComSoc), and is sponsored by the Institute of Electronics, Information and Communication Engineers - Communications Society (IEICE-CS) of Japan, the China Institute of Communications (CIC) of China, the Korean Institute of Communications and Information Sciences (KICS) of Korea.

Since 1993, APCC has been the forum for researchers and engineers in the Asia-Pacific region to present and discuss advanced information, communication technologies, and services.

2. Organizing Committee

APCC'18 was under the supervision of the APCC Steering Committee (ASC) and the ASC chair Prof. Daehyoung Hong from Sogang University, Korea. The organizing committee of APCC'18 was led by the General chairs, and supported by the Technical Program Committee (TPC) chairs and local organizing committee chairs. The main conference organizing committee members are listed as the followings.

General Chairs:

Ping Zhang (Professor, BUPT)

Yanchuan Zhang (Secretary General of the China Institute of Communications, China)

TPC Chairs:

Xiaofeng Tao (Professor, BUPT, China)

Tong Song (Vice Secretary General of the China Institute of Communications, China)

Byonghyo Shim (Professor, Seoul National University, Korea)

Qimei Cui (Professor, BUPT, China)

Local Chairs:

Yinshui Xia (Professor, Ningbo University, China)

Youming Li (Professor, Ningbo University, China)

3. Conference Overview and Tutorials

The APCC'18 was themed by "IoT for Smart City: Green and Sustainability". The conference consists of four main technical sessions:

- 1) Signal Processing for Communications
- 2) Wireless Communications



Fig. 1 Welcome message delivered by Prof. Ping Zhang from BUPT.



Fig. 2 The venue of APCC 2018 Ningbo.

3) Wireless Networks

4) Emerging Technologies

and two workshops that were under the APCC'18 theme:

1) Wireless Communications with Energy Harvesting and Wireless Power Transfer

2) IoT and Smart City Infrastructures

In the opening ceremony, the general chairs, ASC chair and the president of Ningbo University gave speeches to welcome attendees to attend the APCC 2018 conference (see Fig. 2). Followed by three plenary talks given by Prof. Zhen Yang from Nanjing University of Posts and Telecommunications, China, Prof. Fumiyuki Adachi from Tohoku University, Japan, Prof. Xuemin (Sherman) Shen from University of Waterloo, Canada. Their talks resulted in enthusiastic discussion in the field of 5G heterogeneous network convergence and security, artificial intelligence and network security applications.



Fig. 3 Prof. Qimei Cui announced the winners for the “APCC 2018 best paper award”.

The other six plenary talks are organized in the first day afternoon and second day morning. The plenary speakers and their talk titles are listed below:

- 1) Hikmet Sari from Nanjing University of Posts and Telecommunications, China: Multiple Access for 5G - A New Look on NOMA;
- 2) Ke Wu from Ningbo University, China: Wireless Technology-Game-Changing Solution for Extreme Connectivity;
- 3) Thomas Hou from Virginia Tech, US: A Novel GPU-Powered Real-Time Scheduler for 5G NR;
- 4) Xianggen Xia from University of Delaware Newark, US: Signal Variations in Schwarzschild Space time;
- 5) Zhaoyang Zhang from Zhejiang University, China: Random Massive Access for Internet of Things;
- 6) Prof. Qihui Wu from Nanjing University of Aeronautics and Astronautics, China: Cognitive Microwave Photonics.

4. Award Ceremony

In the second day night, an award banquet was held at Ningbo Zhuangyuanlou Restaurant. Four papers won the “APCC 2018 best paper award”. Prof. Qimei Cui announced the list of winners (see Fig. 3) and presented award certificates to each winner.

5. Technical Sessions

Among the three days for APCC’18, attendees gave excellent technical reports. Followings list papers won the “APCC 2018 best paper award”:

“Effective Capacity Analysis of Multiuser Ultra-Dense Networks with Cell DTx”

Cell densification is a key technique for decreasing cell interference to enhance network throughput. By analyzing the effective capacity and quality of service (QoS) performance of ultra-dense networks, the advantage of cell densification was presented by the proposed multidimensional effective capacity framework. The capacity framework is also used to optimize network operations.

“Modeling and Analysis of Millimeter-Wave Cellular Networks Using Poisson Cluster Processes”

Milimeter-wave (mmWave) communication with short wave-length, sufficient bandwidth resources and high-speed data transmission has drawn increasing attention in 5G networks. This paper analyzed the performance of a mmWave network and derived the optimal parameters of control information and data information in mmWave networks. The analysis result makes it convenient and practical to obtain the high SINR or high rate in mmWave networks.

“RF Interference Detection and Signal Classification for IIoT Application”

Industrial Internet of Things (IIoT) is an import communication scenario is 5G communications. Large number of devices makes detecting interference and achieving coexistence across multiple technologies a major challenge. This paper propose a novel and efficient method for interference detection. To realize that, an enhanced spectral matching method is proposed to detect 802.15.4 packet and WIFI packet. Simulation results show the high detection performance of proposed method.

“Sparse Vector Coding for Short Packet Transmission in Massive Machine Type Communications”

Massive machine type communications (mMTC) has drawn high attention as a new service category for supporting Internet of Things (IoT), Internet of Everything (IoE) and Industry 4.0. To decrease the noise and multiuser interference, this paper proposed a sparse vector coding (SVC) by converting an information vector in to the sparse vector and using the support identification algorithm as a decoder in the receiver. Simulation results showed the packet error rate (PER) advantage in massive machine type communications.

6. Conclusions and Future Plans

The APCC’18 was finished with a great success. Excellent ideas and opinions were shared among researchers involved in this conference.

The 25th Asia-Pacific Conference on Communications (APCC 2019) will be held at Ho Chi Minh City, Vietnam on November 6-8, 2019 [2] and will be organized by Posts and Telecommunications Institute of Technology (PTIT), Vietnam. The theme for APCC’19 is “Enabling Technologies for Smart Cities”.

7. References

- [1] www.apcc2018.org
- [2] www.apcc-conf.org

IEICE-CS Related Conferences Calendar

| Date | Conference Name | Location | Note |
|-----------------------------|--|------------------------|------------------------------|
| 26 Oct. – 30 Oct. 2020 | 2020 International Symposium on Antennas and Propagation (ISAP2020) | Osaka, Japan | TBD |
| 6 Nov. – 8 Nov. 2019 | The 25 th Asia-Pacific Conference on Communications (APCC2019) | Ho Chi Minh, Vietnam | Submission deadline: Closed |
| 3 Nov. – 6 Nov. 2019 | International Conference on Renewable Energy Research and Applications (ICRERA2019) | Brasov, Romania | Submission due: 15 July 2019 |
| 29 Oct. – 1 Nov. 2019 | The 37 th International Communications Satellite Systems Conference (37th ICSSC), | Okinawa, Japan | Submission deadline: Closed |
| 27 Oct. – 30 Oct. 2019 | 2019 International Symposium on Antennas and Propagation (ISAP2019) | Xi'an, China | Submission due: 10 June 2019 |
| 16 Oct. – 18 Oct. 2019 | International Conference on Information and Communication Technology Convergence 2019 (ICTC2019) | Jeju Island, Korea | Submission due: 1 June 2019 |
| 22 Sept. 2019 | Technology Trials and Proof-of-Concept Activities for 5G Evolution & Beyond 2019 (TPoC5GE 2019) | Honolulu, USA | Submission due: 10 June 2019 |
| 18 Sept. – 20 Sept. 2019 | Asia-Pacific Network Operations and Management Symposium (APNOMS 2019) | Matsue, Japan | Submission deadline: Closed |
| 5 Aug. – 8 Aug. 2019 | The 18 th International Workshop on Assurance in Distributed Systems and Networks (ADSN 2019) | Fukuoka, Japan | To be held soon |
| 28 July – 2 Aug. 2019 | IEEE International Geoscience and Remote Sensing Symposium 2019 (IGARSS 2019) | Yokohama, Japan | To be held soon |
| 7 July – 11 July 2019 | The 24 th Opto-Electronics and Communications Conference / International Conference on Photonics in Switching and Computing 2019 (OECC / PSC2019) | Fukuoka, Japan | To be held soon |
| 2 July – 5 July 2019 | International Conference on Ubiquitous and Future Networks 2019 (ICFUN2019) | Zagreb, Croatia | To be held soon |
| 3 June – 7 June 2019 | 2019 Joint International Symposium on Electromagnetic Compatibility and Asia-Pacific International Symposium on Electromagnetic Compatibility, Sapporo (EMC Sapporo & APEMC 2019) | Sapporo, Japan | To be held soon |
| 29 May – 31 May 2019 | International symposium on extremely advanced transmission technology (EXAT 2019) | Ise, Japan | Done |
| 20 May – 23 May 2019 | International Conference on DC Microgrids (ICDCM2019) | Matsue, Japan | Done |
| 28 April 2019 | Technology Trials and Proof-of-Concept Activities for 5G and Beyond Industry and Academic Panel 2019 (TPoC5G Panel 2019) | Kuala Lumpur, Malaysia | Done |
| 8 April – 15 April 2019 | The 5 th International Workshop on Smart Spectrum (IWSS2019) | Marrakech, Morocco | Done |

| Date | Conference Name | Location | Note |
|----------------------------|---|----------------------|----------------------------------|
| 15 April 2019 | The 12 th International Workshop on Evolutional Technologies & Ecosystems for Beyond 5G (WDN-5G WCNC2019) | Marrakech, Morocco | Done |
| 8 April – 10 April 2019 | The 14 th International Symposium on Autonomous Decentralized Systems (ISADS2019) | Utrecht, Netherlands | Done |
| 11 Feb. – 13 Feb. 2019 | 2019 International Conference on Artificial Intelligence in Information and Communication (ICAIIIC 2019) | Okinawa, Japan | Reported on this issue |
| 16 Dec. – 18 Dec. 2018 | International Japan-Africa Conference on Electronics, Communications and Computations 2018 (JAC-ECC 2018) | Alexandria, Egypt | Reported on this issue |
| 4 Dec. – 6 Dec. 2018 | International Conference on Smart Grids (icSmartGrids2018) | Nagasaki, Japan | Done |
| 12 Nov. – 14 Nov. 2018 | The 24 th Asia-Pacific Conference on Communications (APCC2018) | Ningbo, China | Reported on this issue |
| 6 Nov. – 9 Nov. 2018 | 2018 Asia-Pacific Microwave Conference (APMC 2018) | Kyoto, Japan | Reported on this issue |

Please confirm with the following IEICE-CS web site for the latest information.
<http://www.ieice.org/cs/conf/calendar.html>

Call for Participations

The 20th Asia-Pacific Network Operations and Management Symposium APNOMS 2019

- Management in a Cyber-Physical World -

September 18-20, 2019, Matsue, Japan

<http://www.apnoms.org/2019/>

Sponsored by IEICE ICM, KICS KNOM

Technically co-sponsored by IEEE Communications Society



The Asia-Pacific Network Operations and Management Symposium (APNOMS) is the premier conference on network operations and management in the Asia-Pacific region. APNOMS meets every year and boasts a rich history of successes. APNOMS will encourage open discussions on technology alternatives that focus on the management and operation of current and future networks and services.

APNOMS 2019 will be held in Matsue, Japan and it marks the 20th anniversary. The three-day program includes keynotes, tutorials, special sessions, technical sessions, innovation sessions, panel discussions, poster sessions, demo and exhibitions focusing on managing networks that span the computing and telecommunications areas.

We cordially invite you to this exciting event and look forward to seeing you in Matsue, Japan.



APNOMS 2019
General Chair
Kiyohito Yoshihara
KDDI Research

◆ Invitation to Matsue, JAPAN

Matsue is one of the best places to experience old Japan. It is known as the City of Water. You can enjoy its historical and traditional atmosphere by walking around a castle, temples and shrines. Visitors are recommended to travel to scenic, historic and tourist spots: Matsue castle which is one of the twelve remaining original Japanese castles, the moats surrounding the castle, a picturesque traditional Japanese street with samurai residences (Shiomi Nawate Street), Matsue History Museum, Teramachi Temple area and Lake Sinjiko known for its beautiful sunset scenery. Matsue is also famous for traditional arts and crafts: Yakumo-nuri Lacquer, Magatama Agate Jewelry and Washi Temari.

Welcome APNOMS 2019 and enjoy MATSUE!!



Photos provided by Matsue City

◆ Conference Details

You will find more detailed information on the conference at the APNOMS 2019 official web site.

◆ APNOMS 2019 Official Web Site

<http://www.apnoms.org/2019/>



Technology Trials and Proof-of-Concept Activities for 5G Evolution & Beyond 2019 (TPoC5GE 2019)

in conjunction with VTC2019-Fall
22nd, September, 2019, Honolulu, Hawaii

Committee

General Co-Chairs

Tomoaki Ohtsuki,
Keio University
Erik Dahlman,
Ericsson Research

TPC Co-Chairs

Yukitoshi Sanada,
Keio University
Shinsuke Ibi,
Doshisha University

Publicity Chairs

Fumiaki Maehara,
Waseda University

Yuyuan Chang,
Tokyo Tech.

Keynote Chairs

Satoshi Suyama,
NTT DOCOMO

Toshihiko Nishimura,
Hokkaido University

Advisories

Fumiyuki Adachi,
Tohoku University

Seiichi Sampei,
Osaka University

Mamoru Sawahashi,
Tokyo City University

Satoshi Denno,
Okayama University

Eisuke Fukuda,
Fujitsu Lab.

Hidekazu Murata,
Kyoto University



Call For Papers

TPoC5G Evolution & Beyond workshop will be held in Honolulu, Hawaii, on 22nd September 2019 in conjunction with the 2019 IEEE 90th Vehicular Technology Conference: VTC2019-Fall. This workshop is technically co-sponsored by IEICE (Institute of Electronics, Information and Communication Engineers) technical committees on Radio Communication Systems (RCS) in Japan.

Scope: The 5th generation (5G) cellular communication systems are going to be launched in 2019. New technology concepts for the next generation mobile communications including 5G Evolution and Beyond 5G (B5G) are about to be investigated in many research entities. On top of that, research and development activities are about to be initiated. In these regards, this workshop is aiming to provide opportunities to present the latest trials and the proof-of-concept activities for next generation mobile communications. Distinguished speakers from industry as well as from academia will present their latest research and development results and will prove their perspective regarding the new directions of mobile communications. Through the discussion at the workshop, it is also expected to promote the exchange of new ideas among researchers.

Topics:

- Technology trials for 5G Evolution and B5G
- Simulation-based validations for 5G Evolution and B5G
- Hardware implementation issues of the B5G systems in SFH band or millimeter wave band
- Validation of technology concepts for next generation mobile communications (e.g. Full duplex)
- Experimental investigation of new radio waveforms (e.g. Filtered OFDM, GFDM, UFMC)
- Etc.

Important Dates:

| | |
|--|---------------------|
| Paper Submission Due: | 10 June 2019 |
| Acceptance Notification: | 08 July 2019 |
| Final Papers/Author Registration Due: | 22 July 2019 |

Paper submission:

Submission requirements: 5-page paper ONLY
Up to 2 additional pages may be accepted with the purchase of additional page charges

Papers should follow the IEEE conference template:
http://www.ieee.org/conferences_events/conferences/publishing/templates.html

Web Site of Paper Submission:
(TBD)

Contact Information

racs_ac-vtc2019f@mail.ieice.org

For more information, please access the following link

<http://www.ieice.org/cs/racs/tpoc5g/>



Xi'an, China
October 27-30

<http://www.em-conf.com/isap2019>



Call for Papers

2019 International Symposium on Antennas and Propagation (ISAP2019) is intended to provide an international forum for the exchange of information on the progress of research and development in antennas, propagation, electromagnetic wave theory, and related fields as shown in the Topics. It is also an important objective of this meeting to promote mutual-interaction among participants.

ISAP2019 will be held in Xi'an, China from October 27 to 30, 2019. During Xian's 3,100 year development, 13 dynasties placed their capitals here. Xian enjoys equal fame with Athens, Cairo, and Rome as one of the four major ancient civilization capitals. ISAP2019 is co-sponsored and co-organized by Xidian University, Southeast University, South China University of Technology, and is technically co-sponsored by CIE Antenna Society, CIE Microwave Society, IEICE Communications Society, IEEE Antennas and Propagation Society, European Association on Antennas and Propagation (EurAAP), IEEE AP/MTT Xi'an Chapter and IEEE AP-MTT-EMC Joint Nanjing Chapter.

Topics

- 1 Antenna Analysis & Synthesis
- 2 Antenna Measurements Techniques A-3
- Antenna Manufacturing Technologies A-4
- Small & Miniaturized Antennas
- 5 Reflector & Lens Antennas
- 6 Phased Array & Air-fed Array
- 7 Broadband & Multi-frequency Antennas A-
- 8 Millimeter- & THz-Wave Antennas
- A-9 Multi-function & Reconfigurable Antennas
- B-1 Mobile & Indoor Propagation
- B-2 Space-Time Channel Characterization
- B-3 Terrestrial & Earth-Space Propagation
- B-4 Ionospheric Propagation
- B-5 DOA Estimation
- 6 SAR Polarimetry & Interferometry
- 7 Wireless Power Transmission
- C-1 Electromagnetic Theory & Modeling
- C-2 Computational Electromagnetics
- C-3 Analysis for Multi-scale Problems
- C-4 Scattering & Diffraction
- C-5 Inverse Problems
- C-6 Remote Sensing
- C-7 Random Media & Rough Surfaces
- C-8 EBG and Metamaterials
- 1A & P for Mobile & Vehicular Communication
- 2A & P for Body-Centric Wireless Communication D-
- 3 A & P for MIMO & Cooperative Communication D-
- 4 A & P for Cognitive Wireless Networks
- D-5 A & P for Radio Positioning & Broadcasting
- D-6 A & P for Medical Applications
- D-7 A & P for RFID Applications
- D-8 EMC/EMI Technologies

Submission Information

All submissions must be electronic in IEEE Xplore-compliant PDF format only and hard copies will not be accepted. All papers must be written in English and limited to three pages including text, references, and figures. Presented papers will be included in IEEE Xplore and ISAP Archives.

Student Paper Contest

Student paper contest is limited to full time student who must be the first author of the paper, and the student is required to present their papers at the conference. The candidates are required to show their full time student identification cards on the registration desk. Each of the three final winners will be awarded the ISAP2019 Best Student Paper Prize with a certificate. All the students are encouraged to participate in the contest.

Important Dates

| | |
|---------------------------|----------------|
| Paper Submission Deadline | June 10, 2019 |
| Acceptance Notification | July 15, 2019 |
| Final Papers Submission | July 31, 2019 |
| Advance Program Delivery | Sept. 01, 2019 |

ORGANIZING COMMITTEE

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Wei Hong (*SEU, China*)
Qingxin Chu (*SCUT, China*)

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ICRERA 2019

8TH INTERNATIONAL CONFERENCE ON RENEWABLE ENERGY RESEARCH AND APPLICATIONS

November 3-6, 2019, Brasov/Romania

Call for Papers

Dear Colleague,

The purpose of the International Conference on Renewable Energy Research and Applications (ICRERA) 2019 is to bring together researchers, engineers, manufacturers, practitioners and customers from all over the world to share and discuss advances and developments in renewable energy research and applications.

After the success of the first seven editions of ICRERA in Nagasaki (2012), Madrid (2013), Milwaukee (2014), Palermo (2015), Birmingham (2016), San Diego (2017) and Paris (2018), the eighth edition will be in Brasov, Romania, and will continue focusing on several key topics and technologies related to renewable (green) energy systems and sources.

It is our happiness to share with you that 112 selected papers out of 254 papers at ICRERA2018 have been proposed for possible publications in IEEE Transactions on Industrial Applications (11 papers), [International Journal of Renewable Energy Research](#) (19 Papers), [International Journal of Smart Grid](#) (31), [Energies](#) (15), and [International Journal of Engineering Science and Applications](#) (36). We hope to select similar number of papers for the ICRERA 2019. All papers presented at ICRERA conference will be published in IEEE Xplore, WEB of Science and SCOPUS. According to WEB of Science, h-index of ICRERA is 12, and average citation per item is 1.52.

ICRERA aims to present important results to the international renewable energy community in the form of research, development, applications, design, and technology. It is therefore intended to assist researchers, scientists, manufacturers, companies, communities, agencies, associations and societies to keep abreast on new developments in their specialties and to unite in finding alternative energy solutions to current issues such as the greenhouse effect, sustainable and clean energy issues.

Topics within the scope of the conference include the following areas, but not limited to:

- Renewable (Green) Energy Systems and Sources (RESSs) as Wind Power, Hydropower, Solar Energy, Biomass, Biofuel, Geothermal Energy, Wave Energy, Tidal energy, Hydrogen & Fuel Cells, Energy Storage
- New Trends and Technologies for RESSs
- Policies and Strategies for RESSs
- Energy Transformation from Renewable Energy System (RES) to Grid
- Novel Energy Conversion Studies for RESSs
- Power Devices and Driving Circuits for RESSs
- Control Techniques for RESSs
- Grid Interactive Systems Used in Hybrid RESSs
- Performance Analysis of RESSs
- Hybrid RESSs

- Decision Support Systems for RESSs
- Renewable Energy Research and Applications for Industries
- RESSs for Electrical Vehicles and Components
- Artificial Intelligence and Machine Learning Studies for RESSs and Applications
- Computational Methods for RESSs
- Energy Savings for Vehicular Technology, Power Electronics, Electric Machinery and Control, etc.
- New Approaches in Lightings
- Public Awareness and Education for Renewable Energy and Systems
- Reliability and Maintenance in RESSs
- Smart grids and RESSs
- Safety and Security of RESSs
- Renewable Energy Systems in Smart Cities
- Future Challenges and Directions for RESSs

Long Digest Submission: IEEE format, around 3 - 5 pages, single column, including figures and references. Selected papers will be published in following journals cited in Web of Science with higher impact factors.

- [IEEE Transactions on Industrial Applications](#)
- [International Journal of Renewable Energy Research](#)
- [International Journal of Smart Grid](#)
- [International Journal of Engineering Science and Applications](#)

ICRERA 2019 Author Deadlines:

| | |
|---|--------------------|
| 3 to 5 Pages Long Digest Submission Deadline: | July 15, 2019 |
| Notification of acceptance: | September 1, 2019 |
| Final submissions due: | October 4, 2019 |
| Conference: | November 3-6, 2019 |

Invitation:

On behalf of organizing committee, we would like to invite you to submit articles to ICRERA 2019. Proposals for special sessions, workshops, tutorials, challenges, competitions, etc. are most welcome.

Awards:

Awards will be provided to some Outstanding Papers and some Student Excellent Presentations selected and conferred by the ICRERA 2019 Program Committee. In order to qualify for the award, the paper must be presented at the conference.

Best regards,

Prof. CARMEN GERIGAN
General Chair, ICRERA
Transilvania University of Brasov,
Romania

Prof. ILHAMI COLAK
General Co-Chair, ICRERA
Nisantasi University, Turkey

Prof. FUJIO KUROKAWA
General Co-Chair, ICRERA
Nagasaki Institute of Applied Science,
Japan

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icrera@gmail.com

Special Section Calendar of IEICE Transactions on Communications

| Issue | Special Section | Note |
|-----------|--|--------------------------------|
| Oct. 2020 | New Era of Satellite Communication / Broadcasting / Application Technologies | Submission due: 1 October 2019 |
| Sep. 2020 | Electromagnetic Compatibility in Conjunction with EMC Sapporo and APEMC 2019 | Submission due: 1 October 2019 |
| Aug. 2020 | No special section this issue | |
| Jul. 2020 | No special section this issue | |
| Jun. 2020 | Information and Communication Technology for IoT/CPS in Medicine and Healthcare | Submission due: 16 July 2019 |
| May 2020 | No special section this issue | |
| Apr. 2020 | Network Resource Control and Management Technologies for Sustainable Social Information Infrastructure | To be issued |
| Mar. 2020 | No special section this issue | |
| Feb. 2020 | No special section this issue | |
| Jan. 2020 | Internet Architecture, Applications and Operation Technologies for a Cyber-Physical System | To be issued |
| Dec. 2019 | No special section this issue | |
| Nov. 2019 | No special section this issue | |
| Oct. 2019 | Exploring Drone for Mobile Sensing, Coverage and Communications: Theory and Applications | To be issued |
| Sep. 2019 | Enhancing Information Centric Networking Technologies Towards Real-world Infrastructure | To be issued soon |
| Aug. 2019 | Technology Trials and Proof-of-Concept Activities for 5G and Beyond | To be issued soon |
| Jul. 2019 | Communication Technologies and Service Qualities in Various Access Networks | To be issued soon |
| Jun. 2019 | Healthcare, Medical Information and Communication Technology for Safe and Secure Society | Vol. E102-B, No. 6 |
| May 2019 | European ICT R&D Project Activities on Broadband Access Technologies in Conjunction with Main Topics of 2016/2017 IEICE ICT | Vol. E102-B, No. 5 |
| Apr. 2019 | Sensing, Wireless Networking, Data Collection, Analysis and Processing Technologies for Ambient Intelligence with Internet of Things | Vol. E102-B, No. 4 |

Please confirm with the following IEICE web site for the latest CALL FOR PAPERS
<http://www.ieice.org/event/ronbun-e.php?society=cs>

----- Special Section on Information and Communication Technology for IoT/CPS in Medicine and Healthcare -----

The IEICE Transactions on Communications announces that it will publish a special section entitled "Information and Communication Technology for IoT/CPS in Medical and Healthcare" in **June 2020**.

The Internet of Things (IoT) and the Cyber Physical Systems (CPS) are rapidly expanding worldwide with the rapid development of information and communication technology (ICT). This is no exception in the medicine and healthcare. As a solution to the increase in medical costs due to the progress of aging society on a global scale, there is great expectation for innovation of medical and health care services using IoT/CPS. Furthermore, IoT/CPS specialized in the medicine and healthcare brings a new research and development paradigm. It is also a new interdisciplinary field of medicine-engineering fusion. To promptly bring the technology to practical use, it is desirable to develop basic research such as sensors, devices, big data analysis, communication networks, robotics, security, regulatory science and so on as soon as possible.

To further promote research and development in IoT/CPS toward realization of innovative medical and healthcare systems and services, the special section is planned to publish papers on the related fields.

1. Scope

This special section aims at timely dissemination of research in these areas. Possible topics include, but are not limited to:

- Medical and Healthcare IoT/CPS Enabling Technologies (wireless sensor networks, communication system, antenna and propagation, localization, remote control, etc.)
- Big Data Analytics for Medical and Healthcare IoT/CPS (data aggregation and management, machine learning, deep learning, etc.)
- Medical and Healthcare IoT/CPS Security and Personal Data Protection
- Infrastructure / Environment for Medical and Healthcare IoT/CPS to make safe for users (electromagnetic environment, power environment, electromagnetic absorption and shield)
- Medical and Healthcare IoT/CPS Service, Real Implementation, Experimentation Results
- Regulatory science for Medical and Healthcare IoT/CPS

2. Submission Instructions

The standard number of pages is 8. The page charges are considerably higher for extra pages. Manuscripts should be prepared according to the guideline in the "Information for Authors." The latest version is available at the web site, http://www.ieice.org/eng/shiori/mokuji_cs.html. The term for revising the manuscript after acknowledgement of conditional acceptance for this special section could be shorter than that for regular issues (60 days) because of the tight review schedule.

This special section will accept papers only by electronic submission. Submit a manuscript and electronic source files (LaTeX/Word files, figures, authors' photos and biographies) via the IEICE Web site https://review.ieice.org/regist/regist_baseinfo_e.aspx by **July 16, 2019 (JST)**. Authors should choose the Information and Communication Technology for IoT/CPS in Medical and Healthcare as a "Journal/Section" on the online screen. Do not choose [Regular EB].

Contact point:

Kento Takabayashi

Okayama Prefectural University

Tel: +81-866-94-2104, E-mail: takabayashi-kento-xp@ynu.jp

3. Special Section Editorial Committee

Guest Editor-in-Chief: Eisuke Hanada (Saga Univ.)

Guest Editor: Kento Takabayashi (Okayama Prefectural Univ.)

Guest Associate Editors: Minseok Kim (Niigata Univ.), Tetsushi Ikegami (Meiji Univ.), Keita Saku (Kyushu Univ.), Masaharu Takahashi (Chiba Univ.), Takefumi Hiraguri (Nippon Inst. of Tech.), Kazuhiro Honda (Toyama Univ.), Dairoku Muramatsu (Tokyo Univ. of Science),

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* Upon accepted for publication, all authors, including authors of invited papers, should pay the page charges covering the partial cost of publication around November 2019.

* At least one of the authors must be an IEICE member when the manuscript is submitted for review. Invited papers are an exception.

We recommend that authors unaffiliated with IEICE apply for membership. For membership applications, please visit

<http://www.ieice.org/eng/member/OM-appli.html>

* The accepted papers will be published online soon after notification of acceptance on the web site of Transactions Online. For detailed information, please visit

http://www.ieice.org/eng/shiori/page2_cs.html#8

Call for Papers

----- Special Section on Electromagnetic Compatibility in Conjunction with EMC Sapporo and APEMC 2019 -----

The IEICE Transactions on Communications announces that it will publish a special section entitled " Special Section on Electromagnetic Compatibility in Conjunction with EMC Sapporo and APEMC 2019 " in the **September 2020 issue**.

In the Electromagnetic Compatibility (EMC) field, there are conventional research topics such as interference among electronic equipment and on telecommunications. Recently, there raises new research topics with rapid spread of information communication technology: security and interference issue in IoT and wireless technologies and wireless power transfer technology that improves our lifestyle. Moreover, relation between nature phenomenon and electromagnetic environment and bioelectronics interactions are still important topics. The EMC field becomes much important in several many academic and industrial fields. In the June 2019, an international symposium on EMC (EMC Sapporo & APEMC 2019) will be held in Sapporo, Japan and many EMC issues will be discussed there. Because of such reasons, a special section is being planned (scheduled to appear in the September 2020 issue) to further promote research and development of future EMC fields as follows.

1. Scope

This special section aims at timely dissemination of research in these areas. Possible topics include, but are not limited to:

EMC Management: *Laboratory Accreditation, EMC Education, EMC Measurements: Standards and Regulations, Radiated and Conducted Emission and Immunity tests, Emission limits, Test Instrumentation & Facilities, Electromagnetic Environment: Natural and Man-made noise source, Control Intentional and Unintentional Emissions, Electromagnetic Interference Control: Shielding, Grounding & Meta-materials, High Power Electromagnetics: ESD and Transients, Lightning EM fields and Currents, EMP and IEMI, Information Leakage, Spectrum Engineering: Adaptive Interference Mitigation, Communications System EMC, Antenna and Wave Propagations, Low Frequency EMC: Power System EMC, Renewables, Electric Vehicles, Energy Efficient Technologies, Computational Electromagnetics: Numerical Modeling, Signal and Power Integrity: Chip, Package, PCB & Cables, Transmission Lines, Nanotechnology & Advanced Materials: Nanomaterials, Nanotubes and Nanofibers for Gaskets and Absorbing Screens, EMC for Emerging Wireless Technologies: Wireless Coexistence, Intra-System Interference, Wireless Power Transfer, Smart Grid, Power Electronics EMC: Power Electronics Converters/Inverters EMI/EMC, Grid-Connected PV Systems, Wind Farms, Transportation & Vehicles EMC, EMF Safety & Biomedical Issues, Human exposure to ELF/RF EM fields, Biological Effects, Medical Application, Medical Devices & Hospital Equipment, Others.*

2. Submission Instructions

The standard number of pages is 8. The page charges are considerably higher for extra pages. Manuscripts should be prepared according to the guideline in the "Information for Authors." The latest version is available at the web site, http://www.ieice.org/eng/shiori/mokujii_cs.html. The term for revising the manuscript after acknowledgement of conditional acceptance for this special section could be shorter than that for regular issues (60 days) because of the tight review schedule.

This special section will accept papers only by electronic submission. Submit a manuscript and electronic source files (LaTeX/Word files, figures, authors' photos and biographies) via the IEICE Web site https://review.ieice.org/regist/regist_baseinfo_e.aspx by **October 1 2019 (JST)**. Authors should choose the [Special-MC] Special Section on Electromagnetic Compatibility in Conjunction with EMC Sapporo and APEMC 2019 as a "Journal/Section" on the online screen. Do not choose [Regular EB].

Contact point:

Tohlu Matsushima

Graduate School of Engineering

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Tel: +81-93-884-3264, E-mail: eb-emc2020@mail.ieice.org

3. Special Section Editorial Committee

Guest Editor-in-Chief: Shinobu Ishigami (Tohoku Gakuin Univ.)*

Guest Editors: Tohlu Matsushima (Kyushu Inst. of Tech.), Takahiro Aoyagi (Tokyo Tech)

Guest Associate Editors: Yoshiharu Akiyama (NTT), Katsumi Fujii (NICT), Takashi Hikage (Hokkaido Univ.), Hiroshi Hirayama (Nagoya Inst. of Tech.), Takaaki Ibuchi (Osaka Univ.), Ken Kawamata (Tohoku Gakuin Univ.), Kimihiro Tajima (NTT-AT), Tomoo Ushio (Tokyo Metropolitan Univ.), Fengchao Xiao (Univ. of Electro-Communications), Takahiro Yoshida (Tokyo Univ. of Sci.)

* Authors must agree to the "Copyright Transfer and Page Charge Agreement" via electronic submission.

* Upon accepted for publication, all authors, including authors of invited papers, should pay the page charges covering the partial cost of publication around February 2020. For detailed information, please visit http://www.ieice.org/eng/shiori/page2_cs.html#5

* At least one of the authors must be an IEICE member when the manuscript is submitted for review. Invited papers are an exception. We recommend that authors unaffiliated with IEICE apply for membership. For membership applications, please visit <http://www.ieice.org/eng/member/OM-appli.html>

* The accepted papers will be published online soon on the web site of Transactions Online after the payment of page charges has been completed. For detailed information, please visit http://www.ieice.org/eng/shiori/page2_cs.html#8

Call for Papers

----- Special Section on New Era of Satellite Communication / Broadcasting / Application Technologies -----

The IEICE Transactions on Communications announces that it will publish a special section entitled "Special Section on New era of Satellite Communication/Broadcasting/Application Technologies" in the October 2020 issue.

Satellite communications have been mainly used for disaster-relief communications, backup communications and/or mobile communications on maritime ships and airplanes. Recently, due to remarkable technology progress on both satellite and terrestrial stations, HTS (High Throughput Satellite) systems consisting hundreds of multi-beams and/or thousands of small satellites have started to provide broadband services for earth stations in motions and as backhaul for cellular phone. On the other hand, as for satellite broadcasting, 4K/8K special technologies have been studied so as to be standardized. Its TV services will be widely spread all over the Japan toward 2020. Further, these developed technologies are applied to many other use for such as UAS (Unmanned Aircraft System), HAPS (High Altitude Platform System), Monitoring system using AIS (Automatic Identification System) and so forth.

This special section will provide an opportunity to summarize the recent research output on satellite communication/broadcasting/application technologies. Your contribution to this special section would be greatly appreciated.

1. Scope

This special section aims at timely dissemination of research in these areas. Possible topics include, but are not limited to:

- Satellite communications (fixed-satellite communications, mobile satellite communications, inter-satellite communications, optical satellite communications, deep space communications, HTS, MEO, LEO)
- Satellite broadcasting (BS, mobile broadcasting, 4K/8K)
- Satellite applications (Unmanned aircraft communications system, HAPS, AIS, Positioning)
- Others on the elementary technologies, the system/earth station technologies, the onboard technologies and the applications concerning the above topics.

2. Submission Instructions

The standard number of pages is 8. The page charges are considerably higher for extra pages. Manuscripts should be prepared according to the guideline in the "Information for Authors." The latest version is available at the web site, http://www.ieice.org/eng/shiori/mokuji_cs.html. The term for revising the manuscript after acknowledgement of conditional acceptance for this special section could be shorter than that for regular issues (60 days) because of the tight review schedule.

This special section will accept papers only by electronic submission. Submit a manuscript and electronic source files (LaTeX/Word files, figures, authors' photos and biographies) via the IEICE Web site https://review.ieice.org/regist/regist_baseinfo_e.aspx by **October 1, 2019 (JST)**. Authors should choose the [Special-CB] Special Section on Satellite Communication/Broadcasting/Application Technologies as a "Journal/Section" on the online screen. Do not choose [Regular EB].

Contact point:

Shinobu Nanba

KDDI Research, Inc. TEL: 080-5985-6313 FAX:049-278-7510

Tel: +81-80-5985-6313, Fax: +81-49-278-7510, E-mail: eb-sat2020@mail.ieice.org

3. Special Section Editorial Committee

Guest Editor-in-Chief: Fumihiro Yamashita (NTT)

Guest Editors: Shinobu Nanba (KDDI Research, Inc.), Kazuto Yano(ATR)

Guest Associate Editors: Takahiro Aoyagi (Tokyo Tech. Univ.), Tetsushi Ikegami (Meiji Univ.), Hiroyasu Ishikawa (Nihon Univ.), Masato Saito (Ryukyu Univ.), Taro Suzuki (Waseda Univ.), Yoshinori Suzuki (ATR), Shigenori Tani (Mitsubishi Electric), Hitoshi Nakagawa (B-SAT), Kazunori Yokohata (NHK), Takashi Takahashi (NICT), Yoshiyuki Fujino (Toyo Univ.), Kousuke Yamazaki (KDDI Research, Inc.)

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* The accepted papers will be published online soon after notification of acceptance on the web site of Transactions Online. For detailed information, please visit http://www.ieice.org/eng/shiori/page2_cs.html#8

Call for Papers

----- Special Cluster in Conjunction with IEICE General Conference 2019 -----

The IEICE Communications Express (ComEX) announces that it will publish a special cluster entitled “Special Cluster in Conjunction with IEICE General Conference 2019” in **December 2019**. ComEX is an online open access letter journal with binary peer review publishing system established in June 2012 by the IEICE covering the entire field of communications. The editorial committee of ComEX thinks much of rapid yet careful peer review, and the average period from submission to decision is less than one month in 2018 and the acceptance rate is 47% in 2017. In order to keep the promptness of the review process and provide high quality letters in a timely manner, the numbers of words and items (Figures plus Tables) in the manuscript are limited up to 1500 and 3, respectively. We believe those requirements are met by typical papers presented at IEICE General Conference or IEICE Society Conference meaning that papers of the conferences can be submitted to ComEX after polishing sentences without significant addition and/or change of the items. Based on the above considerations, the editorial committee of ComEX has planned the special cluster to seamlessly publish letters in the entire field of communications from, but not limited to, authors of IEICE General Conference 2019.

1. Scope

This special cluster aims at seamless publication of the work in the entire field of communications. Possible topics include, but are not limited to, Fundamental Theories for Communications, Energy in Electronics Communications, Transmission Systems and Transmission Equipment for Communications, Optical Fiber for Communications, Fiber-Optic Transmission for Communications, Network System, Network, Internet, Network Management/Operation, Antennas and Propagation, Electromagnetic Compatibility (EMC), Wireless Communication Technologies, Terrestrial Wireless Communication/Broadcasting Technologies, Satellite Communications, Sensing, Navigation, Guidance and Control Systems, Space Utilization Systems for Communications, and Multimedia Systems for Communications.

2. Submission Deadline

Two submission periods are prepared for this special cluster, and the deadlines are set as:

- **First deadline: May 31st, 2019 (JST)** (Submission will open about one month prior to the first deadline.)
- **Second deadline: July 11th, 2019 (JST)** (Submission will open on June 21st, 2019.)

3. Submission Instructions

The maximum number of words is 1500; the maximum number of items (Figures plus Tables) is 3. Manuscripts should be prepared according to the guideline in the “Information for Authors.” The latest version is available at the web site, http://www.comex.ieice.org/data/for_authors.html. In particular, please refer to the paragraph on novelty. Review process will begin immediately after submission.

The notification of review evaluation for the letter submitted in the first submission period and that in the second one will be sent by June 20th, 2019 and July 31st, 2019, respectively. In the second period, prospective authors are allowed to submit not only a manuscript which has not been submitted to this special cluster in the first submission period but also a revised version of the manuscript which was rejected in the first submission period. In such a case, the authors are encouraged to indicate a manuscript ID assigned in the first submission period and to append a "Reply Letter" to expedite the review process. Accepted papers will appear on the IEICE ComEX web site as advance publication as soon as payment of the article charge is confirmed by the ComEX Publishing Office. All of them will appear as a special cluster in ComEX web site on December 1st, 2019.

ComEX will accept only the letter type of manuscripts by electronic submission using one of the officially approved formats (LaTeX style file or Microsoft Word template). Submit a manuscript and electronic source files (LaTeX/Word files, figures) via the IEICE Web site https://review.ieice.org/regist/regist_baseinfo_e.aspx. In this regard, authors should choose [in Conjunction with IEICE General Conference 2019] as a “Journal/Section” on the online screen. Do not choose [Regular-XB].

Contact Person: Kazunori Hayashi
Graduate School of Engineering, Osaka City University
Email: comex-ss-gc2019@ieice.org

4. Special Cluster Editorial Committee

Guest Editor-in-Chief: Hiroo Sekiya (Chiba Univ.)

Guest Editors: Masaki Bandai (Sophia Univ.), Kazunori Hayashi (Osaka City Univ.)

Guest Associate Editors: Yuyuan Chang (Tokyo Inst. of Tech.), Mariusz Glabowski (Poznan Univ. of Tech.), Rokuzo Hara (Mitsubishi Electric), Hiroaki Harai (National Inst. of Info. and Commun. Tech.), Yuki Yoshi Kamio (National Inst. of Info. and Commun. Tech.), Noriaki Kamiyama (Fukuoka Univ.), Hiroshi Kubo (Ritsumeikan Univ.), Ayumu Kubota (KDDI R&D), Tzyh-Ghuang Ma (National Taiwan Univ. of Sci. and Tech.), Ryutaroh Matsumoto (Nagoya Univ., Aalborg Univ.), Hiroaki Morino (Shibaura Inst. of Tech.), Wakaha Ogata (Tokyo Inst. of Tech.), Masakatsu Ogawa (Sophia Univ.), Chuwong Phongcharoenpanich (King Mongkut's Inst. of Tech. Ladkrabang), Nordin Ramli (Malaysian Inst. of Microelectronic Systems), Yuji Sekiya (The Univ. of Tokyo), Takatoshi Sugiyama (Kogakuin Univ.), Hidenori Takahashi (KDDI R&D), Ryo Yamaguchi (Softbank Mobile), Shuto Yamamoto (NTT), Miao Zhang (Xiamen Univ.)

* Authors must agree to the “Copyright Transfer and Page Charge Agreement” via electric submission.

* Please note that if accepted, all authors are requested to pay for the article charges.

* At least one of the authors must be an IEICE member when the manuscript is submitted for review. We recommend that authors unaffiliated with IEICE apply for membership. For membership applications, please visit the web-page, <http://www.ieice.org/eng/member/OM-appli.html>.



Membership for Overseas Candidates: Overseas Members may opt to join **one IEICE Society of their choice** and may request to receive the **IEICE Transactions of online version** of that Society. Furthermore, Overseas Members may request to receive the IEICE Journal (written in Japanese) and Transactions (published in paper) at an additional cost. Similar services are available to **Overseas Student Members**. Voting privileges in the IEICE election do not apply to Overseas Members. Note that the Overseas Membership applies only to candidates who reside outside of Japan and who have citizenship in countries other than Japan.

OMDP (Overseas Membership Development Program): OMDP is provided for candidates **from countries/areas in Asia(except Republic of Korea and Taiwan), Africa, Central America, and South America**. This program is designed so that IEICE can contribute to and support the progress of science and technology throughout the world. Scientists and engineers in these countries/areas are encouraged to apply to the program.

● **IEICE Societies and Publications**

| Society | Transactions | Editorial Subject Indexes |
|---|------------------------------|--|
| A (Fundamentals of Electronics, Communications and Computer Sciences) | EA (English) A (Japanese) | Engineering Acoustics, Noise and Vibration, Speech and Hearing, Ultrasonics, Digital Signal Processing, Analog Signal Processing, Systems and Control, Nonlinear Problems, Circuit Theory, VLSI Design Technology and CAD, Numerical Analysis and Optimization, Algorithms and Data Structures, Graphs and Networks, Reliability, Maintainability and Safety Analysis, Cryptography and Information Security, Information Theory, Coding Theory, Communication Theory and Signals, Spread Spectrum Technologies and Applications, Mobile Information Network and Personal Communications, Intelligent Transport System, Image, Vision, Computer Graphics, Language, Thought, Knowledge and Intelligence, Human Communications, Neural Networks and Bioengineering, Multimedia Environment Technology, Communication Environment and Ethics, Concurrent Systems, Measurement Technology, General Fundamentals and Boundaries |
| B (Communications) | EB (English) B (Japanese) | Fundamental Theories for Communications, Devices/Circuits for Communications, Transmission Systems and Transmission Equipment for Communications, Optical Fiber for Communications, Fiber-Optic Transmission for Communications, Switching for Communications, Switching for Mobile Communications, Network, Network Management/Operation, Internet, Wireless Communication Technologies, Terrestrial Radio Communications, Satellite Communications, Optical Wireless Communications, Antennas and Propagation, Electromagnetic Compatibility (EMC), Sensing, Navigation, Guidance and Control Systems, Energy in Electronics Communications, Terminals for Communications, Multimedia Systems for Communications, Broadcast Systems, Integrated Systems for Communications, Space Utilization Systems for Communications |
| C (Electronics) | EC (English) C (Japanese) | Electromagnetic Theory, Lasers, Quantum Electronics, Optoelectronics, Microwaves, Millimeter-Waves, Ultrasonic Electronics, Electronic Circuits, Electronic Materials, Organic Molecular Electronics, Electronic Components, Electromechanical Devices and Components, Semiconductor Materials and Devices, Integrated Electronics, Electron Tubes, Vacuum and Beam Technology, Electronic Displays, Superconducting Electronics, Storage Technology, Electronic Instrumentation and Control |
| D (Information and Systems) | ED (English) D (Japanese) | Computation and Computational Models, Automata and Formal Language Theory, Algorithm Theory, Complexity Theory, Computer Components, VLSI Systems, Computer Systems, Fundamentals of Software and Theory of Programs, System Programs, Software Engineering, Database, Contents Technology and Web Information Systems, Data Mining, Networks, Dependable Computing, Application Information Security, Distributed Cooperation and Agents, Artificial Intelligence and Cognitive Science, Human-computer Interaction, Office Information Systems, e-Business Modeling, Educational Technology, Rehabilitation Engineering and Assistive Technology, Pattern Recognition, Speech and Hearing, Image Processing and Video Processing, Image Recognition, Computer Vision, Computer Graphics, Multimedia Pattern Processing, Natural Language Processing, Biocybernetics, Neurocomputing, Biological Engineering, Music Information Processing, Kansei Information Processing, Affective Information Processing |
| Journal of IEICE (written in Japanese only) | | |

● **Membership Charges (<http://www.ieice.org/eng/member/OM-appli.html#c>)**

Basic Membership Charge is as follows. It will change the term when you join IEICE. Please refer to the above website.

Basic Membership Charge (UNIT : Japanese YEN)

| Service coverage for overseas members | Admission charge | Online Version | | Paper Version (optional) |
|---------------------------------------|------------------|--|---|-------------------------------|
| | | Registration of the first society (includes its online version transactions) | Registration of additional societies (includes its online version transactions) | Journal (written in Japanese) |
| Member (overseas) | 1,400 | 7,000 | 3,500 / 1society | 6,000 |
| Member (overseas) with OMDP* | 1,000 | 5,000 | 3,000 / 1society | 6,000 |
| Student member (overseas) | - | 2,000 | 2,000 / 1society | 6,000 |
| Student member (overseas) with OMDP* | - | 1,000 | 1,500 / 1society | 6,000 |

NOTE

- You need to choose one Society, and you can subscribe Transactions online of your registered society.
Example: If you want to subscribe to Transaction of EA, please check **Society Registration** as "A", and your membership fee amounts to 7,000 yen / 5,000 yen.
- If you want to register other Societies and Transaction of web version, please check "**Additional Society registration**".
Example: If you want to subscribe to Transaction of EA and EB, please check **Society Registration** as "A", **Additional Society registration (optional)** as "B". Your membership fee amounts to 7,000+3,500 yen / 5,000+3,000 yen.
- If you want to subscribe to one Transaction of paper version, please check "**Additional Transaction subscription (published in paper)**".
Example: If you want to subscribe to Transaction of EC in paper version additionally, please check **Society Registration** as "A", and **Additional Transaction subscription (in paper version)** as "C" or as "EC". Your membership fee amounts to 7,000+4,000 yen / 5,000+4,500 yen.
- If you want to change membership from Member (In Japan) to Overseas Member, you don't need to pay an Entrance charge.

● **Optional Rapid Mailing Service**

Surface mail charge is included in the membership charge. Optional rapid mailing service is available by air mail or surface air lifted (SAL) mail. The additional charge per year periodical depends on the mailing address, as shown in the right table.

| Areas | Air mail | SAL mail |
|--|------------|-----------|
| Asia; Guam; Midway islands | 5,600 yen | 3,200 yen |
| Oceania; Near & Middle East; North & Central America; Europe | 7,800 yen | 4,400 yen |
| Africa; South America | 11,000 yen | 5,600 yen |

Please contact the IEICE Membership Section: E-mail: member@ieice.org FAX: +81 3 3433 6659 Please fill out the application form printed on the next page.

IEICE Overseas Membership Application Form

URL <http://www.ieice.org/eng/member/OM-appli.html> E-mail member@ieice.org FAX +81-3-3433-6659

◆ **Please type or print in English. The deadline for submitting application form is the 1st day of every month.**

Personal Information

Full name: _____ Nationality: _____ Male
 First name _____ Middle name _____ Last name _____ Female

Prof. Dr. Mr. Ms. Place of birth: _____ Date of birth: _____
 Day _____ Month _____ Year _____

Mailing Address

Home Office

_____ Name of Company/School/College _____ Department/Section
 _____ Street _____ City _____ State/Province
 _____ Postal code _____ Country
 _____ TEL _____ FAX _____ E-mail _____

Academic Background

The highest academic degree: Ph.D. Masters Bachelors Others: _____

_____ University/college/school of the highest academic degree _____ Month & year of graduation

(For Student Member) Academic degree which will be conferred on you _____ Month & year when the degree will be conferred on you

Application Information

Membership: I want to apply for the following membership (check one item!)

- Member (Overseas) Student Member (Overseas)
 ◆ If you want to apply for OMDP, please check; OMDP (Overseas Membership Development Program)

Society registration (Membership fee includes one Society of Transaction of Online version.):

- A: Engineering Sciences B: Communications C: Electronics D: Information and Systems

Additional Society (optional): A: Engineering Sciences B: Communications C: Electronics D: Information and Systems

Additional Transactions of paper version (optional):

- EA: Fundamentals EB: Communications EC: Electronics ED: Information and Systems
 A: Fundamentals (Japanese) B: Communications (Japanese) C: Electronics (Japanese) D: Information and Systems (Japanese)

Journal subscription (optional): (Japanese)

Remittance

Remittance is available only in **Japanese yen** by a **credit card**.

Admission charge.....¥ _____ Journal subscription (optional).....¥ _____
 Annual charge.....¥ _____ Mailing option: Air mail.....¥ _____
 Additional Society (optional) ¥ _____ SAL mail.....¥ _____
 Additional Transactions (optional).....¥ _____ **Total**.....¥ _____

Credit Card: UC Master Card VISA JCB American Express

Card number:

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Expiry date: _____ / _____ Credit Card Holder: _____ Signature: _____
 Year _____ Month _____

Endorsement

Endorsements by one IEICE Member application is required. If it is difficult to find endorsers, please contact the IEICE Membership Activities Section by sending this sheet, and we will help you.

I recommend this applicant for IEICE membership.

_____ Endorser's name _____ Membership number _____ Endorser's signature _____ Date _____

From Editor's Desk

●My last editorial job

I'm Manabu Kai, Director, International Publication, IEICE Communications Society. I have continued to edit the Global Newsletter (GNL) for three years. I really appreciate all of persons who have contributed their great articles. My editorial job has been done during my usual research work and it was very tough, but I think that it was very satisfying and fulfilling for me. I hope that more articles will be contributed to the GNL.

●IEICE Society Conference 2019

IEICE Society Conference 2019 will be held at Osaka University, Osaka, from 10th to 13th September 2019. English sessions are scheduled in the conference. Please check out the latest conference information on the IEICE web site (coming soon).

IEICE-CS GLOBAL NEWSLETTER Editorial Staff

Editorial Staff of this issue

No special order is observed.



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To Probe Further and Keep Up-to-date with Communication Technologies

IEICE Communications Society



IEICE Society Conference 2019

10–13 September 2019

Osaka University, Toyonaka Campus, Osaka

Every autumn, each Society organizes a Society Conference to provide a forum where members can present their study results and exchange views. At present, four of the Societies -- the Engineering Sciences Society, the NOLTA Society, the Communications Society, and the Electronics Society -- hold their Society Conferences as a joint event. The Communications Society Conference includes English-language sessions in addition to the Japanese-language sessions.

Please check out the latest information on the IEICE web site at:

<http://www.ieice-taikai.jp/2019society/en/>

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