IEICE General Conference 2018 Symposium

A: Engineering Sciences Society  Click here to see details.
   AS-1. Wide-spreading optical / wireless communication techniques over land-sea-and-air
   AS-2. Hardware security

N: NOLTA Society  Click here to see details.
   NS-1. Development of application researches of nonlinear oscillator networks

B: Communications Society  Click here to see details.
   BS-1. Antennas and Propagation Technologies for Connected Cars
   BS-2. Innovative Information Communication Technologies for Future Network System Supporting
         Information-oriented Industry (English only)
   BS-3. Next generation network technologies utilizing AI
   BS-4. Special Poster Session ~ Network Technology ~
   BS-5. Energy conversion technology, energy control technology and energy management technology for
         super smart society
   BS-6. Poster Session for Young Researchers - Internet Architecture
   BCS-1. Recent Progress in Digital RF Techniques

C: Electronics Society  Click here to see details.
   CS-1. What helps students comprehend electromagnetism: Challenges and prospect in electromagnetism
         education in universities and colleges
   CS-2. Recent progress in optimization, automatic design, and artificial intelligence technology for electronics
   BCS-1. Recent Progress in Digital RF Techniques

D: Information and Systems Society  Click here to see details.
   DS-1. COMP-ELC Student Symposium
A: Engineering Sciences Society

AS-1. **Wide-spreading optical / wireless communication techniques over land-sea-and-air**

Optical wireless communications and RF wireless communications have been recently attracted much attention from wide-spreading land-sea-and-air communications, and these techniques emphasize the potential of future IoT and M2M networks. In this symposium, we will invite some speakers to inform latest research results on the optical / RF wireless communication system for the land-sea-and-air applications, the expansion and potential for new application, and standardization toward the popularization.

AS-2. **Hardware security**

Papers in the area of hardware security will be widely acknowledged.
NS-1. Development of application researches of nonlinear oscillator networks
Our proposed special session aims for a discussion about latest results of following research topic: networks of nonlinear oscillators which exhibit nonlinear phenomena, for example chaos, limit cycle, and so on. Especially, our scope of this special session involves engineering applications of communication network, power system network, optical system network, group control of mechanical systems, and so on.
B: Communications Society

BS-1. Antennas and Propagation Technologies for Connected Cars

Connected-car technologies attract attention for connected car services such as autonomous driving beyond 2020. Fundamental technologies of wireless communications and radio sensors grows its interest in research and development. ITS Connect has already been commercialized and wireless communication uses for ITS are getting more popular. The technologies of automotive antenna integration and wireless propagation in driving environment have been investigated.

This symposium covers Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) communication systems, ETC, DSRC, GPS and mobile communication systems including LTE and 5G that are applied to the connected car services. Car antennas, road-side-unit antennas, sensing and communication antennas in millimeter-wave and quasi-millimeter-wave antennas, furthermore, radio propagation analysis and signal processing techniques are all welcome in the symposium to give presentations and discussions.

BS-2. Innovative Information Communication Technologies for Future Network System

Supporting Information-oriented Industry

With wide spread of various types of wireless communications including cellular network, wireless LAN, and LPWA as well as ultrafast network, a scope of applications based on information and communication technologies is rapidly expanding. Especially, recent development of IoT technologies realizes network system that a field cooperates with a cloud computing through the Internet, which improves information-oriented industry in various areas (e.g., urban areas, Mountainous area).

In order to achieve the future network system, not only the advanced communication and networking, but also innovative information and communication technologies are necessary for accelerating collaboration of the field and the cloud computing. This symposium discusses the wide range of the advanced communication and networking technologies and the applications for future information-oriented industry through active and timely research presentations.

BS-3. Next generation network technologies utilizing AI

Recently, called the third AI boom, an expectation to AI has been rising. For example, machine learning and deep learning, which are elemental technologies for AI, can recognize and predict a result of the newly input data by learning a large amount of data, and they are beginning to be applied to the various fields. In the network field, research, development, and practical use of technologies, such as traffic forecast, improvement of user experience (QoE), anomaly/fault detection, network operation and management, are advancing by analyzing various kinds' of data and log information obtained from network equipment.

In this symposium, we will have presentations and make discussions on the latest technologies to realize next generation network service and system utilizing AI.

BS-4. Special Poster Session ~ Network Technology ~

This session handles the themes on Network Technology. The presentation style is poster session so that people in the room including speakers could hold an active and fruitful discussion anytime during the session and could have feedbacks or tips for his or her own study. As the session aims to have a discussion about research topics in progress, 1 written paper would be sufficient.

BS-5. Energy conversion technology, energy control technology and energy management technology for super smart society

In optimizing the energy value chain for the super smart society, it is required to achieve issues such as distributed energy sources, energy conservations, and efficient demand control by demand response. Therefore, it is very significant to discuss trends of energy conversion technology, control technology and energy management technology for super smart society in order to make energy supply and demand more efficient and to provide stable supply of renewable energy. We propose it as the theme of integrated symposium.
BS-6. Poster Session for Young Researchers - Internet Architecture

From 2016, technical committee on internet architecture (TCIA) regularly provides a poster session for young researchers in General Conference in each year. Young researchers including students are encouraged to submit one or two page manuscripts for the poster session. The poster presenters must bring their posters in the session. English or Japanese language is allowed to use in the manuscript and poster. TCIA will select excellent poster awards.

BCS-1. Recent Progress in Digital RF Techniques

Digital RF (DRF) technology has been proposed to address the issues of deep-micron CMOS technology of which the analog performance becomes problematic. Wireless systems are also increasingly being integrated for improved communication performance. Digital RF circuit directly transmits and receives wireless signals without an RF circuit, and is therefore expected to reduce the size and power consumption according to Moore’s law. The technology and circuits for DRF have been actively developed in recent years. The session covers applications from fundamentals, and opens up vistas of the future.
C: Electronics Society

CS-1. What helps students comprehend electromagnetism: Challenges and prospect in electromagnetism education in universities and colleges

Electromagnetism is definitely one of the foundations of science and technology. However, students often claim their difficulties in comprehensive understanding. Academics in universities and colleges exercise multidirectional actions to enhance students' comprehension and stimulate their springs of ideas. This symposium promotes discussion leading to new actions among the speakers, consisting of senior/young academics to present their activities as well as expecting industry, and the audience of diverse fields including students. The scope includes problems, questions, and/or efforts and new actions in electromagnetism education widely. It also includes curriculum constructions such as whether or not lectures should start with Maxwell equations or Coulomb's law.

CS-2. Recent progress in optimization, automatic design, and artificial intelligence technology for electronics

With the progress of computer architecture, computer simulation is now indispensable for developing of high performance microwave and optical devices in the wide range of electronics. In recent years, with the aim of improving the production efficiency of electronics devices, utilizing computer simulation technique, several automatic optimal design technique which enables to design microwave and optical devices with desired properties. Furthermore, artificial intelligence technology is also developed for device design and recognition of invisible objects. In this symposium, we will discuss the focused issues related to the state of the art and the future prospects on optimization, automatic design, and artificial intelligence technology for electronics.

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D: Information and Systems Society

DS-1. COMP-ELC Student Symposium

In the field of theoretical computer science, wide spread view over various topics is necessary for outstanding researches, and only those with such view can develop the research frontier. Therefore, academic exchange among students with different research themes is effective for supporting the growth of high-level researchers. The purpose of this symposium is to provide opportunities for their research communication. The presenters are required to be students, while the other coauthors may be regular members. This symposium is co-organized with the Grant-in-Aid for Scientific Research on Innovative Areas “Exploring the Limits of Computation (ELC)”.