Keynote Sessions

Keynote Session 1 (11/26 AM1) Chair: Toru Takahashi (Mitsubishi Electric Corporation)

KS1 6G Immersive Communication: Current Developments and Key Technologies

Xiaofeng Tao (Beijing University of Posts and Telecommunications)

Abstract: The talk first introduces the theoretical foundation and technical requirements of immersive communications, which is one of the six major scenarios of 6G. We then analyze the technical challenges in supporting full-sensing holographic immersive communications, including transmission and networking, content capture and reconstruction. Finally, we summarize the research progress in full-sensing holographic immersive communications.

Biography: Xiaofeng Tao received the Bachelor degree in electrical engineering from Xi'an Jiaotong University, Xi'an, China, in 1993, and the Master and Ph.D.
degrees in telecommunication engineering from Beijing University of Posts and Telecommunications, Beijing, China, in 1999 and 2002, respectively. He is a Professor with Beijing University of Posts and Telecommunications , China and the Chairman of the IEEE ComSoc Beijing Chapter. His research interests are focused on 5G/6G technologies and he has authored or coauthored over 300 research papers and three books in wireless communications.

KS2 Initiatives toward Commercialization of HAPS in Japan

Yoshihisa Kishiyama (Space Compass)

Abstract: HAPS is a technology that can deliver communications directly from the stratosphere to smartphones on the ground, extending coverage. This presentation introduces our initiatives for early commercialization of HAPS in Japan and our R&D activities for future advancement.

Biography: Yoshihisa Kishiyama received his B.E., M.E., and Ph.D. degrees from Hokkaido University, Sapporo, Japan in 1998, 2000, and 2010, respectively. In 2000, he joined NTT DOCOMO, INC. Dr. Kishiyama was involved in the research and development of 4G and 5G radio access technologies, including concept development, standardization, and experimental trials at NTT DOCOMO. He was also engaged in 6G concept development as a writer of “DOCOMO 6G White Paper”. In 2022, he was temporarily transferred to Space Compass Corporation. He is currently a Senior Manager, Space RAN Business in Space Compass, and is engaged in research and development of non-terrestrial network, especially HAPS. He has been a Visiting Professor at Hokkaido University since 2023. He has more than 400 granted patents in the area of mobile communications. In 2012, he received the ITU Association of Japan Award for global contributions to LTE.

Keynote Session 2 (11/27 AM1) Chair: Akihiro Nakao (The University of Tokyo)

KS3 6G: Evolution or Revolution?

Luiz A. DaSilva (Commonwealth Cyber Initiative)

Abstract: As we rapidly move from the ideation phase to the standardization of 6G, it is time to reflect on how this new generation of mobile networks will be shaped by the current moment and how it will potentially influence how we live and work. Every mobile generation to date has brought performance gains, but not every generation has significantly altered the way the network has been used for communications, commerce, and entertainment. Whether 6G represents an evolution or a revolution will depend on how we leverage the key technologies that are being integrated into this generation. More than anything else, Artificial Intelligence (AI) holds enormous promise to revolutionize how the network is managed and used. There are also inherent dualities at play here, in the use of AI to run the network and in AI’s dependence on robust network infrastructure, as well as in the potential of AI to improve network security and in the need for new cybersecurity mechanisms to prevent and mitigate attacks on AI. Similar dualities are present in other areas. For example, there is an urgent need to reduce the energy consumed by networks, while at the same time there is great potential for communication networks to increase the efficiency of smart energy grids, transportation, and other verticals. And integrated sensing and communication can potentially introduce new and innovative use cases for mobile networks while raising important privacy concerns. This talk will discuss these dual aspects of 6G technologies and how they can be navigated to make this a truly impactful generation.

Biography: Luiz A. DaSilva is the inaugural executive director of the Commonwealth Cyber Initiative (CCI), an organization comprising 47 institutions of higher education in Virginia, USA, with a common mission of research, innovation, and workforce development in cybersecurity. He is also the Bradley Professor of Cybersecurity in the Department of Electrical and Computer Engineering at Virginia Tech. Prior to that, he was the telecommunications chairholder at Trinity College in Dublin, Ireland, and director of CONNECT – the Science Foundation Ireland Centre for Future Communications and Networks. DaSilva is a Fellow of the Institute of Electrical and Electronic Engineers (IEEE) for his contributions to cognitive networking and to resource management in wireless networks. He pioneered the application of game theory to analyze and design wireless networks. He has also been an IEEE Communications Society Distinguished Lecturer, a Fellow of Trinity College Dublin, and a Virginia Tech College of Engineering Faculty Fellow.

KS4 The role of artificial intelligence in the 6G air interface

Adrian Garcia-Rodriguez (Ericsson Research)

Abstract: Artificial intelligence (AI) will play a prominent role in the next generation of wireless networks, including within the 6G air interface. With the 6G standardization journey just starting, we will begin by encapsulating the lessons learned during the 5G Advanced work and the latest 3GPP updates. We will also provide clarity on the key potentials, achievements, and obstacles that need to be overcome to enable widespread adoption of AI for air interface functionalities. Throughout our presentation, we will share the latest insights and vision from the Ericsson labs. Finally, we will conclude by highlighting the key areas we believe the research community should focus on to make the effective integration of AI in 6G a reality.

Biography: Adrian Garcia-Rodriguez is a team leader at Ericsson Research, where he investigates standard and proprietary artificial intelligence and machine learning (AI/ML) techniques for the 6G air interface. For his work on this area, he was recognized with the Ericsson Impact Award in 2023 and as a Key Ericsson Contributor for having the potential to drive the long-term strategic priorities in 2022 and 2024. Adrian is a co-inventor of 50+ filed patent families, for which he received the Nokia Bell Labs Ireland Certificate of Outstanding Achievement for co-authoring the highest number of filed patents in 2019. He is a recipient of the 2021 IEEE ComSoc Outstanding Young Researcher Award for EMEA and the Best Paper Award in PIMRC’19 for his work on “UAV-to-UAV cellular communications”. Adrian has been an active contributor to IEEE ComSoc conferences, having organized 9 workshops, and delivered 20 between keynotes, tutorials, and industrial seminars.

Keynote Session 3 (11/26 AM1) Chair: Shoji Kasahara (Nara Institute of Science and Technology)

KS5 Evolving AI Architectures Toward On-Device Intelligence

Dong Seog Han (Kyungpook National University)

Abstract: In recent years, artificial intelligence has made dramatic advances, fueled by breakthroughs in neural network architectures, scalable compute infrastructure, and the availability of massive datasets. However, the next wave of innovation is increasingly shifting toward on-device AI, where intelligence is brought closer to the data source—whether it be a smartphone, autonomous vehicle, wearable, or sensor node. This keynote traces the evolution of AI architectures from early convolutional neural networks to recent trends such as transformers, efficient neural networks (e.g., MobileNet, EfficientNet), and foundation models. We will explore how these architectures are being adapted and optimized for deployment on resource-constrained edge devices, through techniques such as neural architecture search (NAS), quantization, pruning, and knowledge distillation. Moreover, the talk will address how on-device AI enables real-time inference, privacy preservation, low-latency interaction, and enhanced reliability, all of which are essential for next-generation applications in autonomous systems, healthcare, smart mobility, and wearable computing. This talk aims to provide both a technological roadmap and a strategic vision for researchers and engineers building the next generation of AI-powered edge systems.

Biography: DONG SEOG HAN is a Professor in the School of Electronics Engineering at Kyungpook National University (KNU). He began his career at Samsung Electronics, where from 1987 to 1996, he developed transmission systems for HDTV receivers. He joined the faculty at KNU in 1996. Professor Han has held several key leadership and visiting positions. He is the Director of the Center for ICT and Automotive Convergence (CITAC) at KNU and previously served as the Director of the Center for Digital TV and Broadcasting at the Institute for Information Technology Advancement (IITA) from 2006 to 2008. In 2004, he held a visiting appointment as a Courtesy Associate Professor at the University of Florida’s Department of Electrical and Computer Engineering. He received his B.S. degree in electronic engineering from KNU in 1987, and his M.S. and Ph.D. degrees in electrical engineering from the Korea Advanced Institute of Science and Technology (KAIST) in 1989 and 1993, respectively. His research focuses on artificial intelligence, V2X communications, and autonomous driving systems.

KS6 Wi-Fi Sensing for Human Activity Recognition: Leveraging Deep Learning

Tomoaki Otsuki (Keio University)

Abstract: This keynote presentation explores the rapidly evolving field of human activity recognition (HAR) using Wi-Fi sensing technologies. The presentation focuses on using channel state information (CSI) and deep learning to detect and classify human behaviors.

The presentation begins with an overview of Wi-Fi sensing, emphasizing its advantages as a noninvasive, cost-effective, and accurate HAR approach. Then, it examines key technical and practical challenges, including subject variability, environmental dynamics, and limitations in data quality.

Advanced deep learning methodologies are then introduced to address these issues and enhance robustness and accuracy. These include refining feature extraction from Wi-Fi signals, integrating state-of-the-art classification models, and devising strategies to improve generalization across diverse users and environments. Particular attention is given to ensuring resilience under real-world conditions, such as noise and signal degradation.

The keynote also addresses practical deployment aspects, focusing on lightweight, resource-efficient models suitable for edge devices. It also explores multi-label classification approaches capable of recognizing multiple concurrent activities. This allows for the capture of the complexity of everyday human behavior.

Overall, this presentation aims to advance Wi-Fi-based human activity recognition (HAR) by addressing critical technical barriers and outlining pathways toward scalable, reliable, and real-world applications.

Biography: Tomoaki Otsuki (Ohtsuki) received the B.E., M.E., and Ph. D. degrees in Electrical Engineering from Keio University, Yokohama, Japan in 1990, 1992, and 1994, respectively. From 1994 to 1995, he was a post-doctoral fellow and a Visiting Researcher in Electrical Engineering at Keio University. From 1993 to 1995, he was a Special Researcher at the Fellowships of the Japan Society for the Promotion of Science for Japanese Junior Scientists. From 1995 to 2005, he was with the Science University of Tokyo. In 2005, he joined Keio University. He is now a Professor at Keio University. From 1998 to 1999, he was with the department of electrical engineering and computer sciences, University of California, Berkeley. He is engaged in research on wireless communications, optical communications, signal processing, and information theory. Dr. Ohtsuki is a recipient of the 1997 Inoue Research Award for Young Scientist, the 1997 Hiroshi Ando Memorial Young Engineering Award, Ericsson Young Scientist Award 2000, 2002 Funai Information and Science Award for Young Scientist, IEEE the 1st Asia-Pacific Young Researcher Award 2001, the 5th International Communication Foundation (ICF) Research Award, 2011 IEEE SPCE Outstanding Service Award, the 27th TELECOM System Technology Award, ETRI Journal's 2012 Best Reviewer Award, 9th International Conference on Communications and Networking in China 2014 (CHINACOM '14) Best Paper Award, 2020 Yagami Award, The 26th Asia-Pacific Conference on Communications (APCC2021) Best Paper Award, International Conference on Internet of Things, Communication and Intelligent Technology (IoTCIT) 2024 Best Paper Award, and the 2024 6th International Conference on Robotics, Intelligent Control and Artificial Intelligence (RICAI2024) Best Paper Award. He has published more than 315 journal papers and 540 international conference papers. He served as a Chair of IEEE Communications Society, Signal Processing for Communications and Electronics Technical Committee. He served as a technical editor of the IEEE Wireless Communications Magazine and an editor of Elsevier Physical Communications. He is now serving as an Area Editor of the IEEE Transactions on Vehicular Technology and an editor of the IEEE Communications Surveys and Tutorials. He is also serving as the IEEE Communications Society, Asia Pacific Board Director. He has served as general-co chair, symposium co-chair, and TPC co-chair of many conferences, including IEEE GLOBECOM 2008, SPC, IEEE ICC 2011, CTS, IEEE GLOBECOM 2012, SPC, IEEE ICC 2020, SPC, IEEE APWCS, IEEE SPAWC, and IEEE VTC. He gave tutorials and keynote speeches at many international conferences including IEEE VTC, IEEE PIMRC, IEEE WCNC, and so on. He was Vice President and President of the Communications Society of the IEICE, also he was a distinguished lecturer of the IEEE. He is a fellow of the IEICE, a Fellow of Asia-Pacific Artificial Intelligence Association (AAIA), a senior member of the IEEE, and a member of the Engineering Academy of Japan.

Invited Special Sessions

Invited Special Session 1 (11/26 PM2) Chair: Satoshi Ohzahata (The University of Electro-Communications)

IS1-01 Independent Power System for Distributed Antenna Networks

Hirohito Yamada (International Research Institute of Disaster Science, Tohoku Univ.)

Abstract: In next-generation mobile communication systems, distributed antenna networks are expected to play a central role. However, during disasters or grid outages, while central base stations typically have backup power, remote antennas—often deployed in large numbers—remain vulnerable to service interruption. To address this, we propose an independent power system for remote antennas, integrating compact batteries and solar panels to ensure operation for over three days in the absence of grid power. Under normal conditions, the system combines solar generation with power delivered via hybrid fronthaul from the base station, aiming for over 50% renewable energy utilization per antenna. We conducted both simulation studies and field experiments using a local 5G system. Results indicate that equipping remote antennas with approximately 2 kWh of battery capacity and 300 W of solar panels can meet key resilience and sustainability goals. This approach enhances disaster robustness and contributes to greener network infrastructure.

IS1-02 Speculative Video Transmission in Cloud Gaming Systems

Takuya Fujihashi (The University of Osaka)

Abstract: Cloud gaming systems allow users to play games that require high-performance computational capability on their mobile devices at any location. However, playing games through cloud gaming systems increases the Round-Trip Time (RTT) due to increased network delay. We present the speculative video transmission, which pre-generates and encodes video frames corresponding to user inputs and sends them to the user before the user's input, to mitigate the network delay. In addition, we design tile-wise delta detection for traffic reduction of speculative video transmission. It determines redundant video region based on the hash-based similarity between the generated video frames and does not send them to the user for traffic reduction. Evaluations using commercial games showed that the speculative video transmission reduced 40-50% in traffic volume when the SSIM index was around 0.98 in certain genres, compared with the vanilla speculative video transmission.

IS1-03 Non-Contact Human Vital Sign Sensing and Activities Recognition with Radar and WiFi Comunications: A Research Overview from Toda Laboratory in Nihon University

Takeshi Toda (Nihon University)

Abstract: In this work, we present recent research activities conducted in the Toda Laboratory at Nihon University, focusing on non-contact human vital sign (heart rate and blood pressure) sensing and activity recognition using MIMO mmWave radar and Wi-Fi communication, exploring practical applications and commercialization opportunities. For human activity recognition, we introduce the classification of nine postures using a MIMO radar and a MIMO Wi-Fi network. Furthermore, we present a method for estimating 18 skeletal joint positions using a 12Tx–16Rx imaging radar. For hardware solutions, we use a low-power solution using a 2Tx–4Rx MIMO 60 GHz-band radar equipped with a single in-phase (I-only) mixer, comparing with the conventional 79 GHz-band 3Tx–4Rx MIMO radar employing both in-phase and quadrature (I/Q) mixers. Additionally, we explore a further lower power consumption 1Tx–1Rx 60 GHz-band pulsed radar. On the other hand, for vital sign sensing, we utilize channel state information (CSI) obtained from 3Tx–3Rx MIMO Wi-Fi routers. Signal processing techniques include beamforming for multi-target tracking and heart rate extraction using traditional frequency-time domain analysis. On the other hand, deep learning-based methods are employed for the human activity recognition and the skeletal pose estimation.

Invited Special Session 2 (11/28 PM1) Chair: Masaharu Takahashi (Chiba University)

Multi-disciplinary Wireless Applications Connected by Multi-Antenna Technologies — Kentaro Murata (Iwate University)

IS2-01

Abstract: Wireless technologies have traditionally been developed with a primary focus on communication. In recent years, however, research and development have increasingly expanded into multi-disciplinary applications, including wireless power transfer and sensing. While these applications differ in their goals and implementations, they share a common technical challenge: achieving flexible and sophisticated manipulation of radio waves.This talk introduces two multi-disciplinary research projects that connect diverse wireless applications through multi-antenna technology, enabling advanced wave manipulation beyond the limitations of conventional single-antenna systems.The first project explores a novel beamforming technique that simultaneously enables high-efficiency wireless power transfer and suppresses radio wave exposure. This is achieved through wireless sensing of challenging targets, such as battery-depleted receivers and device-free human bodies.The second project proposes a low-cost, high-fidelity, and reproducible over-the-air testing platform for human-sensing radar systems. Inspired by reconfigurable intelligent surfaces, the platform integrates a life-emulating electromagnetic phantom that virtually reproduces human presence and motion by reconstructing arbitrary radar signals observed in real-world scenarios.By showcasing these projects, this talk aims to promote multi-disciplinary collaboration and inspire the co-creation of next-generation wireless applications interconnected by multi-antenna technologies.

Battery-Free Wireless Communication Using Backscatter Technology — Jin Mitsugi (Keio University)

IS2-02

Abstract: Beyond its well-known use in Radio Frequency Identification (RFID), backscatter communication technology is expanding into unique industrial applications of battery-free wireless sensing by leveraging its inherent combination of wireless power transfer and ultra-low-power radio links based on signal reflection.This presentation begins with the fundamental principles of backscatter communication, then highlights recent developments from the author's research group, including a versatile sensor handling, and a novel multiple access method that supports concurrent data streaming from groups of backscatter sensors.
Several prototype experiments are also presented, featuring a custom radio frequency integrated circuit (RFIC) and a software-defined interrogator. The latest progress in international standardization efforts under ISO/IEC 18000-65 is also reported.

Applications of Two-Dimensional Laguerre Polynomials in Wireless Communications — Kazuki Komatsu (Toyohashi University of Technology)

IS2-03

Abstract: In this talk, we first introduce the fundamental properties of two-dimensional Laguerre polynomials and their usefulness in signal processing and wireless communications. When the input signal can be modeled as a complex Gaussian process, two-dimensional Laguerre polynomials form an orthogonal basis. This property enables mathematically concise expressions for the autocorrelation and cross-correlation functions of output signals from nonlinear systems, as well as their power spectral densities and nonlinear responses. Based on these features, we present several applications from our recent research. Specifically, we show how two-dimensional Laguerre polynomials provide an analytical framework for the design of self-interference cancellers in in-band full-duplex systems, and for the theoretical analysis of in-band full-duplex terminals. We also show their effectiveness in the theoretical study of stochastic resonance phenomena, where nonlinear system responses play a central role, and in estimating non-ideal characteristics of practical wireless terminals for device identification tasks. By exploiting the orthogonality and representational advantages of two-dimensional Laguerre polynomials, our approach offers new insights into both the analysis and the design of advanced wireless communication systems.

Challenges Toward Massive Virtual Array Channel Sounding with UAV System — Kentaro Saito (Tottori University)

IS2-04

Abstract: Recently, Unmanned Aerial Vehicles (UAVs) have been widely utilized for various industrial applications and are expected to play a key role in next-generation mobile communication systems. For the design and evaluation of the mobile communication system in the sky, the air-to-ground (A2G) propagation channel characteristics have been investigated using UAV-based measurement systems. However, measurement resolution is constrained by the UAV payload, which limits the array antenna size. In this paper, we propose a virtual array channel sounding system using a UAV to solve this limitation. In our system, the propagation channel data are continuously measured by a receiver mounted on the UAV as it flies along the measurement course. The data are combined offline and processed to synthesize a large virtual antenna array for investigating the angular characteristics of the propagation channel. A key advantage of our system is that it enables the configuration of an arbitrary virtual antenna array in the air, including massive arrays with several thousand antenna elements, by compensating UAV position errors using laser equipment. The experiments were conducted in both indoor and outdoor environments in the microwave band. The half-power beam width (HPBW) of the angular power spectrum was 3.2 deg., which is remarkably narrow for this frequency band. Future work includes experiments in various radio propagation environments and more detailed channel analyses.

Invited Special Session 3 (11/28 PM2) Chair: Kenji Kanai (Waseda University)

Precise Vehicle Navigation with RTK-GNSS and Multi-Sensor Fusion — Nobuaki Kubo (Tokyo University of Marine Science and Technology)

IS3-01

Abstract: This presentation introduces a study on high-precision positioning using the integration of Real-Time Kinematic (RTK) GNSS, an Inertial Measurement Unit (IMU), and a velocity sensor. The proposed system aims to achieve continuous and decimeter-level positioning accuracy, even in environments where GNSS signals are partially obstructed. By tightly coupling RTK-based GNSS with IMU and velocity measurements, the system can effectively bridge short GNSS outages and mitigate multipath or cycle slip effects. A Kalman filter–based sensor fusion algorithm is implemented to estimate position, velocity. Field experiments demonstrate that the integrated system significantly improves positioning continuity and accuracy compared to standalone RTK GNSS. This research contributes to the development of reliable and high-precision navigation systems for land and maritime applications, highlighting the potential of compact, low-cost sensor fusion for robust RTK-based positioning in dynamic environments.

DePIN-based Co-Digital Twin — Kenji Kanai (Waseda University)

IS3-02

Abstract: Digital Twin is a technology accelerating the realization of Society 5.0. Digital Twin enables performing high-precision computer simulations. Feedbacking the results of this high-precision future prediction back into the real world enables decisions about future actions and controls within that real world. Currently, research and development regarding Digital Twin is being conducted worldwide across various fields. While many projects focus on creating a computer simulation platform for handling digital data and algorithms, the efficient acquisition of real-world digital data is often overlooked. Involving key players, such as data providers, service providers, and application developers, is essential for constructing a Digital Twin. Based on this motivation, this talk introduces the concept of our proposal, "Co-" Digital Twin, and its critical enabling technology: the Decentralized Physical Infrastructure Network. This mechanism offers zero-touch blockchain and peer-to-peer-based storage networking to create a decentralized system infrastructure. It promotes Web3-based autonomous and sustainable data distribution/trading with an incentive mechanism.

Initiatives toward Evolving All-Photonics Network (APN) — Masahiro Nakagawa (NTT)

IS3-03 Abstract: With the extensive development of IoT and AI-related applications, demands for network capacity and connectivity have been continuously increasing. In addition, cyber-physical systems will enrich our daily lives in the near future but they have a significant impact on network infrastructure. Facing with these trends, network operators should consider strategies for optical network evolution. This talk presents an overview of recent initiatives aiming to evolve All-Photonics Network (APN), which is a common social infrastructure for the smart society. Specifically, the original concept and current APN features will be reviewed, and then latest achievements toward enhancing APN serviceability will be introduced. Latest efforts include state-of-the-art wavelength conversion technologies and plug and play functionality for providing end-to-end direct connections on-demand. Recent results from proof-of-concept demonstration will also be reported. Moreover, multi-band transmission over multiple fibers and related future challenges will be discussed for further capacity scaling.

Invited Sessions

Invited Session 1 (11/26 PM1) Chair: Daishi Kondo (The University of Tokyo)

I1-01 Signal Detection in Underwater Impulsive Acoustic Noise Channel — Takumi Ishihara (NTT)
Abstract: This talk reviews signal detection (SD) schemes for underwater acoustic wireless (UAW) channels affected by non-Gaussian impulsive noise. UAW channels, especially in shallow-water environments, are typically affected by impulsive noise originating from sources such as marine organisms. Consequently, the probability density function (PDF) of the ambient noise in UAW channels is often heavy-tailed and deviates from the Gaussian distribution. This deviation causes a severe degradation in the detection performance of the conventional linear correlator (LC)-based SD scheme, which is optimal only under the assumption of Gaussian noise. To overcome this limitation, several improved SD schemes that consider the specific characteristics of the UAW noise PDF have been proposed. More specifically, SD is typically carried out by relying on the Neyman-Pearson lemma, which forms a likelihood ratio test based on the noise PDF. Accordingly, several SD schemes for UAW channels have been developed by approximating the actual noise PDF using heavy-tailed distributions such as the symmetric alpha stable distribution and the Student's t-distribution. The presentation will demonstrate that these SD schemes achieve significantly better detection performance than the conventional LC-based SD scheme in UAW channels. Moreover, the trade-off between their computational complexity and achievable detection performance will be clarified.

I1-02 QoE Evaluation and Enhancement for Scalable Real-Time Video Content Distribution System — Satoshi Ohzahata (The University of Electro-Communications)
Abstract: Quality of Service (QoS) metrics are crucial for assessing network performance. However, since these metrics do not directly capture user satisfaction, Quality of Experience (QoE) has been adopted as a performance metric for applications such as video and audio. Recently, the use of real-time communication over the Internet has become widespread, presenting a challenge in the real-time evaluation of QoE metrics. Artificial intelligence (AI) has been increasingly applied to network research. In this presentation, we present the latest research findings from our laboratory, which focuses on evaluating QoE using AI technology and its applications. We begin by discussing QoE evaluation methods for real-time video communication within large-scale content distribution systems. Subsequently, we introduce a method for enhancing QoE in real-time content distribution systems catering to a large user base. However, while QoE assesses the quality of video or audio, it does not evaluate whether users can extract the desired information from the content or perform tasks on the network. We will explore a potential research direction based on our laboratory's recent findings regarding the type of information that AI can obtain over the network.

I1-03 A Self-Consistent Framework for Sensor Localization using Interdependence between Locations and Intersensor Distances — Shino Shiraki (Tokyo Metropolitan University)

Abstract: Accurate localization of sensors is essential for a wide range of context-aware applications in wireless sensor networks (WSNs), such as vehicle detection and environmental monitoring. In densely deployed sensor environments, spatially proximate sensor nodes often produce highly correlated measurements. This correlation suggests a potential relationship between sensor locations and intersensor distances, which can be leveraged to cooperatively estimate sensor locations. In this talk, we introduce the concept of cooperative localization and a self-consistent statistical framework for sensor localization that jointly estimates sensor locations and distance distributions based on measurement similarity. The key idea is to model intersensor distances as similarity-conditioned Gaussian distributions, and to iteratively update both the location estimates and distance models in a mutually reinforcing manner. By combining maximum likelihood estimation and nonlinear optimization, the proposed method achieves significant accuracy improvements over randomly initialized locations without requiring explicit ranging or threshold tuning. Even if the distance estimation contains errors, the iterative process improves localization accuracy by leveraging similarity information that does not directly represent distance. We also discuss how this approach broadens the practical applicability of low-cost, densely deployed WSNs.

I1-04 Measuring the Adoption of Email Security Measures Following Google's New Sender Guidelines — Daishi Kondo (The University of Tokyo)

Abstract: On October 3, 2023, Google introduced new email sender guidelines mandating authentication protocols such as Sender Policy Framework (SPF), DomainKeys Identified Mail (DKIM), and Domain-based Message Authentication, Reporting, and Conformance (DMARC) to reduce unsolicited emails to Gmail users. Google claimed these measures would enhance email security. Nevertheless, an August 2024 report revealed that 8 million of the top 10 million domains by web traffic had not implemented DMARC. Our large-scale measurement study investigates entities that failed to adopt the required authentication protocols. Our findings indicate low SPF, DKIM, and DMARC adoption in domains associated with China, South Korea, and Japan. Gmail remains blocked in China due to censorship, while in South Korea, availability of free email accounts through NAVER reduces incentives for compliance. In Japan, despite Google's search engine dominance, adoption still lags, implying non-compliance stems from practical constraints rather than deliberate resistance. Furthermore, business-to-business domains show low adoption, likely because Gmail has limited operational significance in these sectors. Although some entities are exempt from Google's requirements, others did not comply despite enforcement from a powerful platform. In the absence of effective organizational enforcement, it is necessary to examine whether regulatory or community-based technical approaches more effectively enhance email security.

Invited Session 2 (11/27 PM2) Chair: Hiroo Sekiya (Chiba University)

I2-01 Noncontact Measurement of F-Parameters for Cable-to-Board Transitions at Both Ends — Masahiro Yoshida (Okayama University)
Abstract: Cables can cause radiated emissions depending on the impedances at both ends. These impedances are determined not only by the board connected to the cable but also by the cable-to-board transition. A previous study proposed a method to measure the transition at one end using a current probe; however, it assumes an ideal load at the other end, which limits the measurable frequency range. In this study, we propose a method that independently measures F-parameters at both ends to overcome this limitation. The effectiveness of the method was verified through SPICE simulations and experiments.

I2-02 Load-independent technology on high-frequency magnetic resonance wireless power transfer systems — Hiroo Sekiya (Chiba University)
Abstract: Wireless power transfer (WPT) is now widely practical technology, ranging from electric vehicles to portable devices and IoT devices. This presentation introduces circuit design techniques, which enable stable power transmission with a simplified circuit configuration in magnetic resonance WPT system. Specifically, it covers a technique called load-independent design, explaining this design concept and its effect on WPT performance. Furthermore, it introduces the latest design methodology utilizing machine learning.

I2-03 Machine Learning-Enhanced Implantable Device Localization Based on Magnetic Fields — Daisuke Anzai (Osaka Metropolitan University)
Abstract: In recent years, in-body cybernetic avatars (in-body CAs), namely implantable sensors or robots, have been attracting significant attention in order to achieve a healthy longevity society. In-body CA facilitates interaction with the external environment within the body by safely and securely monitoring internal conditions within organs or the digestive system through remote operation from outside the body. In-body CA can provide functions such as measuring body temperature and pH, delivering medication to localized areas, and removing tumors. To realize next-generation in-body CA, it is necessary to construct spatio-temporal information about the internal environment based on data acquired from implantable sensors. This study proposed a machine learning-enhanced in-body CA localization based on magnetic fields. Then, we experimentally evaluated the estimation accuracy to demonstrate the superiority of the developed localization system.

I2-04 Entangled photons and measurements for quantum communication — Shigeki Takeuchi (Kyoto University)
Abstract: Quantum communication is rapidly advancing as a foundation for secure information transfer and scalable quantum networks. In this talk, we introduce our recent experimental achievements after a brief overview of quantum communication.
We first report the experimental demonstration of the generation of ultra-broadband frequency-correlated photon pairs using a high-index contrast doped glass micro ring resonator fabricated on a silicon chip [1]. The generated photon pairs exhibit frequency correlation between 106 mode pairs and 212 frequency combs in total, ranging from 1394.0 to 1745.9 nm with the bandwidth of 351.9 nm and covering the telecom E-, S-, C-, L-, and U-bands. Such a source will increase the information capacity per photon, enabling more efficient data transmission and stronger security in quantum key distribution.
Secondly, we present the realization of entangled measurement for W states [2]. Entangled measurements are an indispensable tool for quantum information processing, such as Bell-state measurements in quantum teleportation and entanglement swapping. Here, we propose a scheme to realize entangled measurements for W states of arbitral number of photonic qubits by use of the discrete Fourier transformation (DFT). We also experimentally demonstrated the entangled measurement for W state for 3 qubits yielding a measurement discrimination fidelity of 0.871 ± 0.039.
[1] Y. Hamayama, S. Takeuchi et. al., APL Photonics 10, 076101 (2025).
[2] G. Park, S. Takeuchi et. al., Science Advances 11, eadx4180 (2025).

Invited Session 3 (11/28 PM1) Chair: Moriya Nakamura (Meiji University)

I3-01 Recent Advances in High-Performance Multi-core Fiber Technologies — Mukasa Kazunori (Lightera)

Abstract: Multi-core fiber (MCF) technologies have been remarkably advanced in recent years driven by the growing demand for higher capacity transmissions. In addition to the higher density, the similar properties as conventional single-core fibers are also required. This talk will provide an overview of recent advancements of MCF performance, including technologies for increasing density, reducing attenuation loss, and optimizing fabrication processes. Various design strategies and process innovations will be discussed, highlighting their optical performances as well as future directions and challenges in applying the MCFs for the practical next-generation optical networks.

I3-02 Long-haul transmission of a 4096-ary optical eigenvalue-modulated signal using a neural network demodulator and SD-FEC — Ken Mishina (The University of Osaka)

Abstract: In long-haul optical fiber transmission systems, Kerr nonlinearity induces distortion that limits transmission capacity and distance. Inverse scattering transform (IST), also known as the nonlinear Fourier transform (NFT), enables eigenvalue communication to overcome this limit. Eigenvalues associated with the nonlinear Schrodinger equation remain invariant during fiber transmission, even though the waveform and spectrum change. Hasegawa and Nyu proposed eigenvalue communication in 1993, and recent advances in digital coherent technology have made its realization feasible.

Various IST-based modulation schemes have been demonstrated. To increase capacity, on?off encoding of multieigenvalues was proposed, with successful 3000-km transmission of 16-ary eigenvalue-modulated signals. Another approach exploits the nonlinear spectrum and scattering coefficient b, with 16QAM transmission over 1200 km. Joint modulation of continuous and discrete spectra has also been achieved, including 3200-km dual-polarization QPSK transmission.

This presentation reports our recent studies on optical eigenvalue communication. We designed a 4096-ary eigenvalue-modulated signal using on?off encoding of 12 eigenvalues arranged in a triangular lattice. A multilabel neural network receiver was developed for demodulation, achieving a balance between BER and complexity. Furthermore, soft-decision FEC was applied to extend transmission distance, demonstrating the potential of high-order eigenvalue modulation in practical long-haul systems.

I3-03 Wideband Incoherent Pump Sources with Low Relative Intensity Noise for Bidirectional Distributed Raman Amplification in C — Shigehiro Takasaka (Furukawa Electric)

Abstract: We review recent developments in distributed Raman amplification (DRA) for optical fiber communication systems, focusing on the use of high-power, wideband, low relative intensity noise (RIN) incoherent light sources (iPUMPs) for forward pumping. While DRA systems have traditionally relied mainly on backward pumping with conventional laser diodes (cPUMPs), forward pumping can further improve the optical signal-to-noise ratio (OSNR) and extend transmission distances. However, forward pumping with cPUMPs induces RIN transfer from the pumps to the signals, resulting in signal quality degradation. The introduction of iPUMPs resolves the issue of RIN transfer and enables the practical implementation of forward pumping.

We demonstrate bidirectionally pumped DRA, employing iPUMPs for forward pumping and cPUMPs for backward pumping. This configuration achieves flatter gain and higher OSNR, allowing for longer transmission distances and improved signal quality. The transmission distance of a WDM signal over the C and L bands was extended by 1.8 times compared to that achieved using only EDFA. Furthermore, by utilizing second-order forward pumping with cPUMPs, we further enhance the signal quality.

We conclude that iPUMP-based bidirectional DRA is a key technology for future high-speed, large-capacity optical networks, overcoming the limitations of conventional amplification methods.

I3-04 Data transmission method using modulated vibrations and an optical fiber vibration sensor — Tetsuya Manabe, Yuki Okamoto (Mie University), Shingo Ohno, Atsushi Nakamura, Kunihiro Toge (NTT)

Abstract: We have proposed a novel data transmission method which uses a vibration source as a transmitter and an optical fiber vibration sensor as a receiver. Without tearing apart the optical fiber cable to extract the optical fiber, proposed method enables data transmission utilizing the deployed optical fibers by simply placing a vibration source in contact with an outer sheath of an optical fiber cable. So far, we have worked on the data transmission system using a Mach–Zehnder interferometer (MZI) as the optical fiber vibration sensor and conducted the research for improving the data transmission speed and qualities by frequency diversity method, parallel data transmission and multi-channel transmission using spectrum spread. Recently, we have been working to improve the stability of data reception using multiple interfere waves. In this presentation, we show the fundamental configuration of the proposed data transmission system using MZI and some experimental results.

Invited Session 4 (11/28 PM2) Chair: Takumi Miyoshi (Shibaura Institute of Technology)

I4-01 Filter and Forward Collaborative Relaying For Higher Diversity Gain — Satoshi Denno (Okayama University)

Abstract: Filter and forward collaborative relaying is proposed in the presentation.

The proposed collaborative relaying makes other devices relay the signals for the destination terminal. The proposed collaborative relaying achieves higher diversity gain in conjunction with those devices.

In the proposed collaborative relaying, he received signals are filtered at those devices and forwarded just like amplify and forward relaying (AF) for gaining higher diversity gain, which improves the transmission performance.

Moreover, a device selection technique is proposed for the proposed collaborative relaying in which signal distortion caused by the Doppler shift is taken into account. The performance is evaluated in a double selective fading channel by computer simulation, because we assume that a higher frequency band is utilized for the signal forwarding. A 30GHz band is used for the signal forwarding, while a 3GHz band is utilized for the signal transmission between the base station to the devices.

the OFDM is applied for the signal transmission.

Even if the Doppler frequency becomes higher due to the movement of the devices, the transmission performance is kept high.

I4-02 Deep Joint Source-Channel Coding for Autonomous Driving Applications — Katsuya Suto (Hokkaido University)

Abstract: In the context of collective perception and remote driving, reliable image transmission over wireless channels plays a crucial role in enabling safe autonomous driving. Unlike conventional image transmission, these applications do not necessarily demand high-resolution video quality. Instead, the primary requirement lies in achieving real-time performance with minimal latency.

This motivates the exploration of advanced coding and transmission schemes capable of handling stringent delay constraints while maintaining robustness to channel impairments.

Deep Joint Source and Channel Coding (DJSCC) has recently emerged as a promising approach to meet these demands. By jointly optimizing source compression and channel coding within an end-to-end learning framework, DJSCC can significantly improve transmission efficiency and adaptability compared to traditional separate source-channel coding strategies.

In this presentation, we focus on the design and analysis of DJSCC schemes for autonomous driving applications. Specifically, we investigate their performance under fast-varying channels and examine their potential resistance to chosen-plaintext attacks, which pose emerging security threats to communication systems. The results highlight DJSCC as a viable pathway toward secure, low-latency video transmission in next-generation vehicular networks.

I4-03 Massive MIMO System Using Small Ground Stations for High-Capacity Satellite Feeder Link — Koyo Tategami, Daisuke Goto, Kiyohiko Itokawa, Tomohiro Tokuyasu and Fumihiro Yamashita (NTT)

Abstract: Future LEO satellite systems are expected to accommodate a more significant number of terminals than conventional satellite-only communication systems because they are expected to provide the same level of service as mobile terminals and other terrestrial mobile communication systems. For such satellite communication services, it is necessary to increase the capacity of the feeder link, which is the backhaul link between the satellite and the ground station. We have studied satellite MIMO systems that employ multiple-input multiple-output (MIMO) technology to increase transmission capacity by utilizing spatial multiplexing with multiple antennas for feeder link transmission and reception. Increasing the number of transmit and receive antennas to enhance spatial multiplexing effectively achieves even greater capacity. However, satellite communications typically employ large ground stations, and deploying numerous ground stations is expected to face geographical constraints.

This presentation introduces the concept of a Massive MIMO system that employs numerous small ground stations to increase transmission capacity further. Simulation evaluations of the proposed system show that many small ground stations increase transmission capacity.

I4-04 A Multi-Band Redundancy Scheme to Enhance V2N2V Communication Quality — Jin Nakazato (Tokyo University of Science), Manabu Mikami (Softbank)

Abstract: As Level 4 automated driving systems are increasingly deployed worldwide, ensuring ultra-reliable and low-latency communications has become critical for safety and coordination, especially in the platooning applications of trucks and Bus Rapid Transit (BRT). One major challenge in 5G networks is the occurrence of latency spikes caused by Data Radio Bearer (DRB) suspension during inter-cell handovers (HOs). This paper proposes a practical multi-band redundancy scheme for Vehicle-to-Network-to-Vehicle (V2N2V) communications that leverages two frequency bands operated by a single mobile network operator (MNO). The proposed method duplicates packets over both bands, thereby enabling seamless communication even when a handover disrupts one link. We implement the scheme using 5G modems and validate it through field trials on live commercial 5G Standalone (SA) network environments in both urban and suburban areas. Experimental results demonstrate that the proposed approach mitigates latency spikes, effectively reducing the probability of one-way end-to-end (E2E) communication latency and reliability. We confirm the viability of our method for enhancing V2N2V communication reliability in real-world 5G networks without requiring modifications to the existing infrastructure or protocols.

Oral Sessions

Oral Session 1 (11/26 PM1) Chair: Takuya Asaka (Tokyo Metropolitan University)

O1-01	Multiple LiDAR-based Mirror Surface Detection Considering Sequential Scan Discontinuities	Yuzuki Yasuzuka, Taku Yamazaki and Takumi Miyoshi (Shibaura Institute of Technology, Japan)
O1-02	Vehicle-to-Pedestrian Warning System Using Graph Neural Networks	Hiroaki Sugiura, Taku Yamazaki and Takumi Miyoshi (Shibaura Institute of Technology, Japan)
O1-03	Delay Modeling of Camera-Based Visible Light Communication Systems Using Queuing Theory	Kosuke Nakano, Shan Lu and Takaya Yamazato (Nagoya University, Japan)
O1-04	Secure Parallel-Transmission Visible Light Communication via DFT Order	Fumihito Anno, Koji Kamakura and Masayuki Kinoshita (Chiba Institute of Technology, Japan); Takaya Yamazato (Nagoya University, Japan)

Oral Session 2 (11/26 PM2) Chair: Osamu Muta (Kyushu University)		
O2-01	User Fairness in Asynchronous NOMA with Transmit Equalization	Tomonari Kurayama and Teruyuki Miyajima (Ibaraki University, Japan)
O2-02	Calibration Method Involving Pointing Error Estimation for a Satellite Receiving DBF Antenna	Narihiro Nakamoto, Tai Tanaka, Makoto Matsuki, Masaaki Kusano and Shigeru Uchida (Mitsubishi Electric Corporation, Japan)
O2-03	Real-Time Prediction of Classroom Usage Using Wi-Fi Traffic and Time Information Data	Yohei Sakatani (Osaka Univeisity, Japan); Yuichi Ohsita, Kenji Ohira and Hideyuki Shimonishi (The University of Osaka, Japan)
Oral Session 3 (11/27 PM1) Chair: Badr Mochizuki (Kansai Gaidai University)		
O3-01	A Low-Power Consumption Metro Optical Network using Two-Node Cooperative Node Architecture	Satsuki Jimura (Keio University, Japan); Takashi Miyamura (Senshu University, Japan); Satoru Okamoto and Naoaki Yamanaka (Keio University, Japan)
O3-02	Development of an OAM Transmission Transmission Characteristic Evaluation Tool with Lens Placement	Takahiro Yokoi and Keizo Cho (Chiba Institute of Technology, Japan)
O3-03	Theoretical Performance Analysis for Image Sensor Communication using a Propeller LED Transmitter	Shin Asaoka and Shan Lu (Nagoya University, Japan); Zhengqiang Tang (Shizuoka University, Japan); Takaya Yamazato (Nagoya University, Japan)
Oral Session 4 (11/27 PM2) Chair: Takuya Fujihashi (The University of Osaka)		
O4-01	Performance evaluation of traffic compression method for large-scale system log collection	Michishiro Tanaka and Go Hasegawa (Tohoku University, Japan); Ryotaka Miyamoto, Masaki Tsuji and Kazushi Toyoda (Furukawa Electric Co., Ltd., Japan)
O4-02	QoE-Aware UAV Trajectory Planning via Reinforcement Learning for Post-Disaster Network	Zalita Phetxomphou (The University of Aizu, Japan); Hoang Le (University of Aizu, Japan); Anh T. Pham (The University of Aizu, Japan)
O4-03	Secure Sparse Inpainting via Permutation-based Encryption for Image Reconstruction	Itsuki Arakaki, Tadashi Shiroma, Morikazu Nakamura and Takayuki Nakachi (University of the Ryukyus, Japan)

Poster Sessions

Poster Session 1 (11/26 AM2)		
P1-01	SplitNFT: A Quantified, Algorithm-Driven Approach to Eliminate Carbon Double-Counting with NFTs	Shuhei Yamauchi (NARA Institute of Science and Technology, Japan); Shoji Kasahara (Nara Institute of Science and Technology, Japan)
P1-02	On Analysis of Tradeoff between Latency and Resource Efficiency in Multi-hop Split Learning	Akihiro Inoue, Takanori Hara and Shoji Kasahara (Nara Institute of Science and Technology, Japan)
P1-03	A study on improving user throughput using cell clustering method in dynamic TDD system	Hayato Soya (Suwa University of Science, Japan); Hideya So (Kogakuin University, Japan)
P1-04	Enhanced Evaluation: 3D Pose Estimation of 18 Skeletal Joints Using mm-Wave Radar with Deep Learning	Sora Nagayama, Tatsunori Saito and Takeshi Toda (Nihon University, Japan)
P1-05	A Study of Improved Remote Heart Rate Estimation Method with A 60 GHz In-phase Sensor Module	Yuto Imada, Tatsunori Saito and Takeshi Toda (Nihon University, Japan)
P1-06	Waveband Transmission over a ROADM System using Symbol CBC Mode with Polarity-based Phase Shifting	Takahiro Kodama and Reika Suketomo (Kagawa University, Japan); Ryosuke Matsumoto (National Institute of Advanced Industrial Science and Technology, Japan)
P1-07	SDN-Based Control for a Reconfigurable Optical Access Network with Single-Star and Passive Double-S	Daiki Kuzuhara, Sogo Mii and Hitoshi Kamei (Kagawa University, Japan); Takaki Nakamura (Tohoku University, Japan); Satoru Izumi (National Institute of Technology Sendai College, Japan); Takahiro Kodama (Kagawa University, Japan)
P1-08	A Study of Phase Selection and Accumulation Methods on Heart Rate Estimation with A Pulse Sensor	Taiyo Takahashi, Tatsunori Saito and Takeshi Toda (Nihon University, Japan)
P1-09	An Evaluation for ResNet-50 and Deep Fusion Analysis for Human Activity Recognition with Wi-Fi CSI	Kaede Nitta (Graduate School of Nihon University, Japan); Takumi Kojima and Takeshi Toda (Nihon University, Japan)
P1-10	Evaluation of Robust Metrics for Assessing Metallic Backing Effects on Antennas	Yoichi Murakami and Toru Fukasawa (Kanazawa Institute of Technology, Japan)
P1-11	Experimental Evaluation of Continuous Cuffless Blood Pressure Estimation from ECG and PPG Signals	Takahiro Ishimoto, Tatsunori Saito and Takeshi Toda (Nihon University, Japan)
P1-12	Development of Epidermis-equivalent Phantom in THz Frequency Region for Exposure Assessment	Tatsuya Ohwada (Aoyama Gakuin University, Japan); Shota Yamazaki and Maya Mizuno (National Institute of Information and Communications Technology, Japan); Ryosuke Suga (Aoyama Gakuin University, Japan); Tomoaki Nagaoka (National Institute of Information and Communications Technology, Japan)
P1-13	Hierarchical Unified Spatial Representation Learning for mm-Wave Radar Pose Estimation	Tatsunori Saito, Sora Nagayama and Takeshi Toda (Nihon University, Japan)
P1-14	Federated Learning Ensemble Based 5G mobility prediction	Teresia Ankome (Saga University & Namibia University of Science & Technology, Japan); Guy-Alain Lusilao Zodi (Namibia University of Science and Technology, Burkina Faso); Yoshiaki Hori and Eisuke Hanada (Saga University, Japan)
P1-15	A Study of Heart Rate Extraction from Noise Rich SignalObtained with A 60 GHz Pulse Sensor Module	Shoei Satou, Tatsunori Saito and Takeshi Toda (Nihon University, Japan)
P1-16	A 1.8 micrometer broadband light source consisting of an SLD and a double-pass ASE light source	Soshiro Omae, Osanori Koyama and Kanami Ikeda (Osaka Metropolitan University, Japan); Hirotaka Ono (Shonan Institute of Technology, Japan); Makoto Yamada (Osaka Metropolitan University, Japan)
P1-17	High efficiency antenna for ITE device	Ryoya Kishi and Toru Fukasawa (Kanazawa Institute of Technology, Japan)
P1-18	Weibull Distribution-Based Approximation of Skin Temperature Rise Due to MMW Beam Exposure	Haruto Utsushigawa, Yuma Ueda and Kun Li (The University of Electro-Communications, Japan); Takashi Hikage (Hokkaido University, Japan); Hiroshi Masuda and Etsuko Ijima (Kurume University School of Medicine, Japan); Akiko Nagai (Aichi Gakuin University, Japan); Kenji Taguchi (Kitami Institute of Technology, Japan)
P1-19	Implementation and Evaluation of Portable System for Communication Support using AI and AR Glasses	Ryuta Akashi (Tokyo Metropolitan University Graduate School, Japan); Takuya Asaka (Tokyo Metropolitan University, Japan)
P1-20	Averaging of Absorbed Power Density for Forearm Skin Exposure at Millimeter-Wave Frequencies	Yuma Ueda and Kun Li (The University of Electro-Communications, Japan); Takashi Hikage (Hokkaido University, Japan); Hiroshi Masuda and Etsuko Ijima (Kurume University School of Medicine, Japan); Akiko Nagai (Aichi Gakuin University, Japan); Kenji Taguchi (Kitami Institute of Technology, Japan)
P1-21	BER Enhancement of Maximum Acceptable Power under SAR Constraints for Implanted Biomedical Telemetry	Ziheng Zhou and Kun Li (The University of Electro-Communications, Japan); Kazuhiro Honda (University of Toyama, Japan)
P1-22	Design of Combline Bandpass Filters Using LC-Terminated Rectangular Coaxial Resonator	Hao-Hui Chen, Yao-Wen Hsu and Sing-Ting Ho (National Kaohsiung University of Science and Technology, Taiwan); Yusuke Kusama (Toyo University, Japan)
P1-23	Clustering-Based Resource Allocation in LPWA Considering Hidden Terminal Information	Keita Aoki and Osamu Takyu (Shinshu University, Japan); Koichi Adachi (Keio University, Japan); Mai Ohta (Kogakuin University, Japan); Takeo Fujii (The University of Electro-Communications, Japan)
P1-24	Mast cell degranulation induced by local exposure to 60 GHz millimeter waves in rat skin	Yukina Tsuruta and Tatsuya Ishitake (Kurume University School of Medicine); Akiko Nagai (Aichi Gakuin University, Japan); Takashi Hikage (Hokkaido University, Japan); Kun Li (The University of Electro-Communications, Japan); Hiroshi Masuda (Kurume University School of Medicine, Japan)

P1-25	Sex-based differences in human skin temperature response to 28 GHz quasi-millimeter wave exposure	Jing Chen (Kurume University School of Medicine, Japan); Tatsuya Ishitake (Kurume University, Japan); Akiko Matsumoto (Saga University School of Medicine, France); Sachiko Kodera (Nagoya Institute of Technology, Japan); Takashi Hikage (Hokkaido University, Japan); Hiroshi Masuda (Kurume University School of Medicine, Japan)
P1-26	Localized 60 GHz exposure induces skin necrosis without Iba1 expression in rat dorsal tissue	Naomi Kamizawa and Naoko Terada (Kurume University School of Medicine, France); Tatsuya Ishitake (Kurume University, Japan); Akiko Nagai (Aichi Gakuin University, Japan); Takashi Hikage (Hokkaido University, Japan); Kun Li (The University of Electro-Communications, Japan); Hiroshi Masuda (Kurume University School of Medicine, Japan)
P1-27	Effects of 28 GHz millimeter wave exposure on human skin blood flow: influence of age and sex	Masae Kunitake (Kurume University School of Medicine, Japan); Tatsuya Ishitake (Kurume University, Japan); Akiko Matsumoto (Saga University School of Medicine, France); Sachiko Kodera (Nagoya Institute of Technology, Japan); Takashi Hikage (Hokkaido University, Japan); Hiroshi Masuda (Kurume University School of Medicine, Japan)
P1-28	Age- and sex-related differences in skin temperature response to 60 GHz millimeter-wave exposure in	Fumie Nonaka (Kurume University School of Medicine, France); Tatsuya Ishitake (Kurume University, Japan); Akiko Nagai (Aichi Gakuin University, Japan); Takashi Hikage (Hokkaido University, Japan); Kun Li (The University of Electro-Communications, Japan); Hiroshi Masuda (Kurume University School of Medicine, Japan)
P1-29	Evaluation of Autonomous Notification Control Using Prediction Broadcasts in Sensor Networks	Hideyasu Hirane and Osamu Takyu (Shinshu University, Japan)
P1-30	Experimental Evaluation of Beam Index Estimation Using Spectrum Sensing in Local 5G	Hayato Mitsuhashi and Osamu Takyu (Shinshu University, Japan); Kohei Akimoto (Akita Prefectural University, Japan)
P1-31	A Study on the Application of DDS to nodal point Communication in IoT DEP	Ayumu Ito, Souta Mori, Atsuko Yokotani, Koichi Ishibashi and Tetsuya Yokotani (Kanazawa Institute of Technology, Japan)
P1-32	Capacity Evaluation of Wireless System Using Movable RIS Device	Hayato Yamasaki (Okayama University & Graduate School of Environmental, Life, Natural Science and Technology, Japan); Yu Yasufuku, Ren Nakaya, Yafei Hou and Satoshi Denno (Okayama University, Japan)
P1-33	Estimating Interference Power from Massive Terminals Using Propagation Similarity-Based Clustering	Tatsuro Hidaka and Osamu Takyu (Shinshu University, Japan); Kei Inage (Tokyo Metropolitan College of Industrial Technology, Japan); Takeo Fujii (The University of Electro-Communications, Japan); Kohei Yoshida and Masayuki Ariyoshi (NEC Corporation, Japan)
P1-34	Experimental Investigation of the Impact of Metallic Obstacles for In-Metal-Pipe Wireless LAN	Yuki Endo, Daiki Nobayashi and Takeshi Ikenaga (Kyushu Institute of Technology, Japan)
P1-35	A Dynamic and Scalable Resource Monitoring Platform for Evolving Network Infrastructures	Yuki Hatanaka (Graduate School, Kanazawa Institute of Technology, Japan); Tetsuya Yokotani, Koichi Ishibashi, Atsuko Yokotani and Hiroto Washio (Kanazawa Institute of Technology, Japan)
P1-36	Stacked Combline Bandpass Filter Design Using a Bridging Resonant Structure	Hao-Hui Chen, Kai-Sheng Shi and Yao-Wen Hsu (National Kaohsiung University of Science and Technology, Taiwan); Yusuke Kusama (Toyo University, Japan)

Poster Session 2 (11/27 AM2)

P2-01	Cyclically Permutable Codes for Information Networks and Optical Communication Systems	Jui-Chou Guo (Chung Hsing University, Taiwan); Cheng Hsi Yang, Kuan-Sih-Wei Pan and Houshou Chen (National Chung Hsing University, Taiwan)
P2-02	Encryption offloading for software-based uncompressed-video transmission	Takuro Yamaguchi, Yoshiki Kobayashi, Naohiro Kimura and Yasuhiro Mochida (NTT, Japan); Hirokazu Takahashi (Nippon Telegraph and Telephone Corporation, Japan)
P2-03	Real-Time Monitoring of Emotional and Autonomic Nervous Changes During Gameplay	Fumiya Nakanishi, Yuta Fukami and Ryuta Maeda (Kyushu University, Japan); Satoshi Matsunuma (Maxell, Japan); Reiji Hattori (Kyushu University, Japan)
P2-04	Temperature-Aware Workload Distribution between Two GPU Servers for Waste Heat Reuse in Data Centers	Naruto Arai, Naoki Hanaoka and Toshihiro Hayashi (NTT Corporation, Japan)
P2-05	Performance of Decision-Directive RSOP Tracking for Stokes Vector Modulation-Direct Detection Scheme	Riona Kawabata and Joji Maeda (Tokyo University of Science, Japan)
P2-06	Performance Evaluation of Terahertz-Based Posture Detection using Skeletal Detection for Slip-and-Fa	Hideya So (Kogakuin University, Japan); Tatsuya Yoshida (OLDBASE, Japan); Shusaku Umeda and Kazuaki Ishioka (Mitsubishi Electric Corporation, Japan); Naofumi Yoneda (Mitsubishi Electric.Corporation, Japan); Akinori Taira (Mitsubishi Electric Corp., Japan)
P2-07	Overloaded MU-MIMO Employing Non-linear Precoding For Inter-User Interference Mitigation	Kosuke Ota, Satoshi Denno and Yafei Hou (Okayama University, Japan)
P2-08	Spatial Extraction Technology using Terahertz-wave Imaging	Shusaku Umeda, Kyoko Nakayama and Kazuaki Ishioka (Mitsubishi Electric Corporation, Japan); Hideya So (Kogakuin University, Japan); Naofumi Yoneda (Mitsubishi Electric.Corporation, Japan); Akinori Taira (Mitsubishi Electric Corp., Japan); Satoshi Yoshima and Takeshi Suehiro (Mitsubishi Electric Corporation, Japan)
P2-09	High-precision phase screen prediction by diffusion model in free-space optical communications	Ryo Nishizono and Shun Kojima (Yokohama National University, Japan)
P2-10	Fingerprint localization using coordinate-wise GAN-based data augmentation	Aoi Ohno, Satoru Aikawa and Shinichiro Yamamoto (University of Hyogo, Japan)
P2-11	Indoor localization by updating the Path loss exponent using measurement points	Keita Takimoto, Satoru Aikawa and Shinichiro Yamamoto (University of Hyogo, Japan)
P2-12	Semantic Communications using Stacked Intelligent Metasurfaces	Inhyeok Choi and Shun Kojima (Yokohama National University, Japan)
P2-13	Water Flow Classification via Cross-Sectional Fluctuation of Underwater Optical Beams	Komei Maekawa, Kiichiro Kuwahara and Takahiro Kodama (Kagawa University, Japan)
P2-14	Simple Delay Design of Adjustable-Delay IRS for Spatial Equalization	Kento Kurashima and Teruyuki Miyajima (Ibaraki University, Japan)
P2-15	Fairness Revisited: Uplink/Downlink of Coexisting QUIC and TCP Flows in Wireless LANs	Kota Iwasaki and Ken'ichi Kawanishi (Gunma University, Japan)
P2-16	Investigating the Effects of VR Headset Variations on Users' Subjective Assessment	Takae Sanada and Yasuhiro Sato (Osaka Electro-Communication University, Japan)
P2-17	Distributed in-band network telemetry for network failure avoidance	Badr Mochizuki (Kansai Gaidai University, Japan)
P2-18	DCF-based Multi-Channel Access for the Virtual Dedicated Channel Scheme under Transmission Duration	Yusuke Hirano and Shinichi Miyamoto (Wakayama University, Japan)
P2-19	Evaluation of 5G/6G Performances Using Point Cloud Simulator with Map-based Hybrid Channel Model	Koshiro Kitao, Satoshi Suyama, Takahiro Tomie and Nobuaki Kuno (NTT DOCOMO, INC, Japan)
P2-20	Theoretical Adaptive Modulation Control in 2-channel Ultrasonic PORC-OFDM Systems	Mahiro Munakata, Fumihito Sasamori and Ryo Shibata (Shinshu University, Japan)
P2-21	Overlapping Clustering for Interdisciplinary Literature and Implementation to the IEICE Web System	Angxiao Li, Tetsuo Tsujioka and Tomohito Takubo (Osaka Metropolitan University, Japan)
P2-22	Development of a Lung Age Estimation Device Using Electronic Fukimodoshi Blowouts	Misaki Shinmyo (Osaka Metropolitan University, Japan)
P2-23	Influence of Air Tanks on Undersea Electromagnetic Communication at 10 kHz	Ukai Tachikawa, Shinnosuke Sakaya and Masaharu Takahashi (Chiba University, Japan)
P2-24	Temperature Sensitivity and Measurable Range of Long- Period Fiber Grating using Glycerol Solution	Yuto Fujimoto, Osanori Koyama, Kanami Ikeda and Makoto Yamada (Osaka Metropolitan University, Japan)
P2-25	On-device Embedding-based Playlist Personalization for Privacy-Preserving Recommendation	Shohei Mori and Satoshi Nishimura (Japan Broadcasting Corporation, Japan)

P2-26	A Wireless Communication-Based EMS Model Adapted for Emergency Response in Bangladesh	Shakil Hossain, Md Rayhan Uddin and Eisuke Hanada (Saga University, Japan)
P2-27	Dynamic Load Balancing for Distributed Image Analysis Using Deep Q-Network with eBPF	Yu Yoshimura and Kimihiro Mizutani (Kindai University, Japan)
P2-28	Efficient Global Model Aggregation via Node Clustering in Two-Layer Peer-to-Peer Federated Learning	Shotaro Hirao and Kimihiro Mizutani (Kindai University, Japan)
P2-29	Privacy-Preserving Decentralized Model Aggregation in Federated Learning Systems	Sofia Bodnar and Kimihiro Mizutani (Kindai University, Japan)
P2-30	Fingerprint-Based Localization Method Using Data Diversity for MmWave System Using RIS Device	Katsuma Kishi, Souichirou Tada, Yafei Hou and Satoshi Denno (Okayama University, Japan)
P2-31	A Secure AES-RSA Hybrid System with Expiry-Aware Key Management for Encrypted Medical IoT Data	Ahmed Mushabbir and Eisuke Hanada (Saga University, Japan)
P2-32	A Two-Dimensional Constrained Code for Light-Trail-Based Image Sensor Communication	Eisuke Abe, Shan Lu and Takaya Yamazato (Nagoya University, Japan)
P2-33	Clutter Suppression for Millimeter-Wave Radar by Using Compressed Sensing	Hiroyuki Yamaguchi (Institute of Technologists, Japan)
P2-34	Enhanced Hospital Discovery System with Ambulance Tracking & Doctor Availability	Md Rayhan Uddin and Eisuke Hanada (Saga University, Japan)

Poster Session 3 (11/28 AM2)

P3-01	Performance of Uplink Terminal Collaboration Considering Device-to-Device Communication Throughput	Riku Nakaoka and Yukitoshi Sanada (Keio University, Japan)
P3-02	Image-Based Beam Centroid Detection and Optical Axis Control in Aberrated Underwater Environments	Haruto Miyamoto, Kiichiro Kuwahara and Takahiro Kodama (Kagawa University, Japan)
P3-03	22 W optical power delivery with suppressed fiber fuse in pure-silica-core multi-mode fiber	Kenji Kurokawa and Shosei Nakano (Kitami Institute of Technology, Japan)
P3-04	Suppression of fiber fuse propagation in Ge-doped and pure-silica-core single-mode fibers	Masahide Ota and Kenji Kurokawa (Kitami Institute of Technology, Japan)
P3-05	Reinforcement Learning-based Antenna Association Switching and Deactivation in Uplink for Distribute	Ayumu Takada and Yukitoshi Sanada (Keio University, Japan)
P3-06	Multi-User Signal Detection with UAV Relay Station in Uplink Heterogeneous Network	Mana Furuichi and Yukitoshi Sanada (Keio University, Japan)
P3-07	Spectrum Efficiency Improvement with A Non-Linear Distortion Noise Canceller for Multi-Band Spectrum	Hironori Mizuma (University of Okayama, Japan); Shigeru Tomisato and Kazuhiro Uehara (Okayama University, Japan)
P3-08	PAM-4 Based Time Domain Single Carrier Index Modulation for Future Optical Access Networks	Yuto Yamauchi (Meijo University, Japan); Rui Shimada and Daichi Aoki (Kindai University, Japan); Wataru Imajuku (Meijo University, Japan)
P3-09	Indoor 3D position estimation by LoRa using 4 anchor nodes	Sho Yanagisawa and Takuya Asaka (Tokyo Metropolitan University, Japan)
P3-10	Performance Evaluation of Transceiver Beamforming in Integrated Multifunctional Wireless Systems	Hayato Minamino and Teruyuki Miyajima (Ibaraki University, Japan)
P3-11	Design and Implementation of a Priority-Based Control System for Social Media in Disaster Situations	Hideyuki Tanaka and Yasuhiro Sato (Osaka Electro-Communication University, Japan)
P3-12	Motion artifact removal in ECG signals for wearable biomedical sensors without using accelerometer	Ryo Sugiura (Tottori University, Japan); Tenki Kodani (FUJIFILM Medical Service Solution, Japan); Tadao Nakagawa (Tottori University, Japan)
P3-13	Motion artifact removal in ECG signals for wearable biomedical sensors using EMD and HPF	Aito Hirota and Tadao Nakagawa (Tottori University, Japan)
P3-14	Measurement and Simulation of Air-to-Ground Radio Propagation Characteristics for UAV at 5.7 GHz	Yuto Ogasawara (Muroran Institute of Technology, Japan)
P3-15	Routing Control using Self-organizing Map and Ant Colony Optimization in Information-centric Network	Rin Akabane, Takuya Asaka and Takumi Senaha (Tokyo Metropolitan University, Japan)
P3-16	Routing for Bottleneck Bandwidth Maximization using ACO with an Autonomous Learning Mechanism	Takumi Senaha, Taito Baba and Takuya Asaka (Tokyo Metropolitan University, Japan)
P3-17	Stereo-Vision-Aided Intelligent Reflecting Surface Control for High-Frequency-Band Communications	Ryuhei Kobayashi, Toshihiko Nishimura and Yasutaka Ogawa (Hokkaido University, Japan); Satoshi Suyama (NTT DOCOMO, INC, Japan); Takeo Ohgane (Hokkaido University, Japan)
P3-18	Transmission-distance dependence of quaternion neural-network equalizers for optical fiber links	Kizuku Ochiri and Moriya Nakamura (Meiji University, Japan)
P3-19	Dispersion preprocessing for fiber nonlinearity compensation using complex reservoir computing	Shunya Uchide, Soya Shimomura, Takumi Yamamoto and Tsuyoshi Yamada (Meiji University, Japan); Takahide Sakamoto (Tokyo Metropolitan University, Japan); Naokatsu Yamamoto (National Institute of Information and Communications Technology, Japan); Moriya Nakamura (Meiji University, Japan)
P3-20	Goodput Performance of FSO-based LEO Satellite Systems Using IR-HARQ with Network Coding	Doan Van Luan and Hoang Le (University of Aizu, Japan); Anh T. Pham (The University of Aizu, Japan)
P3-21	Non-Linear Distortion Compensation for Multi-User LED Visible Light Wireless Communications	Kento Yamada, Shigeru Tomisato, Satoshi Denno and Kazuhiro Uehara (Okayama University, Japan)
P3-22	An Integration Scheme of Provisioning and Switching Control for Metabolizing Virtual Routers	Hiroki Saruta (University of Tokai, Japan); Junichi Murayama (Tokai University, Japan)
P3-23	Scalable complex reservoir computing with tapped delay lines for fiber nonlinearity compensation	Soya Shimomura, Tsuyoshi Yamada, Takumi Yamamoto, Shunya Uchide and Moriya Nakamura (Meiji University, Japan)
P3-24	Activation function effects in complex-valued ANN for OSSB signal nonlinearity compensation	Shoma Kanaya, Jun Yokoyama, Kodai Watanabe and Moriya Nakamura (Meiji University, Japan)
P3-25	Optical twin-SSB Signal detection using a single Kramers-Kronig receiver	Kodai Watanabe, Jun Yokoyama, Shoma Kanaya and Moriya Nakamura (Meiji University, Japan)
P3-26	Spectral radius dependence of sparsified complex-valued RC for fiber nonlinearity compensation	Takumi Yamamoto, Tsuyoshi Yamada, Soya Shimomura, Shunya Uchide and Moriya Nakamura (Meiji University, Japan)
P3-27	Nonlinearity compensation in optical SSB transmission using frequency-domain neural networks	Jun Yokoyama, Shoma Kanaya, Kodai Watanabe and Moriya Nakamura (Meiji University, Japan)
P3-28	A Proposal on operations in BMI/BCI-Enabled Robots TICOT	Atsuko Yokotani (Kanazawa Institute of Technology, Japan)
P3-29	Overfitting suppression in ANN-based fiber-nonlinearity mitigation via L1 and L2 regularization	Kensuke Sato, Tsuyoshi Yamada, Takumi Yamamoto, Kizuku Ochiri and Moriya Nakamura (Meiji University, Japan)
P3-30	Delay characteristics of sparsified reservoir computing for fiber-optic nonlinearity mitigation	Tsuyoshi Yamada, Takumi Yamamoto, Soya Shimomura, Shunya Uchide and Moriya Nakamura (Meiji University, Japan)
P3-31	Optimal Blockchain Sharding for Fairness and Attack Resistance	Reiji Sawaoka and Takuji Tachibana (University of Fukui, Japan)
P3-32	Window Flow Control for Effective Entanglement Utilization in Quantum Networks	Shuga Mizutani and Takuji Tachibana (University of Fukui, Japan)
P3-33	Topology Design of Quantum Networks via Repeater Placement and Path Selection	Kota Iida and Takuji Tachibana (University of Fukui, Japan)
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P3-35	Transmission of message from existing devices using long distance communication devices	Kosei Kurono and Satoshi Kodama (International Professional University of Technology in TOKYO, Japan)
P3-36	Clustering Based Transmission Control Method for Indoor Spatio-Temporal Data Retention System	Riku Nakamura, Daiki Nobayashi, Kazuya Tsukamoto and Takeshi Ikenaga (Kyushu Institute of Technology, Japan)