

Keynote Lectures	
<b>Speaker</b>	Mr. Kannan Lakshminarayanan (Sr. Project Consultant, CEET (Centre for Excellence in Energy and Telecommunication), IIT Madras)
<b>Title</b>	Challenges and Opportunities in Motors
<b>Abstract</b>	Nearly 60% of all electricity in the world is consumed by motors of some kind or the other. Motors are now poised for an explosive growth in significant domains like electric vehicles, heat-pumps, and robots. Despite the promise of emerging technologies in this domain, there are a number of challenges and constraints to navigate. The performance advantage of the best motors is derived from the strength of the magnets in them. This presents a key supply-chain risk – China is the sole source of these, and prices can be very volatile. Efforts to move away from RE dependence have always been accompanied by increased use of steel and copper, which also increases the size and weight of the motor. What is often overlooked is that copper and electrical steel are also expensive and scarce. While these are less expensive per gram than RE magnets, they constitute a far greater share of the active weight than the magnets. In a typical EV motor, these contribute four-times as much to the cost as the RE magnets do – as illustrated in the table below. Thus, there is little merit in reducing the RE content by adding to the amount of steel and copper consumed. Although motors have been made and used for several decades, their methods of manufacture are primitive and not adapted the big surge in volumes that is expected. In this talk, we review the promising strategies for addressing these challenges and identify innovative trends in expanding the envelope of possibilities that these emerging applications represent. These directions hold the promise of rich rewards for the early movers.
<b>Bio</b>	Kannan Lakshminarayan currently leads a team at the Indian Institute of Technology, Madras, in designing and developing High Efficiency Traction Motors for electrical vehicles. His research interests revolve around electro-mechanical engineering for making products that impact livelihoods and sustainability. He is the founder and director of Fractal Foundation – a one of a kind “ideas accelerator” focused on bringing new technologies to the market, including Microspin and Skillveri. In addition, Kannan’s passion for innovation-driven engineering led him to co-found and direct several tech companies like Vortex, Motorz and Pilabz. Kannan received the Distinguished Alumnus Award of the Indian Institute of Technology Madras 2014, in recognition of his innovations and transformative work in sustainable solutions for rural India.
<b>Date and Time</b>	12:30 HRS (JST), 09:00 HRS (IST), 10:30 HRS (GMT), 11:30 HRS (MYT)
<b>Speaker</b>	Prof. IR. Dr. Khairul Salleh Bin Mohamed Sahari (Universiti Tenaga Nasional, Malaysia)
<b>Title</b>	Mapping by practical inspection robot in a real environment
<b>Abstract</b>	Usage of practical robots to replace human in inspection is more common today than ever before, especially in dirty, difficult and dangerous (3D) situations. In radiation accidents areas or situations involving potential threats, there may be objects that are cluttered or suspicious, and require careful inspection to identify radiation source parameters and determine appropriate mitigation actions. Currently, the inspection is performed by first responders or radiation workers, putting them at risk of radiation exposure. Robots equipped with radiation detector is an ideal substitution to eliminate the risk. Data acquired is useful for constructing a radiation map, a tool to visualise the radiation distribution and identify the presence of hotspots within the location. Given the information from a 2D occupancy map, a strategy to identify the position of clutter and formulate the sampling positions to acquire radiation measurement is proposed.  Meanwhile, periodical inspection of the power plant system and its subsystem are deemed necessary to avoid shortage and unplanned shutdown. One of the critical areas of inspection is the welding joint between the boiler header and tubes. Image from camera probes are often used as input for experts during periodic inspection. The Self-Magnetic Leakage Field (SMLF) technique can also be used to determine the Stress Concentration Zones (SCZ) of metal structures and welded joints. Different robotic-based inspection systems incorporating image mapping and SMLF scanning system were developed. The SMLF robot system in particular uses an automated circumvent motion mechanism to inspect boiler tubes in the range of 30 mm to 70 mm outer diameters (OD) that can access the minimal gap constraint of 32.9 mm.
<b>Bio</b>	Dr Khairul is currently the Deputy Chief Executive Officer (CEO) (Quality Assurance) of the Malaysian Qualifications Agency (MQA) since May 2019. He is also the current chair of the ASEAN Qualifications Reference Framework Committee and President of the Association of Quality Assurance Agencies of the Islamic World. He also sits as a council member in the Engineering Technology Accreditation Council.
<b>Date and Time</b>	12:50 HRS (JST), 09:20 HRS (IST), 10:50 HRS (GMT), 11:50 HRS (MYT)
<b>Speaker</b>	Dr. Budi Rahmadya (Andalas University, Indonesia)
<b>Title</b>	Wind velocity measurement using balloon wireless sensor network at Padang beach in Indonesia
<b>Abstract</b>	Sea breezes can cause sea waves which can cause disasters in residential areas in coastal areas such as Padang Beach in Indonesia. In these research we developed a prototype named balloon wireless sensor network placed on the sea to measure wind velocity that occurs on the sea surface. These prototype is equipped with an anemometer sensor and 900 MHz wireless device as a transmitter. In these research we conducted an experiment to determine the relationship between wind velocity and RSSI values in the receiver that was installed on land.
<b>Bio</b>	Prof. Budi Rahmadya (Member, IEEE) received the M.E. degree in computer science from the Nara Institute of Science and Technology (NAIST), Ikoma, Japan, in 2013, and the Ph.D. degree in computer and information science from Ibaraki University, Ibaraki, Japan, in 2021., He is a Associate Professor with the Computer System Department, Faculty of Information and Technology, Andalas University, Padang, Indonesia. His research interests include wireless communications, Low Power Wide Area Network (LPWAN), bbreak sensor networks, and networking.
<b>Date and Time</b>	15:55 HRS (JST), 12:25 HRS (IST), 13:55 HRS (GMT), 14:55 HRS (MYT)
<b>Speaker</b>	Mr. Onishi (Hitachi Ltd, Japan)
<b>Title</b>	Verification of Crossroad for Wireless System to Achieve Mobility Safe Control

<b>Abstract</b>	We are proposing a database-type real-time radio environment evaluation method to solve the problems of transmission time and model optimization time on the GPU, it was possible to shorten the time by confirming the agreement of data trends in the simple 3D model used when comparing the actual measured values in the demonstration experiment and the radio environment analysis results. In the comparison between the radio environment analysis results by the ray tracing method and the actual measured values, it was confirmed that the communication connection probability was low near the boundary where the ray reached or not.
<b>Bio</b>	Masami Ohnishi graduated from Tadotsu technical high school in 1982 and joined Central Research Laboratory Hitachi Ltd. He is the member of IEICE and IEEJ in Japan.
<b>Date and Time</b>	16:15 HRS (JST), 12:45 HRS (IST), 14:15 HRS (GMT), 15:15 HRS (MYT)
<b>Speaker</b>	Dr. P. Hanumantha Rao (Director General, Society for Applied Microwave Electronics Engineering & Research (SAMEER))
<b>Title</b>	6G : Challenges and India initiatives
<b>Abstract</b>	The talk focuses on the Indigenous developments of 5G systems ( a multi-institute collaborative program). The hardware challenges and the practical implementation will also be covered. Further, the 6G technology challenges will be highlighted. The talk focusses further on 6G challenges and India initiatives under Intelligent Reflecting surfaces and Orbital angular momentum concepts. The developments under these aspects will also be covered.
<b>Bio</b>	Dr. Hanumantha Rao , Director General SAMEER, MeitY, Govt of India, has more than 34 years of experience in Research and Development in RF, microwaves and mm-wave technologies for strategic and civilian sectors. He actively participates in developing Indian standards for 5G and represented India at ITU global meetings. His current research areas include 6G solutions, intelligent reflecting surfaces, UAV detection and deactivation, Spectrum studies and RF SoC and Tiled Phased arrays systems.
<b>Date and Time</b>	12:30 HRS (JST), 09:00 HRS (IST), 10:30 HRS (GMT), 11:30 HRS (MYT)
<b>Speaker</b>	Dr. Keiichiro Inaba (Hitachi Ltd, Japan)
<b>Title</b>	Post SDGs smart community: from SUSTAINABLE to REGENERATIVE world
<b>Abstract</b>	Today, the SDGs have spread to the citizen level, and even to the point where elementary school students learn about them. On the other hand, we are beginning to see industrial societies struggling to cope with the weight of the word sustainable. This time, I will discuss how to generalize the concept of regenerative, which is currently spreading from regenerative medicine and agriculture, and use it as a keyword for the next social development as post-SDGs. Specifically, as the founder of the Gastronomic Science Study Group, I would like to explain our goals and approach in Hokkaido, and hope that this will provide suggestions for this smart city workshop.
<b>Bio</b>	Keiichiro Inaba graduated from Hokkaido University and received a master's degree from Tokyo Institute of Technology in 1985 and 2007, respectively. He joined Hitachi Ltd. in 1986 and works in Hitachi Hokkaido-daigaku lab. He is the member of Japanese committee of ISO TC68 and the international expert of TC307.
<b>Date and Time</b>	12:50 HRS (JST), 09:20 HRS (IST), 10:50 HRS (GMT), 11:50 HRS (MYT)
<b>Speaker</b>	Mr. Karthik Ayyar (Founder Director, BharOS, India)
<b>Title</b>	WiFi 0 (A lean wireless protocol for IP communication)
<b>Abstract</b>	WiFi has become the dominant wireless communication technology, enabling ubiquitous internet access and connectivity. However, the traditional WiFi protocol stack is relatively complex, with multiple layers and components. WiFi 0 is a proposed simplified wireless protocol that streamlines the stack and enables direct IP communication over the wireless medium. It eliminates the need for a separate Link Layer (Layer 2) by incorporating key Layer 2 functions into Layer 3.
<b>Bio</b>	Karthik Ayyar is the progenitor of BharOS, a simple linux distribution optimized for data protection. A graduate of the University of Minnesota, he has been on the Internet since 1989. Among other things, his previous works include video conferencing over the Internet, large scale messaging, and secure wireless communication networks.
<b>Date and Time</b>	16:10 HRS (JST), 12:40 HRS (IST), 14:10 HRS (GMT), 15:10 HRS (MYT)
<b>Speaker</b>	Keita Morimoto (University of Hyogo, Japan)
<b>Title</b>	Efficient Finite Element Analysis and Optimal Design of Dielectric Waveguide Components
<b>Abstract</b>	In order to develop high performance dielectric waveguide components for optical and millimeter-wave applications, optimal design methods combined with computer simulation techniques have been intensively developed. Topology optimization techniques have attracted much attention in the design of dielectric waveguide structures, especially for device miniaturization and integration. Finite element method, which is highly compatible with waveguide geometries, is one of the most widely used analysis methods for topology optimal design. However, on these approaches, since the optimal design of complex structures that satisfy multiple design requirements causes enormous computational costs, it is essential to improve the efficiency of design and analysis for further development. Recently, we proposed a propagation operator method and demonstrated that it can achieve both high computational efficiency and versatility in waveguide discontinuity problems. In this talk, a versatile and efficient waveguide analysis method based on the finite element scheme using propagation operator technology is presented. In addition, our recent progress of the topology optimal design for millimeter-wave devices based on non- radiative dielectric (NRD) waveguide is also presented.
<b>Bio</b>	Keita Morimoto (Member, IEEE) received the B.S., M.S., and Ph.D. degrees in electronic engineering from the Muroran Institute of Technology, Muroran, Japan, in 2017, 2019, and 2021, respectively. From 2021 to 2022, he was the Postdoctoral Research Fellow with the Japan Society for the Promotion of Science. He is currently an Assistant Professor of electronics and computer science with the University of Hyogo, Kobe, Japan. Dr. Morimoto is a Member of the Institute of Electronics, Information and Communication Engineers, Tokyo, Japan and Institute of Electrical and Electronics Engineers. His research interests are computational electromagnetics, optical waveguide analysis, finite element method, optoelectronics, structural optimization.
<b>Date and Time</b>	16:30 HRS (JST), 13:00 HRS (IST), 14:30 HRS (GMT), 15:30 HRS (MYT)