IEEE Region 10 Special Industry Track

at TENCON 2020 **Online conference** **18 November 2020**
3:00 pm - 6:45 pm (JST)

Creating new business and vision for SDGs

- Share new trends and visions regarding advanced technologies -

- ✓ IEEE Region 10 Industry Relations Committee will organize fully online Special Industry Track (SIT) at TENCON 2020.
- ✓ This SIT will have a special focus on emerging technologies: AI, IoT in Biotech, Manufacturing, Agriculture/Food, Power, 5G, Tech against Coronavirus, etc.
- ✓ For Start-up Business, Entrepreneur, Internship

Registration:

Option: If you can't access, please visit:
http://bit.ly/SIT-OPTION-TENCON2020

- ◆ **IEEE Region 10 Director Address**
- ◆ **Opening Remarks**
- ◆ **Invited Speech from Industry**
- ◆ **Panel Discussion**
- ◆ **Introduction of New Technologies and Activities -Presentation, Video-**

Registration: http://bit.ly/SIT-TENCON2020
For details, please visit: https://jp.ieee.org/

Free Admission

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IEEE region 10

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Title: Creating new business and vision for the SDGs.

- Share new trends and vison regarding advanced technologies -

Time Schedule

15:00-15:03 **IEEE R10 Director Address: Expectations for Industry**
Prof. Akinori Nishihara (IEEE Region 10 Director)

15:03-15:06 **Opening Remarks**
Prof. Chris Lee (IEEE Region 10 Industry relations Committee Chair)

15:06-16:26 **Invited Speech**

- **Will Technology Make us Happier?**
  -Towards Happier Society with Scientific Understanding of Happiness-
  Kazuo Yano (Fellow, Hitachi, Ltd., CEO, Happiness Planet, Ltd.)
- **To control the device, control the heat**
  Kazuko Ishikawa (President, PicoTherm Corporation)
- **AI with EQ – Analyzing Human Emotions**
  Stefan Winkler (Co-founder and Director, Opsis)
- **Edge AI is key to post-covid world**
  Davis Chen (Vice President of Engineering, Kneron)

16:26-16:36 Break

16:36-17:21 **Panel Discussion**

- Kazuo Yano (Fellow, Hitachi, Ltd., CEO, Happiness Planet, Ltd.)
- Stefan Winkler (Co-founder and Director, Opsis)
- Davis Chen (Vice President of Engineering, Kneron)

17:21-17:24 Break

17:24-18:44 **Introduction of new technology and activities**
-Share new trends, and vison-

- **8K + 5G ecosystem and Technologies**
  Yasuhiro Hamaguchi (Division Manager, SHARP CORPORATION)
- **Democratizing Space – Microsatellites will change the way we use space**
  Yuya Nakamura (President and CEO, Axelspace Corporation)
- **Creation of next-generation industries utilizing AI/IoT / Robotics**
  Keiichi Yokoyama (Director/Corporate Management, OPTiM Corporation)
- **NTT Innovations in Edge Computing for Connected Cars and Digital Twin Computing**
  Lidwina Andarini (Research Engineer, NTT Laboratories)

18:44-18:45 **Closing Remarks**
Prof. Takako Hashimoto (IEEE Region 10 Secretary)

Register here!
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Will Technology Make us Happier?
-Towards Happier Society with Scientific Understanding of Happiness-

Kazuo Yano
Fellow, Hitachi, Ltd
CEO, Happiness Planet, Ltd

Abstract

Under the rapid change in technology, people are required to change proactively. According to scientific knowledge of happiness, it has been clarified that the positive energy of the mind and energizing relationship (called "human capital") that allows us to discover our own way to face difficulties and to step forward is the foundation of sustained corporation and society. Sustained happiness cannot be obtained by the temporary positive emotions. We need to increase this human energy and mutually energizing relationship in a way that fits our time. The latest technology allows us to quantify the positive mind and the energizing relations with smartphones, which also enhances positive mind and creates trustworthy relationship in an enterprise and society. This talk will cover the whole picture of this new society.

Biography

Kazuo Yano is a Fellow, Hitachi Ltd, and CEO, Happiness Planet Ltd. He is known for the pioneering works in the world-first room-temperature single-electron memories. He has pioneered the measurement and analysis of social big data. He and coworkers have succeeded quantifying the happiness of people from unconscious physical motion and has founded "Happiness Planet, Ltd" in 2020 for enhancing happiness and psychological capital through technology. He has provided keynote speeches on data for happiness worldwide.

He has applied over 350 patents and his papers are cited by over 2500 papers. His book, "The Invisible Hand of Data," is cited as one of top-10 business books in Japan in 2014.

He received 2020 IEEE Frederik Phillips Award and many other international awards. He is a Fellow of the IEEE.

To Control the Device, Control the Heat

Kazuko Ishikawa
President, PicoTherm Corporation
http://www.pico-therm.com

Abstract

Heat is looming ever larger over IoT. Heat from highly integrated and fast electronics threatens electronics with failure, malfunctions, and shorter life spans. Dealing with heat requires quantitative thermal design and simulation based on highly accurate thermal properties. Our start-up provides thermal solutions based on reliable thermal measurement and analysis, and on SI-traceable calibration. Our advanced measurement technologies are commercial versions of technologies developed by the National Metrology Institute of Japan (NMIJ) of the National Institute of Advanced Industrial Science and Technology (AIST).

Biography

Kazuko Ishikawa is founder and CEO of PicoTherm Corporation, which develops, manufactures, and markets thermal analysis systems for thin films. Upon graduating from the University of Tsukuba, Ms. Ishikawa joined NEC where she developed thermal control systems for satellites and research tools for zero-gravity environments. From there, she worked on planning and production for a publishing company and a performing arts center before joining the National Institute of Advanced Industrial Science and Technology (AIST). At AIST, Ms. Ishikawa formed a task-force to commercialize AIST research leading to the 2008 launch of PicoTherm Corporation as an AIST start-up. A member of IEEE Japan Council Women in Engineering Affinity Group (JC WIE), Ms. Ishikawa served as its Chair from 2014 to 2015.

AI with EQ – Analyzing Human Emotions

Stefan Winkler
Co-founder and Director, Opsis
http://opsis.sg/

Abstract

While most AI solutions focus mainly on the "IQ" aspect of intelligence, emotional intelligence or "EQ" is just as important for machines to be able to interact with humans effectively and naturally. In this talk, I will discuss the role of facial expressions as an essential component for understanding human emotions, and how we use machine learning to analyze those automatically. I will present our technology as well as some of its applications and use cases.

Biography

Stefan Winkler is Co-founder and Director of Opsis, Senior Deputy Director at AI Singapore, and Associate Professor at the National University of Singapore. Prior to that, he was Distinguished Scientist and Director of the Video & Analytics Program at the University of Illinois' Advanced Digital Sciences Center (ADSC) in Singapore. He also co-founded two start-ups and worked for a Silicon Valley company.
Dr. Winkler has a Ph.D. degree from the Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland, and a Dipl.-Ing. (M.Eng./B.Eng.) degree from the University of Technology Vienna, Austria. He is an IEEE Fellow and has published over 150 papers. His research interests include video processing, computer vision, machine learning, perception, and human-computer interaction

Edge AI is key to post-covid world

Davis Chen
Vice President of Engineering, Kneron
https://www.kneron.com/

Abstract

The current COVID-19 crisis will almost certainly speed up AIoT adoption. We'll likely see more focus on how technology can be used to improve social hygiene and health practices, for example, creating contactless ID and security systems that use facial recognition. Edge AI can play a significant role in different aspects of detection.

Biography

Davis Chen spent 21 years at Qualcomm and was the former Taipei Head of Engineering. In his time there, he managed six business units including Mobile, IOT/XR, Compute, Connectivity, Auto, and Audio, and won eight Qualcomm Annual Achievement Awards. Davis has a Master's Degree focused on Computer Science from the University of California, San Diego.

Introduction of new technology and activities -Presentation, Video-

8K + 5G ecosystem and Technologies

Yasuhiro Hamaguchi
Division Manager Research Division 2 Telecommunication and Image Technology Laboratories
Corporate Research & Development BU, SHARP CORPORATION
https://corporate.jp.sharp/brand/vision/8k/8klab/

Abstract

Commercial services of the 5th generation mobile wireless communication system (5G) started in March 2020 in Japan. Moreover, it is also expected to start commercial services using local 5G that can be individually used by local companies and local governments according to the needs of the region and the industry. The features of 5G are not only “ultra-large capacity transmission”, but also features such as “ultra-low latency and high reliability” and “massive terminal connection” and these 5G capabilities will support applications and services that cannot be realized with 4G. Therefore, the so-called vertical sector (e.g., automotive, energy, government, healthcare, manufacturing, public transportation, and so on), will likely be the leading adopters of 5G rather than the telecommunications industry. As the result, it is expected that the industry will develop significantly. Under such circumstances, there is a lot of discussion about what the killer application that represents 5G will be. We believe that ultra-high-definition video (8K) applications that can make the most of 5G's ultra-large capacity transmission capacity will play a role, and consider using them not only for entertainment but also for various industrial areas. In this presentation, we will first explain the possibilities of 8K in the industrial field, and then introduce past demonstration tests in combination with 5G, which is a candidate for the transmission network required to enable 8K to be used anywhere. In addition, we will introduce the research and development we are working on to advance 8K + 5G ecosystem.

Biography

Yasuhiro Hamaguchi received the B.E degree in communications engineering from Osaka University, Osaka, Japan, in 1990. Since April 1990, he has been with Sharp Corporation, where he is now Director of Research Division II, Telecommunication and image Technology laboratories, Corporate R&D BU. He is also Senior Director of Networking & New Radio Technologies in 8K Laboratory which is part of Sharp corporate R&D BU. He is engaged in research for next generation mobile communications systems. His research interests include wireless access technologies for cellular systems and wireless LAN systems. He participated in the 5G comprehensive demonstration test conducted from 2016 to 2019.

Introduction of new technology and activities -Presentation, Video-

Democratizing Space – Microsatellites will change the way we use space

Yuya Nakamura
President and CEO, Axelspace Corporation
https://www.axelspace.com/

Abstract

Have you ever heard of the word “newspace”? Newspace indicates the emerging space industry, led mainly by startups established within the past 15 years. Since 1950s when human started to send objects in space until recently, almost all activities had been dominated by the governments, as space development required huge investments. However, newspace companies are challenging the status quo to make space a new business field with innovative ideas. Among them, microsatellites are one of the notable new tools that many newspace companies are developing. Microsatellites can be built at lower cost and with shorter time than conventional big satellites, and thus private companies, not just the governments, started to utilize them for their business.

Axelspace is a Tokyo-based newspace startup, specializing in microsatellite technology. Since its establishment, the company has developed 4 dedicated microsatellites for specific clients. Two satellites out of four are for Weathernews, a Japanese weather information company, with the mission to monitor ice distribution in the Arctic Ocean to provide a navigation service to vessels sailing through the water. Another one is RAPIS-1, a technology demonstration satellite for JAXA. The project became big news in the space industry because it was the first time for JAXA to let a startup build their satellite. Since 2015, Axelspace started AxelGlobe project, where we launch dozens of satellites into orbit to construct a “constellation” to monitor the world frequently. We are creating new businesses upon it across a wide range of industries, by introducing low-cost and easy-to-use satellite data utilization platform.

In this presentation, Axelspace’s history and business will be introduced first, and then the company’s achievements to date and its future plan will be shared.

Biography

Yuya Nakamura is the President and CEO of Axelspace, a microsatellite startup based in Tokyo. In 2007, he earned Ph.D. in aerospace engineering from the University of Tokyo, where he was involved in 3 microsatellite projects including the world's first successful student-led satellite. Based on the experience, he co-founded the company in 2008 after serving as a project researcher at the university for 1.5 years. Since the establishment, he has led 5 successful microsatellite projects, including “WNISAT-1”; the world’s first commercial microsatellite and “RAPIS-1”; the first JAXA (Japan Aerospace Exploration Agency) satellite developed by a startup company. In 2015, he inaugurated a new initiative called AxelGlobe, where the constellation of dozens of micro-satellites in orbit will monitor the whole world on a daily basis. He has been a member of the Committee on National Space Policy since 2015.

Introduction of new technology and activities -Presentation, Video-

Creation of Next-Generation Industries Utilizing AI/IoT/Robotics

Keiichi Yokoyama
Director/Corporate Management Division, OPTiM Corporation

Abstract

OPTiM Corporation is a venture company specializing in AI and IoT technologies established by current President and Representative Director Shunji Sugaya in 2000 when he was a student at Saga University. It has “We make the Internet as simple as breathing” as is its mission, and through making its OPTiM Cloud IoT OS the de facto standard, it is aiming to be a leading company in the Fourth Industrial Revolution.
From the start, it developed technologies focusing on creating services never seen in the world before, and it owns a number of patents related to these technologies. Many of its partners are major companies, and the Company’s technological capabilities and potential have been highly evaluated both inside and outside of Japan. In this presentation, specific usage scenes and business models of the latest AI / IoT / Robotics will be introduced.

Biography

Born in Tokyo, Keiichi Yokoyama started his career as an assembler programmer in KK Ashisuto, a software sales trading company, and joined Microsoft in 1992. He worked closely with the HQ development team in US, contributed significantly to improving the quality of the English and Japanese versions of "Microsoft Word" and "Microsoft Office", and was appointed as the first Japanese test leader of Microsoft Word team at HQ. He received the president's award when he was the general manager of Japan's original New Year's card software "Postcard Studio (Hagaki Studio)". After joining OPTiM Corp in 2010, he systematically improved software quality, and also promoted business development outside Japan. Currently, he has been in charge of PR (Public Relations) and IR(Investor Relations) in Corporate Management Division.

Introduction of new technology and activities -Presentation, Video-

NTT Innovations in Edge Computing for Connected Cars and Digital Twin Computing

Lidwina Andarini
Research Engineer,
Service Innovation Laboratories / Media Intelligence Laboratories, NTT
https://jp.linkedin.com/in/lidwina-andarini-26595037

Abstract

The internet and artificial intelligence are reshaping the world by connecting things and giving more meaning to the collected information, paving a way to Society 5.0. NTT Software Innovation Centre has been working in evolving technologies that will leverage the interconnected society, including those that support connected cars and digital twins.

In this talk we will first discuss NTT's works in edge computing for connected cars as well as the required infrastructure. Many services for connected cars such as dynamic map and driving assistance will involve the collection, processing and distribution of huge amounts of data that the current infrastructure was not designed to handle. Knowing this, we are endorsing the use of edge computing which may offer a more efficient scheme for data collection and data processing. We will show some samples of services for connected cars and their data requirements, and showcase some solutions by NTT and our standardization efforts within the Automotive Edge Computing Consortium.

The second part of the talk will show the Digital Twin Computing concept that was launched in 2019. This initiative will endeavor to configure a virtual society composed of a variety of digital twins, replicate in cyberspace digital twins of single entities in the real world, and exchange or fuse some of the elements constituting different digital twins to generate new digital twins that do not exist in the real world. While this concept is still in its infancy, we will show our vision of how we can change society by leveraging Digital Twin Computing.

Biography

Lidwina Andarini joined NTT in 2016. She graduated with a Bachelor of Engineering in Electrical Engineering, and continued her Master degree in Nara Institute of Science and Technology. Her research focuses on computer networking and system architecture. Aside from her research she is also involved in standardization and global research partnership efforts within NTT. She is an active member of the Automotive Edge Computing Consortium. She joins IEEE since her undergraduate year in Indonesia and currently holds the position of Secretary in the Tokyo Section of IEEE Young Professional.