Monthly Newsletter |No. 07 | November 2017

Senior Figures ICT Indonesia Received an International Award in Telecommunication Field

Arnold Ph Djiwatampu, a senior figure in Information and Communication Technology (ICT) Indonesia has just received an international award from IEEE Communications Society (ComSoc).

IEEE is the world's largest engineering profession organization, headquartered in Washington DC America, composed of engineers related to Electrical, Computer and Telecommunications, with members dedicated to improving technological advancements for humanity. In Indonesia, the IEEE Indonesia Section and ComSoc Indonesia Chapter are very active in conducting activities of International Indexed Conferences and several other scientific activities, including research activities in technology and providing input to the government, related to the development of ICT field.

The Award for Public Service in the Field of Telecommunications, for the dedicated service as the founding Director of the ITU Bureau for Telecommunications Development (BDT) of Geneva, is given to Arnold Ph. Djiwatampu, on Tuesday, December 05, 2017, at the Luncheon Awards session on the IEEE Global Communicatios International Conference (GLOBECOM 2017).

This award is very prestigious, because it is only given to selected figures in the field of world telecommunication that has dedicated itself in a real and sustainable development of Telecommunications.

EDITOR

We welcome all the readers for the 7th edition of our newsletter. This newsletter is from us to us and hopefully it is useful for all Indonesian IEEE members. We hope that the article can inspire you and the changes also the additions that are made in the newsletters will be liked by all of you.

The 7th edition of the IEEE Indonesia Section 2017 newsletter includes activities which have been conducted in November 2017. We have many articles and information that is interesting. Hope you enjoy this newsletter edition!

Happy reading!

CasiSetianingsih&Hugeng,
Editor - IEEE Indonesia Newsletter

Official Website

http://ieee.id

IEEE Indonesia Section

We are waiting for the participation of Chapters and Student Branch in Indonesia to share the information of completed and ongoing activities and the participation of Chapters in Indonesia to share the regarding technical articles. For members IEEE who want to share information and articles please email to :

casie.sn@ieee.org /
hugeng.sps@ieee.org

Every year there is only one character who gets this Award, after going through the recommendations and tight selection conducted by the jury team ComSoc.

Famous figures in the field of World Telecommunication, such as Werner Mohr, Michael J. Marcus, Veena Rawat, Sasi P Meethal, David Falconer, Sam Pitroda, David D. Clark, George E. Brown, Jr., Mansoor Shafi, Richard C. Kirby , Hubert Zimmerman, Mohammed Mili, Joseph R. Fogarty, Henry Geller, Alphonse Ouimet, Benjamin L. Hooks and Senator JO Pastore, is the recipient of this Award, which is only received once a year, since 1976.

The award ceremony was led by Harvey Freeman, Ph.D, President of IEEE ComSoc Center, held at the Golden Ballroom, Marina Bay Sands Hotel and Convention Center, Singapore, witnessed by over 2,000 GLOBECOM 2017 conference participants and invited guests from all over world.

Arnold Ph. Djiwatampu, familiarly called Pak Dji, is the Life Senior member of IEEE, who is very active in dedicating himself to the development of ICT, especially Telecommunication field in Indonesia. Pak Dji, who is also the author of *Strategi Perjuangan International Telekomunikasi,* is almost always asked to be a member of the Indonesian government delegation, especially the Ministry of Foreign Affairs and the Ministry of Communications and Informatics, to attend the annual session of the International Telecommuncation Union (ITU).

Arnold Ph. Djiwatampu is the founder and President Director of PT. Tiara Titian Telekomunikasi, which is engaged in Telecommunications consultant since September 1995. He has served as first director of the ITU Bureau for Telecommunications Development (BDT), Geneva – from 1992 until the end of 1994. Also as Deputy Director General of Post and Telecommunication at *Direktorat Jendral Post dan telekomunikasi* (DG POSTEL) in 1988-1991 and several other important positions in DG POSTEL. He is also served as a Commissioner of PT. INDOSAT in 1989 - 1992 and was also a key figure in the launch of Indonesia's first satellite, PALAPA 1975 - 1977 Domestic Satellite Communication System (SKSD).

International Award is a special gift for Mr. Djiand also for the people of Indonesia in general, at the end of 2017, because it became an important momentum in the improvement of the struggling strategy of Indonesia’s Telecommunication. A strategy that must be maintained, uplifted and continued, as it concerns the dignity and sovereignty of Indonesia as a country with huge market and telecommunication interests, in terms of certainty of investment and interest in access and regulation of radio frequency spectrum and satellite orbit, which is a vital asset which must be maintained and fought for sovereignty, because it concerns the interests of the wider community.

IEEE Indonesia Section International Conference Workshop

To organize an international conference workshop, you can contact the IEEE Indonesia Section's Conference activity coordinator :

Muhammad Nasrun
0813-2112-0802

On Saturday, November 11, 2017, Faculty of Engineering, Department of Electrical Engineering - University of Riau, in cooperation with IEEE Indonesia Section and IEEE ComSoc Indonesia Chapter held a workshop on how to manage international conferences. The event was entitled "Workshop on International Conference Management in Collaboration with IEEE Indonesia Partnership and IEEE ComSoc Indonesia Chapter". The event held at Hotel Ayola - Pekanbaru was attended by about 45 lecturers from several universities, including : University of Riau, Pekanbaru Technology High School (STTP), University of LancangKuningPekanbaru, University of North Sumatra Medan, University of Tanjungpura Pontianak, and State Islamic University of Sultan Syarif Kasim Riau Pekanbaru.

The purpose of this workshop is to provide a training and understanding of how to manage quality IEEE international conferences. There are 4 core sessions that be held at this workshop. Muhammad Nasrun as representative of the IEEE Indonesia Section became the speaker in the first and second sessions. The first session themed the IEEE Conference, this session discussed the IEEE profile and initial steps to start the IEEE international conference. In the workshop explained that IEEE has many advantages, namely:

- IEEE, an association dedicated to advancing innovation and technological excellence for the benefit of humanity
- Is the world's largest technical professional society.
- It is designed to serve professionals involved in all aspects of the electrical, electronic, and computing fields and related areas of science and technology that underlie modern civilization.
- IEEE sponsors more than 1,600 annual conferences and meetings worldwide.

After 30 minutes of coffee break, the second session started with the material about IEEE Sponsorship Applications and the IEEE Publication Program which was followed by discussion and question & answer session.

Dr. Muhammad Ary Murti as a representative of IEEE ComSoc Indonesia Chapter, became the speaker in the third and fourth sessions. The IEEE Standards and Quality conferences became the material topics and discussions at the third session. This session contains a detailed explanation of the standards that must be met when organizing an IEEE international conference and how to have a good quality conferences according to IEEE standards also can be published in IEEE xplore. After coffee break for 30 minutes then the event continued with the fourth session with theme of Conference Management Tools. This session is explained that there are several tools needed to hold an IEEE international conference, including:

- IEEE CrossCheck
- IEEE PDF eXpress
- IEEE Copyright Form (eCF)
- EDAS

Furthermore, participants are introduced and taught steps how to use the tools. At 18:00 the event is over and closed with photo session for all participants and speakers.

Dr. Muhammad Ary Murti and Muhammad Nasrun agreed on the great wishes that accompanied the workshop. They hope that more and more international conferences are sponsored by the IEEE in Indonesia which will be accompanied by increased academic interest to publish their research results. Moreover, it is expected that the quality of the international conference that is held increasingly and in accordance with IEEE quality standards, can also be published in IEEE Xplore.

"If there is still not understood, IEEE Indonesia Section is ready to help again" said both.

Inauguration of Professor Dr. Ir. Fitri Yuli Zulkifli, ST., MSc., IPM., SMIEEE

Universitas Indonesia (UI) confirmed Dr. Fitri Yuli Zulkifli, ST., MSc., IPM., SMIEEE as permanent professor of the Faculty of Engineering on Wednesday, November 29, 2017 at UI Session Hall, Depok Campus. Prof. Dr. Fitri Yuli Zulkifli who is the Chair of IEEE Indonesia section officially became Professor of UI in field Microwave Antenna Engineering of Electrical Engineering. Open session inauguration of Professor led by Rector of University of Indonesia, Prof. Dr. Ir. Muhammad Anis, M.Met.

Prof. Fitri delivered an inaugural speech entitled "Antenna as Sensor on Modern Technology Applications for Improving Quality of Life." Prof. Fitri said antennas for many modern technologies are undergoing rapid development, beginning with just a simple wire antenna (dipole), then into various types of antennas, complex array antennas of various dimensions and are now headed towards nano antennas working at Terahertz frequencies.

"The use of an early antenna used for radio communications, then TV and continues to grow into wireless telecommunications is now headed 5 Generation (5G), is now felt to be a necessity of human life," said Prof. Fitri

Prof. Fitri continues that nowadays antennas are developing, can be used as sensors in various applications such as 4G telecommunication systems that use smart antennas with boaming forming to detect and direct signals to customers. It makes the signal more efficient with a wider range of services, on a radar system to detect ships on a Vessel Traffic Surveillance (VTS) human health detection system with microwave imaging and Terahertz spectroscopy systems that can detect the type of material contained in food.

In her inaugural speech, Prof. Fitri closed it with thanks to God for all the grace and blessings He has given, to the Government of the Republic of Indonesia through the Minister of Technology and Higher Education, to the Rector of the University of Indonesia along with the Board of Leaders of the University of Indonesia, and all those who have supported her during her career. Not forgetting with full respect and infinite gratitude to her family.

Prof. Fitri adds a message to the great women out there in her closing speech "Finally, I would like to invite especially to women that women can play a plenary role in benefiting the society. High achievement can be done while balancing it with home life. "

DLP in Compressive Sampling at Telkom Institute of Technology Purwokerto

Reported By Alfin Hikmaturokhman
alfin@ittelkom-pwt.ac.id

This year Indonesia Section has conducted its first Distinguish Lecture Program (DLP) from Indonesia to Indonesia. This program means that the distinguish lectures are professors and Senior Member IEEE from Indonesia. This program is held to reach the vast territory of Indonesia and is aimed primarily to the regions in Indonesia as one of the efforts of equitable distribution of knowledge that can be done by IEEE IS for the Indonesian nation.

Prof. Andriyan Bayu Suksmono as one of IEEE Indonesia Section DL was asked by Telkom Institute of Technology Purwokerto (ITTP) to give a Lecture about Compressive Sensing and also promote IEEE.

Telkom Institute of Technology Purwokerto consists of two faculties with eight study programs. Faculty of Telecommunications and Electrical Engineering is one of the faculties in IT Telkom Purwokerto. This Faculty consists of three study programs. The study programs are D3 Telecommunication Engineering (vocational study), S1 Telecommunication Engineering and S1 Electrical Engineering.

Every program that was held in this university usually has a purpose to increase the insight and knowledge of the academic community such as students and lecturer. Being a university under Telkom Education Foundation which has concentration in telematics field, ITTP always carry out the development of knowledge in telecommunication technology, not only in terms of devices but also application methods in telecommunication technology. Studium generale from a competent Guest lecture from senior members or professors who are initiated by IEEE Indonesia Section is one of the methods to improve our understanding in Telecommunication technology. In line with this, the academic coummunity from the Faculty of Telecommunications and Electrical Engineering conduct a stadium generale using DLP by senior members of IEEE-Indonesia Section in the field of signal processing. Based on the scientific summary submitted by senior members of IEEE, The Faculty invited Prof. Andriyan BayuSuksmono from Bandung Institute of Technology. The main topic of this stadium generale is Compressive Sampling. The event was attended by academic community in ITTP especially from faculty of telecommunicatons and electrical engineering.

The event was held on Friday, 24th november 2017 from 08.00 AM – 11.00 AM. The attendants are the students and lecturers from Faculty of telecomunicatons and electrical engineering of around 130 participants. In the opening, Rector of Telkom Institute of Technology, Dr. Ali Rokhman, M.Si gave opening speech.

After the opening speech, Prof Andriyan Bayu suksmono as the guest lecturer gave the presentation about compressive sampling. Prof Andriyan has divided the subjects into two sections. The first section discussed the main theory of compressive sampling. In this section, prof Andriyan Bayu Suksmon explained the main advantage of using compressive sampling compared to the conventional sampling. In the second section, Prof Andriyan Bayu Suksomono explained several applications of compressive sampling such as the application in radar and image processing.

At the end of every sections, the audiences can ask Prof Andriyan about topics related to compressive sampling. The event was ended in 11.00 AM with photo session of all audiences.

System on Chip (SoC)

Trio Adiono, PhD. Head of Microelectronics Center ITB

What is SoC?

Recently, we often hear about the system on chip (SoC). Especially when people talk about new smartphone, they usually measure the performance from the SoC that is used by those smartphone.Exynos® processor from Samsung®,Snapdragon® from Qualcom®, Apple A10 Fussion are examples of SoC with multi core ARM® processors. The SoC is a technology that integrate many functional modules into a single chip. Functional module is not limited into hardware, but also software. Therefore, designing SoC sometime also called hardware/software co-design. The complexity and types of functional modules depend on the application of the SoC. With the current advancement in chip process technology, we can see that the system integrated in PCB today, will be integrated as SoC tomorrow. The chip process technology has reach 10 nm resolution, as consequence, million of transistors can be integrated into a single chip. This is the enabler of SoC technology to integrate high density transistors within a small chip size.

On the other hand, most of electronic products today use battery as main power supply that requires a very low power consumption. By integrating whole system into a single chip, it will significantly reduce the power consumption as well as small form factor.

The SoC Challenge

The challenge of the SoC technology is the increase of the complexity and computational density of the system. Moreover, time to market of product has also become very short due to push of new product release. In order to solve those problems, there is a new paradigm in SoC design method. In SoC design method, the functional modules that are integrated as system, are usually pre-design module or called as Intellectual Property (IP) core. The IP cores are designed by the third parties or other companies. This way of design is called “Design Reused”. Reused method can significantly reduced the design cycle, because the SoC designer is only need to integrate the module in the system level. The IP core is sale by fabless company as license. One example of company that is famous for their IP is ARM®. ARM® never has their own product, but many companies, including Apple® and Samsung®, license the processor IP core from ARM®. In order to simplify the IP core integration process, the IP is design with standard interface. Usually the interface use bus architecture, such as AMBA, AXI, Avalon and etc.

The SoC Architecture

SoC usually consists of embedded processor, memory, flash, security, interface, DSP accelerator and etc. as shown in Figure 1. The DSP accelerator depends on the application of SoC. For example, in SoC for wireless communication usually has FFT/IFFT module as DSP IP core. On the other hand for multimedia system, they usually require IP of MPEG4 andMP3 for video and audio compression. For smartphone SoC, Graphic Processing Unit(GPU), is one of the most important DSP module to accelerate graphical functions. Interface modules also play an important role in SoC chip to ensure the flexibility of chip applications. Currently, USB, HDMI, Ethernet, or event WiFi can be integrated intoSoC. With the important of data security, the encryption accelerator such as 3DES, AES, RSA, ECC are also usually found in SoC.

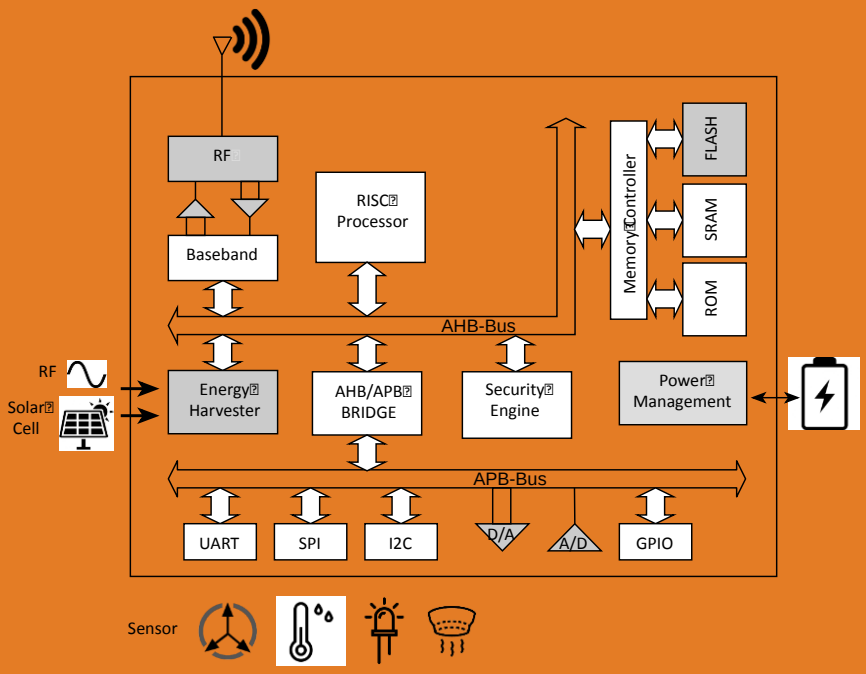

Figure 1. Typical SoC Architecture.

The Microelectronics Center of ITB has developed a SoC chip for various IoT applications as illustrated in Figure 2. The chip was wire bonded at Polytechnic Batam.

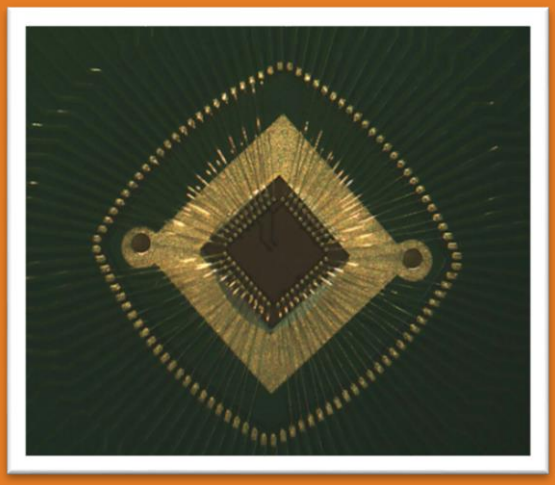

Figure 2. Chip SoC for IoT.

The SoC Applications

In this internet era, there are a lot of application requires SoC. Most of Internet of Things (IoT) chips are SoC, because it requires processor, interface (SPI, GPIO, I2C) and etc. Many applications can be built using this kind of chip, such as automotive, wireless communication, audio/video, games, e-health instruments, smart card and etc. The most popular application, deep learning, can be also implemented in SoC using array processor accelerator. With the concern of low power and form factor, wearable device use SoC as main processing chip.

2017 International Conference on Smart Cities, Automation & Intelligent Computing Systems (ICON-SONICS 2017)

By: **Muhammad Salehuddin** (Engineering Physics Dept., Universitas Multimedia Nusantara)

During the growth of Universitas Multimedia Nusantara (UMN) over the last decade, UMN has taken the big step to widen the scientific spectrum to scientific and technical domains. This is marked by research mapping that is focused on the development of multimedia/mobile digital technology, which is now penetrated on a more advanced scale, the digital infrastructure on the concept of smart city and the concept of digitalization of Internet-based industry with automation system or known as Industry 4.0. Seeing the significance of this technological development, in **technically co-sponsored by IEEE Indonesia Section**, UMN has held an international meeting on November 08-10 November, 2017, in Yogyakarta – Indonesia, entitled **International Conference on Smart Cities, Automation & Intelligent Computing Systems (ICON-SONICS 2017)**.

The ICON-SONICS 2017 was supported by **Deutscher Akademischer Austauschdienst (DAAD)** which has not only increased the reputation of education in Germany through the Plenary Speakers from reputable German Professors, but also contribution of former DAAD scholarship holders in form of their presented qualified scientific papers.

In conjunction with The 4th International Conference on New Media Studies (CONMEDIA), the ICON-SONICS 2017 program composed of the invited speaker, paper sessions and a small gathering of former DAAD scholarship holders. The conference was opened by welcoming speech from **Assoc. Prof. Dr. Hugeng** as General chair of ICON-SONICS 2017, **Dr. Friska Natalia** as General co-chair of CONMEDIA 2017, then **Dr. Ninok Leksono** as Rector of UMN also gave the opening speech and officially opening of both conferences by sounding the gong. Next, **Prof. Dr. Fitri Yuli Zulkifli** as Chairman of IEEE Indonesia Section who gave the short overview about activites of IEEE in Indonesia.

After photo session, the conference continued with the first keynote from **Prof. Paulo LISBOA** (Liverpool John Moores University, United Kingdom). His presentation discussed about **Big Data For Decision Support In Digital Marketing and Healthcare**. Next, the second keynote speech delivered by **Prof. Dr.-Ing. Norbert Schwesinger** (Technische Universität München, Germany) with his presentation discussed about **Energy Harvesting as One Perspective Power Supply for Smart Sensors.**

More than 50 papers from both conferences were divided into 25 parallel sessions in two days. The first day ended with magnificent gala dinner that performed Tayub Dance which is one of the traditional dance from Central Java, Indonesia. In this event, ICON-SONICS 2017 also announced the winner of best paper that goes to **Seno D. Panjaitan et al,** from Tanjungpura University, Indonesia; with paper entitled **DC Source-based Stand-alone Microgrid Control using I-PD Scheme for a MIMO System.**