

# IEEE Gwangju Section Report

## PART A - SECTION SUMMARY

### A.1 Executive Summary – (Please follow the format given below)

- Section Executive Committee Member List as of Dec. 2016

CHAIR	Heung-No Lee	<a href="mailto:heungno@gist.ac.kr">heungno@gist.ac.kr</a>
SECRETARY	Jong Won Shin	<a href="mailto:jwshin@gist.ac.kr">jwshin@gist.ac.kr</a>
TREASURER	Sung Min Hong	<a href="mailto:smhong@gist.ac.kr">smhong@gist.ac.kr</a>
VICE CHAIR	JONG-IN SONG	<a href="mailto:jisong@gist.ac.kr">jisong@gist.ac.kr</a>
MEMBERSHIP DEVELOPMENT	Minjae Lee	<a href="mailto:minjae@gist.ac.kr">minjae@gist.ac.kr</a>
	Kiseon Kim	<a href="mailto:kskim@gist.ac.kr">kskim@gist.ac.kr</a>
MEMBER-AT-LARGE	Yo-Sung Ho	<a href="mailto:hoyo@gist.ac.kr">hoyo@gist.ac.kr</a>

- Section Highlights  
In year 2016, the Section offered eighteen technical and social meetings. Most technical activities were given at the campus of GIST, Korea. Young Professional Affinity Group (YPAG) of Gwangju Section was started in July 2016, for the first time in Korea. In addition, Prof. Dr. Yo-Sung Ho was promoted to be a IEEE Fellow this year.
- Major Events (International, National)  
There were nine technical and nine social meetings. We have published Section By-Law in February. The very first meeting of YPAG was held in August. Celebration for Prof. Ho's promotion to the IEEE Fellow was in December. Recently, we have elected Prof. Yo-Sung Ho as the Section Chair for 2017.
- Major Student and Affinity Group Activities  
In July, Young Professional Affinity Group (YPAG) was organized for the first time in Korea. Although there have been many difficulties mainly due to the size of the Section, YPAG will continue meetings and recruitments.

### A.2 Financial Report – (Please follow the format given below)

- Summary

date (DD/MM/YY)	RCT No	covered	out of total	잔액	Rev. MT	비고
2015 잔액분		2,727,183				
2016 총입금(2016)		3,412,159				
19-Dec-15			145	2,727,328		이자수입 (interest)
11-Jan-16		250,000		2,477,328		이성호 전문가활용
11-Jan-16		82,000		2,395,328		IEEE Meeting
13-Jan-16		300,000		2,095,328		김종선 전문가활용
13-Jan-16		58,000		2,037,328		IEEE Meeting
01-Feb-16		100,000		1,937,328		IEEE Meeting
01-Feb-16		104,000		1,833,328		IEEE Meeting
01-Feb-16		88,000		1,745,328		IEEE Meeting
19-Mar-16			481	1,745,809		이자수입 (interest)
02-May-16		107,000		1,638,809		IEEE Meeting
13-May-16			3,412,159	5,050,968		2016 IEEE 입금
23-May-16		104,100		4,946,868		IEEE Meeting
23-May-16		200,000		4,746,868		박형민 전문가활용
18-Jun-16			296	4,747,164		이자수입 (interest)
18-Jun-16			349	4,747,513		이자수입 (interest)
06-Jul-16		248,000		4,499,513		IEEE Meeting
06-Jul-16		24,000		4,475,513		IEEE Meeting
12-Jul-16		286,000		4,189,513		변경수 전문가활용
12-Jul-16		59,000		4,130,513		IEEE Meeting
27-Jul-16			314	4,130,827		#74213 계정해지이자
16-Aug-16		100,000		4,030,827		IEEE Meeting
16-Aug-16		299,000		3,731,827		IEEE Meeting
22-Aug-16		10,000		3,721,827		IEEE 가입비 지원
23-Aug-16		200,000		3,521,827		최정우 전문가활용
14-Sep-16			542	3,522,369		이자수입 (interest)
27-Oct-16		318,757		3,203,612		김강 전문가활용
09-Nov-16		250,000		2,953,612		구형일 전문가활용
12-Dec-16		565,000		2,388,612		IEEE Meeting
17-Dec-16			708	2,389,320		이자수입 (interest)
21-Dec-16		331,144		2,058,176		Gerwin Schalk 전문가활용

- Total amount left in the beginning of 2016 was 2,727,183KRW.
- Total deposit in 2016 was 3,412,159KRW.
- Total amount of interest incurred in 2016 was  
145 + 481 + 296 + 349 + 314 + 542 + 708 = 2,835 KRW.
- Colored table is old account's income history.  
Old account (Woori bank, 347-027532-02-001, 30-9-2015 end) was canceled.

## **PART B - ORGANIZATIONAL ACTIVITIES**

### **B.1 Membership Development Activities**

- Total number of active members  
The number of active members is currently 186 for Gwangju Section.
- Summary and evidence of work done to improve the value of membership, which leads to retention and growth of members  
In 2016, the YPAG was established in July with promotion and persuasion with student members. The effort of Membership Development chair, Prof. Minjae Lee, was crucial in the process.

### **B.2 Professional and Continuing Education Activities**

There has been nine seminars supported by IEEE Gwangju Section. Five of the lecturers came from other parts of Korea, while four came from United States.

- Dec. 29, 2015, IEEE Seminar
  - Speaker: Dr. Sungho Lee, Managerial Researcher, KETI
  - Topic: Wireless Power Transfer and Energy Harvesting Technique for IoT Devices
  - Attendees: 10 members and 10 non-members
  - Gwangju Section invited Dr. Sungho Lee who is a Managerial Researcher in KETI. In this talk, trends and designs of wireless power transfer (WPT) and energy harvesting techniques were introduced to extend the battery time, removing external connectors and power cables. After the seminar, the members of the IEEE Gwangju Sections continued discussion with Dr. Lee over the dinner.

**SIC/IEEE Seminar**

**Host: Prof. Minjae Lee, Language: Korean**

**Tuesday, December 29, 2015, 16:00-17:00, Room 109, Dasan Bldg.**

## **Wireless Power Transfer and Energy Harvesting Technique for IoT Devices**

**Dr. Sungho Lee,**

**Managerial Researcher, KETI**

### **Abstract**

With increasing IoT devices, their battery time is a crucial key factor in choosing applications. Small battery is preferred in mobile IoT devices for small and light modules but limited for the long operating life. For increasing smart sensors and wearable devices, many researches are putting to enhance the battery time using auxiliary methods. In this talk, trends and designs of wireless power transfer (WPT) and energy harvesting techniques will be introduced to extend the battery time, removing external connectors and power cables. In this talk, major two standards of WPT will be described from the standard specification level to prototype IC design level. Also, several energy harvesting techniques will be briefly presented in circuit level.

- Dec. 31, 2015, IEEE Seminar
- Speaker: Prof. Jongsun Kim, Hongik University
- Topic: High-Speed Clock Generation and Data Recovery Techniques for 60GHz Systems
- Attendees: 10 members and 8 non-members
- Gwangju Section invited Prof. Jongsun Kim who is a Professor at Hongik University. In this talk, a 10-20 Gbps serializer/deserializer (SerDes) with a phase interpolator (PI) based clock and data recovery (CDR) circuit for high-speed and short-range 60GHz wireless chip-to-chip communication is presented. After the seminar, the members of the IEEE Gwangju Sections continued discussion with Prof. Kim over the dinner.

**SIC/IEEE Seminar**

Host: Prof. Minjae Lee, Language: Korean

**Tuesday, December 31, 2015, 15:00-16:00, Room 109, Dasan Bldg.**

## High-Speed Clock Generation and Data Recovery Techniques for 60GHz Systems

Prof. Jongsun Kim, Ph.D.

School of Electronic and Electrical Engineering, Hongik University

### Abstract

In this talk, a 10–20 Gbps serializer/deserializer (SerDes) with a phase interpolator (PI) based clock and data recovery (CDR) circuit for high-speed and short-range 60GHz wireless chip-to-chip communication is presented. The PI-based CDR uses an 8-phase delay-locked loop (DLL) to produce a set of evenly spaced reference clock phases. The phase vernier, then transforms the 8-phases to sampling clocks for the sampler, which performs  $2\times$  oversampling to recover the data from the input signal. Also, a new multiplying delay-locked loop (MDLL) is presented that can provide programmable fractional-ratio frequency synthesis of de-skewed clock. The proposed fractional-ratio MDLL (FMDLL) employs a new select logic for controlling three operation modes and utilize a new phase detecting structure to achieve inherent cancellation of internal phase offset.



- May 20th, 2016, IEEE Seminar
  - Speaker: Prof. Hyung-Min Park, Sogang University
  - Topic: Sound Source Localization
  - Attendees: 12 members and 8 non-members
  - Gwangju Section invited Prof. Hyung-Min Park who is with Sogang University. In this talk, various source localization techniques were introduced. Extensive Q&A followed.

## SIC/IEEE Seminar

Host: Prof. Jong Won Shin, Language: Korean

Friday, May 20, 2016, 11:00-12:00, Room 203, EECS Building B.

### Sound Source Localization

Prof. Hyung-Min Park,  
Sogang University

요약: 본 세미나에서는 음원 국지화 기술에 대해 소개한다. 먼저 두 개 이상의 마이크를 사용할 때 신호처리에 대해 간단히 설명하고 음원 국지화의 대표적 3 가지 방법인 인간의 청각 정보 처리에 기반한 방법, 마이크 사이의 상관관계에 기반한 방법, 그리고 다채널 음향 채널 추정에 기반한 방법을 소개한다. 각 방법의 장단점을 분석하고 이러한 문제점을 개선한 방법 및 실험결과를 제시하고 결론을 맺는다.

약력:

1993 년 3 월 ~ 1997 년 2 월: KAIST 전기및전자공학과 학사

1997 년 3 월 ~ 1999 년 2 월: KAIST 전기및전자공학과 석사

1999 년 3 월 ~ 2003 년 8 월: KAIST 전자전산학과 박사

2003 년 9 월 ~ 2005 년 2 월: KAIST 바이오시스템학과 박사후연수과정

2005 년 3 월 ~ 2007 년 1 월: Carnegie Mellon University, Language Technologies Institute

박사후연수과정

2007 년 3 월: 서강대학교 전자공학과 조교수로 부임

현재: 서강대학교 전자공학과 교수

- Jun. 29th, 2016, IEEE Seminar
- Speaker: Prof. Sumit Roy, U. Washington, Seattle
- Topic: Radio Mapping Using Spectrum Sensing
- Attendees: 11 members and 9 non-members
- Prof. Kisun Kim invited Prof. Sumit Roy, who is with University of Washington, Seattle. In this talk, he focused on principles of distributed spectrum sensing viewed as a *statistical spatial sampling* problem and its application to Radio Mapping, i.e. updating of a-priori TV coverage maps. More discussions follow over the dinner.

## IEEE Seminar

Host: Prof. Kisun Kim, Language: English

Wednesday, June 29, 2016, 16:00-17:00, Room 203, EECS  
Building B.

## Radio Mapping Using Spectrum Sensing

Sumit Roy, Prof.  
Integrated Systems Professor  
Dept. of Electrical Engineering  
U. Washington, Seattle

[roy@ee.washington.edu](mailto:roy@ee.washington.edu)  
[www.ee.washington.edu/research/funlab](http://www.ee.washington.edu/research/funlab)

### Summary

The preferred systems architecture for opportunistic use of **White Spaces** (cognitive radio based spectrum sharing) requires in-situ client-driven spectrum sensing in conjunction with centralized databases. This talk will focus on principles of distributed spectrum sensing viewed as a *statistical spatial sampling* problem and its application to Radio Mapping, i.e. updating of a-priori TV coverage maps. I will explain how 2-Dim. interpolation techniques may be used to determine desired sampling locations that minimize the boundary estimation variance, and its performance advantages compared to other clustering (e.g. K-nearest neighbor) approaches.

### BIO

**Sumit Roy (Fellow, IEEE)** received the Ph. D. degrees from the University of California (Santa Barbara), in Electrical Engineering in 1988. Presently he is Integrated Systems Professor of Electrical Engineering, Univ. of Washington where his research interests broadly encompass analysis/design of wireless communication and sensor networked systems. His recent research emphasis includes multi-standard wireless inter-networking and cognitive radios, vehicular and sensor networking involving RFID technology and networking for the emerging Smart Grid. His activities for the IEEE Communications Society (ComSoc) includes membership of several technical and conference program committees, notably the Technical Committee on Cognitive Networks and was a ComSoc Distinguished Lecturer for 2014-15. He has served as Associate Editor for IEEE Trans. Communications, IEEE Trans. Wireless Communications and IEEE Trans. Smart Grids, and presently is on the Editorial Board for IEEE Trans. Circuits & Systems II Express Briefs. Most recently, he served as a Guest Editor for the 2014 J. Selected Areas Communications Spl. Issue on Smart Grid Communications.

- Jul. 7th, 2016, IEEE Seminar
- Speaker: Prof. Gyungsu Byun, Southern Methodist University (SMU), Dallas, Texas
- Topic: Energy-Efficient and High-Performance Communication Microsystems Design
- Attendees: 9 members and 8 non-members
- Prof. Gyungsu Byun from Southern Methodist University (SMU) came to Gwangju for a seminar. In this talk, latest IC prototyping and designs including latest fabricated chip results were introduced. The discussion continues over the dinner.

**IEEE Seminar**

Host: Prof. Minjae Lee, Language: English

Thursday, July 7, 2016, 16:00–17:00, Room 203, EECS Building B.

## Energy-Efficient and High-Performance Communication Microsystems Design

Prof. Gyungsu Byun

EE Department of Southern Methodist University (SMU), Dallas, Texas

[gsbyun@mail.smu.edu](mailto:gsbyun@mail.smu.edu)

<http://lyle.smu.edu/~gsbyun/>

### Summary

In this seminar, a high-speed and low-power mixed-signal/analog/RF-IC design for mobile computing/communication systems will be presented. In the era of the nanometer CMOS technology, power and bandwidth requirements have become more stringent for mobile systems. This is largely because mobile devices (such as smart phones) are more intensively relying on the use of graphics. Therefore, microprocessor and memory manufacturers are relying more on energy-efficient and high-speed computing/communication interface designs such as clocking (PLL/DLL), transceiver, filters/sensors and RF key circuits (LNA/mixers, oscillators). Since the power consumption of mobile computing/communication systems has been one of the most critical design factors in nanometer designs, the communication infrastructure would significantly impact the performance, area, and power of mobile devices, we explore the use of ultra-low-power mixed-signal/analog/RF designs to a wire-line/wireless communication links, 3D-vertical IOs, failure-resistant systems (FRS) and implantable biomedical applications. In this talk, latest IC prototyping and designs including latest fabricated chip results will be presented.

### BIO

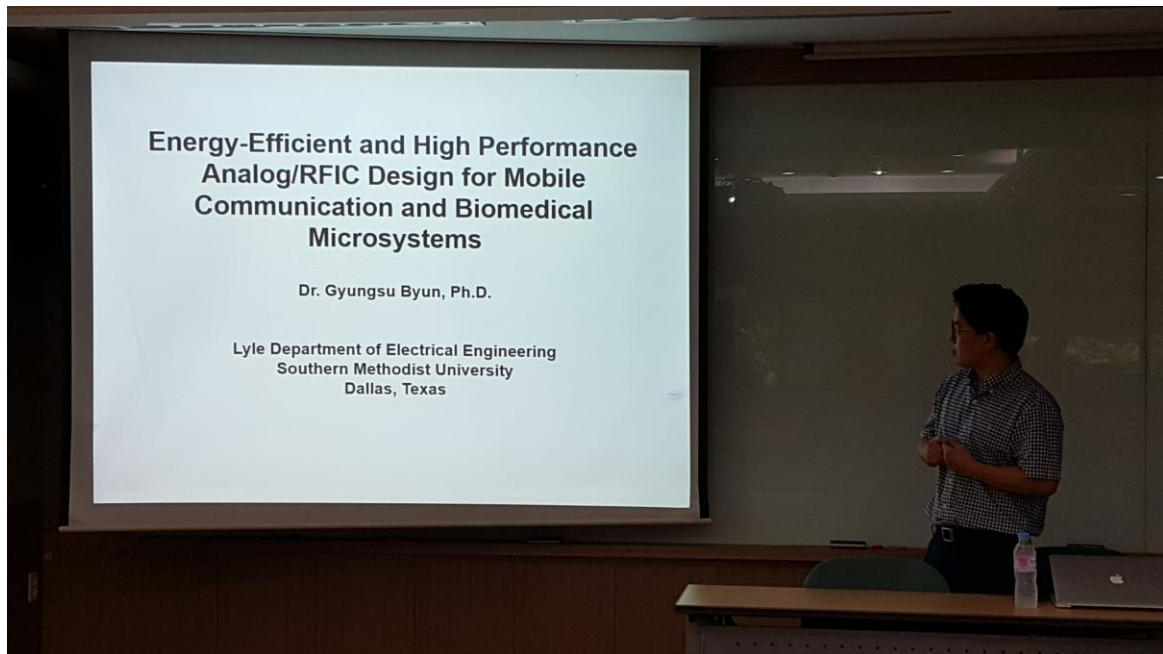
Gyungsu Byun received the Ph.D. degree in electrical engineering (EE) from University of California, Los Angeles (UCLA). Since 2014, he is currently an Associate Professor of the Mixed-signal Integrated Circuit and System (MICS) Lab (<http://lyle.smu.edu/~gsbyun/>) with the EE Department of Southern Methodist University (SMU), Dallas, Texas.

From 1999 to 2005, he was a Sr. Design Engineer with Samsung Electronics, where he worked on the design of low power and high-speed DRAMs such as DDR2, GDDR3, Rambus and XDR. In 2006, he was a research intern with Intel Corporation where he worked on the design of a cache memory and a 3D chip multi-processor (CMP) with RISC core architecture. From 2007 to 2011, he was a Sr. Design Engineer with Inphi Corporation, where he worked on the design of advanced memory buffer between CPU and memory. From 2011 to 2014, he was an Assistant Professor and Director of the MICS lab at West Virginia University (WVU), West Virginia.

His key research area includes a low-power mixed-signal/analog/RF IC design for wire-line and wireless communication and ultra-low-power biomedical integrated circuit and system design for implantable microsystems. Dr. Byun was also the recipient of the prestigious NSF CAREER Award (2014), NSF FRS Award (2013), the NSF BRIGE Award (2012) and the Outstanding Research Award (2013).



- Speaker: Prof. Gyungsu Byun, Southern Methodist University (SMU), Dallas, Texas
- Topic: Energy-Efficient and High-Performance Communication Microsystems Design
- Attendees: 9 members and 8 non-members
- Prof. Gyungsu Byun from Southern Methodist University (SMU) came to Gwangju for a seminar. In this talk, latest IC prototyping and designs including latest fabricated chip results were introduced. The discussion continues over the dinner.
- 



## IEEE/GIST EECS Seminar

*Host: Jong Won Shin / Language: Korean*

**Monday, August 22, 2016, 11:00-12:00, #203, EECS-B Bldg. 2nd Floor**

# **Internet of Sounding Things: sound field control with smart sound objects**

**Jung-Woo Choi, Ph. D.**

Assistant Professor, KAIST

### **Abstract**

Sound field control techniques have been widely adopted for sound field reproduction, virtual/augmented reality, and personal sound zone. Theoretical studies have shown that a desired sound field can be nearly reconstructed using many secondary control sources or loudspeakers distributed in space, but sound field reproduction technologies haven't yet achieved the expected commercial success. Their difficulty in market penetration is mostly attributed to cost and installation complexity. Multichannel loudspeaker systems usually require many cable connections and bulky loudspeakers, which are not cost-effective from the consumer's viewpoint. Moreover, the installation of loudspeakers is a substantial hurdle in implementing a practical system for home environments. To implement a practical sound field control system, difficulties with the construction of massive acoustic arrays will have to be resolved.

To overcome these practical but important issues, a concept of "self-networked smart sound objects" has been proposed. The ultimate goal of this study is to revolutionize present acoustic array systems through the construction and combination of smart sound objects. Specifically, we aim to develop novel acoustic array systems consisting of smart sound objects with self-sensing abilities. The smart sound object can perform acoustic-based coordination, synchronization, and environment detection in a continuous and seamless manner, offering installation and operational benefits over conventional arrays of non-flexible configurations. Similarly to the Internet of Things paradigm, we focus on what can be delivered through the interaction between multiple sound objects arbitrarily deployed in space but connected through a unified sound network.

In the beginning part of this talk, recent advances in personal/holographic audio technologies will be briefly reviewed with various sound field control systems implemented since 2007. Then, from the concept of smart sound objects, we introduce simultaneous synchronization and coordination techniques that can combine multiple sound objects as a unified array system. In addition, an acoustic-based user tracking system will be introduced to demonstrate the ability of environmental change detection through the exchange of acoustic signals between arbitrarily placed smart sound objects.

- Oct. 14th, 2016, IEEE Seminar
- Speaker: Prof. Kang Kim, University of Pittsburgh
- Topic: A new approach for high-resolution and high-sensitivity ultrasound imaging using novel contrast agents
- Attendees: 8 members and 8 non-members
- Prof. Heung-No Lee invited Prof. Kang Kim from the University of Pittsburgh for a seminar. In this seminar, a novel multi-modality contrast agent and associated imaging technology were introduced and discussed to overcome limitations. Discussion continues over the dinner.

## IEEE/GIST EECS Seminar

Host: Prof. Heungno Lee, Language: Korean

Friday, October 14, 2016, 16:00–17:00, Room 203, EECS Building B.

### **A new approach for high-resolution and high-sensitivity ultrasound imaging using novel contrast agents**

**Prof. Kang Kim**

**Department of Medicine and Department of Bioengineering, University of Pittsburgh**

[kangkim@pitt.edu](mailto:kangkim@pitt.edu)

<http://www.pitt.edu/~kangkim/>

#### Summary

Ultrasound imaging, a real-time, non-invasive, non-destructive, and non-ionizing tool, has great advantage especially for in vivo study in biology and medicine. However, it suffers in general with relatively low spatial resolution and sensitivity. In this presentation, a novel multi-modality contrast agent and associated imaging technology will be introduced and discussed to overcome such limitations. As promising multi-modality contrast agents for combined ultrasound and photoacoustic imaging, phase-transition droplets that react to a short-pulse laser have been synthesized and evaluated. The underlying mechanism of vaporization and resulting acoustic signal have also been closely investigated. In addition, a novel imaging technology using vaporized droplets that provides superior spatial resolution beyond the acoustic diffraction limit has been developed.

#### BIO

**Kang Kim, PhD** is an Associate Professor of Medicine and Bioengineering at The University of Pittsburgh. Dr. Kim directs the Multi-modality Biomedical Ultrasound Imaging Laboratory (<http://www.pitt.edu/~kangkim/>) at the Center for Ultrasound Molecular Imaging and Therapeutics (<http://www.imagingtherapeutics.pitt.edu/>) – home to research projects focused on basic science, pre-clinical studies and clinical translation of medical instrumentation, signal/image processing algorithms and imaging contrast/therapeutic agents. Dr. Kim's research seeks to develop and translate state-of-the-art noninvasive ultrasound imaging technologies to (1) improve disease diagnosis (2) guide therapeutic strategies and (3) evaluate therapeutic efficacy, especially in cardiovascular applications. His research emphasis is on development and application of multi-modality imaging systems that are based on a fundamental understanding of how sound and light interact with soft tissues, and are capable of characterizing the structural, mechanical, compositional properties of tissues and organs and their underlying biological activities in cellular level. Dr. Kim earned his Bachelor's in Educational Physics at Seoul National University in Seoul, South Korea. He then went to the University of Pierre & Marie Curie (Paris 6) in Paris, France for his Master's in Physics before he moved to the United States for his PhD in Acoustics at Pennsylvania State University. He then won a postdoctoral fellowship in Biomedical Engineering Department at the University of Michigan.

- Nov. 7th, 2016, IEEE Seminar
- Speaker: Prof. Hyung Il Koo, Ajou University
- Topic: Understanding convolutional neural networks for vision problems

- Attendees: 24 members and 16 non-members
- Prof. Hyung Il Koo from Ajou University had a seminar on convolutional neural networks for computer vision applications. It was exceptionally successful seminar with full of attendance, maybe due to the increasing interest on deep learning and computer vision.



**IEEE/GIST EECS Seminar**

*Host: Jong Won Shin / Language: Korean*

**Monday, November 7, 2016, 13:00-14:00, #203, EECS-B Bldg. 2nd Floor**

## **Understanding convolutional neural networks for vision problems**

**Hyung Il Koo, Ph. D.**

Associate Professor, Ajou University

### **Abstract**

Recently, CNN (convolutional neural network) architectures showed state-of-art performance on several computer vision tasks such as classification, detection, segmentation, and tracking. In this talk, we first review well-known CNN architectures for image classification (LeNet, AlexNet, ZFNet, GoogLeNet, and VGGNet) and discuss what the CNNs have learned from the data, by using visualization techniques. Based on the understanding of feature maps, we will discuss the motivations of CNN architectures for detection and segmentation tasks.

### **Biography**

Hyung Il Koo received the B.S., M.S., and Ph.D. degrees in the department of electrical engineering and computer science from Seoul National University (SNU), Seoul, Korea, in 2002, 2004, and 2010 respectively. From 2010 to 2012, he was a research engineer at the Qualcomm Research Korea. He joined the Department of Electrical and Computer Engineering, Ajou University, in 2012, where he is currently an associate Professor. His research interests include computer vision and machine learning.

- Dec. 12th, 2016, IEEE Seminar
- Speaker: Prof. Gerwin Schalk, National Center for Adaptive Neurotechnologies
- Topic: Applying Engineering Principles to Applied ECoG-based Research
- Attendees: 10 members and 8 non-members
- Prof. Gerwin Schalk had a seminar on applied ECoG-based research. In this talk, he gave examples of successful application of engineering principles to applied ECoG-based neuroscience.

**IEEE/GIST EECS/GIST BMSE Seminar***Host: Sung Chan Jun / Language: English***Monday, December 12, 2016, 14:00-15:00, #109, Dasan Bldg.****Applying Engineering Principles to Applied ECoG-based Research****Gerwin Schalk, Ph. D.**

Deputy Director, National Center for Adaptive Neurotechnologies

Research Scientist, Wadsworth Center, NYS Dept. of Health

Associate Professor, Dept. of Neurology, Albany Medical College

Associate Professor, Dept. of Biomed. Sci., State Univ. of New York at Albany

**Abstract**

Our laboratory integrates and advances scientific, engineering, and clinical concepts to innovate, develop and test new neurotechnologies and to apply them to basic and applied research. These multidisciplinary efforts span a variety of areas, including computational, cognitive, and systems neuroscience, signal processing, machine learning, statistics, computer science, and neurology/neurosurgery. To perform this research, we focus most of our efforts on signals recorded directly from the surface of the brain (electrocorticography (ECoG)). Our vision is to revolutionize the way we can study the brain, and to develop important clinical tools for diagnosis or treatment of nervous system function.

In this talk, I will give examples of successful application of engineering principles to applied ECoG-based neuroscience. These examples include a variety of brain-computer interfacing systems interfacing with motor, perceptual, or language systems. They highlight throughout the critical need for engineering advances and showcase the unique properties and substantial opportunities of the ECoG platform.

**Biography**

Dr. Schalk obtained his M.S. in Electrical Engineering and Computer Science from Graz University of Technology in Austria, his M.S. in Information Technology from Rensselaer Polytechnic Institute (RPI) in Troy, New York, and his Ph.D. in Computer and Systems Engineering from RPI. He is interested in integrating and advancing scientific, engineering, and clinical concepts to innovate, develop and test new neurotechnologies and to apply them to basic and applied research. He authored or co-authored >120 peer-reviewed publications, one book and 10 chapters, has >11000 total citations and an H factor of 42, and has given more than 200 invited lectures world-wide. His work is funded by the NIH and the US Army, is currently establishing the only neurotechnology center sponsored by the NIH, and has been extensively featured by the media including features on CNN, NBC, CBS, Science Channel, articles in New York Times Magazine, Discover Magazine, Technology Review, and Wired. He is also listed in Who's Who in the World and Who's Who in America, and received several awards for his work.

**B.3 Affinity Group Activities**

- Young Professional (YP)  
In July, Young Professional Affinity Group (YPAG) was organized for the first time in Korea. The very first meeting was on August 4<sup>th</sup>, 2016, in which 15 IEEE Members/Student Members attended.

**B.4 Awards & Recognition Activities**

- Prof. Yo-Sung Ho was promoted to IEEE Fellow. There was celebration party in which 19 IEEE Members attended.

## **PART D - GOALS AND PLANS**

### **D.1 Goals and Future Plans**

The number of IEEE Members in Gwangju Section suddenly increased from ~100 to ~150 a few years ago, so the main goal is to maintain the number of members while continuing professional activities such as technical seminars. Especially, we will continue recruiting undergraduate students through pizza parties, seminars, and a few dedicated events for membership recruitment. In 2017, we plan to have more than 5 technical seminars and more than one huge event for undergraduate recruitment, and continue our effort to sustain the YPAG in Gwangju.