

Region 10 Section Report Format – Gwangju Section

PART A - SECTION SUMMARY

A.1 Executive Summary

- Section Executive Committee Member List as of Oct. 2019

| | | |
|------------------------|----------------|--|
| CHAIR | Minjae Lee | minjae@gist.ac.kr |
| SECRETARY | Sung-Min Hong | smhong@gist.ac.kr |
| TREASURER | Jong Won Shin | jwshin@gist.ac.kr |
| VICE CHAIR | JONG-IN SONG | jisong@gist.ac.kr |
| MEMBERSHIP DEVELOPMENT | Tae Joon Seok | tjseok@gist.ac.kr |
| MEMBER-AT-LARGE | Kiseon Kim | kskim@gist.ac.kr |
| | Heung-No Lee | heungno@gist.ac.kr |
| | Myoung Jin Lee | mjlee@chonnam.ac.kr |

- Section Highlights

In year 2019, the Section offered six technical (5) and social (1) meetings. Most technical activities were given at the campus of GIST, Korea.

- Major Events (International, National)

Prof. Minjae Lee started his term as the Section Chair on February 1, 2019.

- Major Chapter Activities

N/A

- Major Student and Affinity Group Activities

In this year, in order to enhance the membership development, the student membership fee was partially reimbursed.

- Awards

N/A

A.2 Financial Report

- Summary

| 2017 잔액분 | 3,612,577 | | | | | | |
|-----------------|-----------|---------|--------------|-----------|---------|----------------------|--|
| 2018 총입금 | 2,926,848 | | | | | | |
| date (DD/MM/YY) | RCT No | covered | out of total | 잔액 | Rev. MT | 비고 | 참석인원 |
| 23-Jan-18 | | 80,000 | | 3,532,577 | | IEEE Meeting | 18.1.19일 호요성, 이민재, 신종원, 홍성민 |
| 23-Jan-18 | | 104,000 | | 3,428,577 | | IEEE Meeting | 18.1.19일 호요성, 홍성민, Mehrdad Panahpour Tehrani, Toshiaki Fujii |
| 13-Feb-18 | | 300,000 | | 3,128,577 | | 김태수 전문가활용 | (17.12.01 16:00~17:00) Considerations for commercializing machine learning applications |
| 17-Mar-18 | | | 727 | 3,129,304 | | 이자수입 (interest) | |
| 03-Apr-18 | | 64,000 | | 3,065,304 | | IEEE Meeting | 18.3.30일 호요성, 이민재, 신종원, 홍성민 |
| 16-Jun-18 | | | 657 | 3,065,961 | | 이자수입 (interest) | |
| 13-Aug-18 | | | 2,926,848 | 5,992,809 | | 2018 IEEE 입금 | 1002-754-402392 |
| 06-Sep-18 | | 164,000 | | 5,828,809 | | IEEE Meeting | 18.9.5일 호요성, 이민재, 신종원, 홍성민, 김기선, 이훈노, 정우정 |
| 15-Sep-18 | | | 874 | 5,829,683 | | 이자수입 (interest) | |
| 05-Nov-18 | | 93,600 | | 5,736,083 | | IEEE Workshop Attend | 장용준 학생 교통비 지급 |
| 15-Dec-18 | | | 1,223 | 5,737,306 | | 이자수입 (interest) | |

- Total amount left in the beginning of 2018 was 3,612,577KRW.
- Total deposit in 2018 was 2,926,848KRW.
- Total amount of interest incurred in 2018 was $727 + 657 + 874 + 1,223 = 3,481$ KRW.

| 2018 잔액분 | 5,737,306 | | | | | | |
|-----------------|-----------|---------|--------------|-----------|---------|-----------------|--|
| 2019 총입금 | | | | | | | |
| date (DD/MM/YY) | RCT No | covered | out of total | 잔액 | Rev. MT | 비고 | 참석인원 |
| 30-Jan-19 | | 48,000 | | 5,689,306 | | IEEE Meeting | 19.1.28일 김기선, 이훈노, 신종원, 홍성민 |
| 16-Mar-19 | | | 1,224 | 5,690,530 | | 이자수입 (interest) | |
| 15-Jun-19 | | | 1,218 | 5,691,748 | | 이자수입 (interest) | |
| 04-Sep-19 | | 334,980 | | 5,356,768 | | 이명종 전문가활용 | 19.08.28 14:00~15:00 Toward Secure Intelligent IoT |
| 21-Sep-19 | | | 1,282 | 5,358,050 | | 이자수입 (interest) | |
| 26-Sep-19 | | 119,000 | | 5,239,050 | | IEEE Meeting | 19.9.24. 이민재, 신종원, 석태준, 이명진, 홍성민 |
| 17-Oct-19 | | 300,000 | | 4,939,050 | | 이육재 전문가활용 | 19.10.17 16:00-17:00 Integrated photonics towards Quantum Computing |

- Total amount left in the beginning of 2019 was 5,737,306KRW.
- Total deposit in 2019 was 0 KRW.
- Total amount of interest incurred in 2019 was $1,224 + 1,218 + 1,282 = 3,724$ KRW.

- Any other financial activities
N/A

PART B - ORGANIZATIONAL ACTIVITIES

B.1 Membership Development Activities

- Total number of active members in the past 3 years.
The number of active members is 269 for Gwangju Section. (Membership Development Report – August 2019)
- Summary and evidence of work done to improve the value of membership, which leads to retention and growth of members
In 2019, in order to enhance the membership development, the student membership fee was partially reimbursed.

B.2 Chapter Activities

- Total number of Chapters in the Section
N/A
- Number of Chapters formed in the current year
N/A
- Number of active Chapters (Chapters who have reported required number of meetings during the year)

N/A

- Summary of Chapter activities (Chapter wise with attachment table/information)

N/A

B.3 Professional and Continuing Education Activities

There have been 5 seminars supported by IEEE Gwangju Section. The lecturers came from Korea and the United States.

| Number | Seminar |
|--------|---|
| 1 | <ul style="list-style-type: none">• Feb. 7, 2019, IEEE Seminar <p>-Speaker: Dr. Taesu Kim, Neosapience, Inc</p> <p>-Topic: Talking machine: towards natural sounding speech generation</p> <p>-Attendees: 15 members and 10 non-members</p> <p>Gwangju Section invited Dr. Taesu Kim from Neosapience, Inc. In the past few years, deep learning has made progress in various areas. Speech generation is one of the area significantly advanced in the last year. Neural network based algorithms showed promising results and possibility towards more natural sounding speech. In this talk, Dr. Kim introduced recent advances and trends in speech generation, and suggest the key factors and future direction to build machines that speak like human.</p> |
| 2 | <ul style="list-style-type: none">• May 2, 2019, IEEE Seminar <p>-Speaker: Dr. Wook-Jae Lee, Senior Researcher, ETRI, Daejeon, South Korea</p> <p>-Topic: Integrated Photonics towards Quantum Computing</p> <p>-Attendees: 5 members and 45 non-members</p> <p>Gwangju Section invited Dr. Wook-Jae Lee from ETRI. In this talk, Dr. Lee reviewed current quantum computer technology and introduce the integrated quantum photonics platform for single photon manipulation.</p> |
| 3 | <ul style="list-style-type: none">• August 28, 2019, IEEE Seminar <p>- Speaker: Prof. Myung Jong Lee, Professor, Dept. of Electrical & Computer Engineering, City University of New York</p> <p>- Topic: Toward Secure Intelligent IoT</p> <p>- Attendees: 8 members and 5 non-members</p> <p>- Gwangju Section invited Prof. Myung Jong Lee who is a professor at the Dept. of Electrical & Computer Engineering, City University of New York and also an adjunct professor at the School of Electrical Engineering and Computer Science,</p> |

| | |
|---|--|
| | <p>Gwangju Institute of Science and Technology (GIST). In this talk, he introduced the technology trends regarding maximum entropy and discussed various issues on IoT such as security, application of AI techniques, and future trend of IoT</p> |
| 4 | <ul style="list-style-type: none"> ● October 10, 2019, IEEE Seminar <p>-Speaker: Dr. Myunghwan Kim, Head of Data Science, Mesh Korea Co., Ltd., Seoul, South Korea</p> <p>-Topic: Connect Better: Lifecycle of Data Science and AI in Industry</p> <p>-Attendees: 7 members and 50 non-members</p> <p>Gwangju Section invited Dr. Myunghwan Kim from Mesh Korea. In this talk, Dr. Kim introduced the social and economical connecting behavior, and showed some examples of the attempts to interpret its underlying patterns by data analysis. Furthermore, he discussed how to apply the insights from the data analysis into the AI-driven services and business, and the lifecycle of such data science in the industry. Finally, Dr. Kim also talked about the skills and the attitudes that each person needs to equip in the data-driven service-oriented industry.</p> |
| 5 | <ul style="list-style-type: none"> ● October 17, 2019, IEEE Seminar <ul style="list-style-type: none"> - Speaker: Dr. Jae Kyung Mun, ETRI, Korea - Topic: GaN Semiconductor Devices for RF and Power Applications - Attendees: 5 members and 50 non-members - Dr. Jae Kyung from ETRI, Korea was invited as a seminar speaker. In this talk, the power electronic devices based on GaN have been introduced. Especially, various wide bandgap materials have been compared to understand the pros/cons of those materials at a certain voltage range. The epi-structure, the fabrication process, and the device characteristics of GaN devices have been briefly explained. |

- Feb. 7. 2019, IEEE Seminar

-Speaker: Dr. Taesu Kim, Neosapience, Inc

-Topic: Talking machine: towards natural sounding speech generation

-Attendees: 15 members and 10 non-members

Gwangju Section invited Dr. Taesu Kim from Neosapience, Inc. In the past few years, deep learning has made progress in various areas. Speech generation is one of the area significantly advanced in the last year. Neural network based algorithms showed promising results and possibility towards more natural sounding speech. In this talk, Dr. Kim introduced recent advances and trends in speech generation, and suggest the key factors and future direction to build machines that speak like human.

GIST EECS/IEEE Seminar

Host: Jong Won Shin / Language: Korean
Thursday, February 7, 2019, 11:00~12:00
GIST EECS B-Bldg. 2nd Floor #201

Talking machine: towards natural sounding speech generation

Taesu Kim, Ph.D.

CEO
Neosapience, Inc.

[Abstract]

In the past few years, deep learning has made progress in various areas. Speech generation is one of the area significantly advanced in the last year. Neural network based algorithms showed promising results and possibility towards more natural sounding speech. In this talk, we introduce recent advances and trends in speech generation, and suggest the key factors and future direction to build machines that speak like human.

[Bio]

Taesu Kim received B.S. degree from Hanyang University in 2001, and M.S. and Ph.D. from KAIST in 2003 and 2007, respectively. From 2004 to 2006, he worked for Institute for Neural Computation at UCSD as a visiting scholar, where his research was to develop unsupervised feature learning and source separation. From 2007 to 2010, he worked for LG Electronics as a senior research engineer, where he developed machine learning algorithm for audio signal processing. Then he joined Qualcomm to establish Korea Research Center in 2010. While working for Qualcomm, he developed machine learning algorithm for low power microphone such as environmental sound classification, audio event detection, key phrase detection, and speech recognition, and he has promoted to staff engineer, staff engineer/manager, and senior staff engineer/manager in 2011, 2012, and 2014 respectively. Recently, he founded a startup named Neosapience, Inc. to make personalized AI that speaks and acts like human.

- May 2nd, 2019, IEEE Seminar

-Speaker: Dr. Wook-Jae Lee, Senior Researcher, ETRI, Daejeon, South Korea

-Topic: Integrated Photonics towards Quantum Computing

-Attendees: 5 members and 45 non-members

Gwangju Section invited Dr. Wook-Jae Lee from ETRI. In this talk, Dr. Lee reviewed current quantum computer technology and introduce the integrated quantum photonics platform for single photon manipulation.



GIST EECS/IEEE Seminar

Host: Tae Joon Seok / Language: English

Thursday, May 2, 2019, 16:00~

Haerim Hall, EECS-B Bldg. 1st Floor

Integrated Photonics towards Quantum Computing

Wook-Jae Lee, Ph.D

Senior Researcher

ETRI

[Abstract]

On-chip integration of single photon sources and detectors is crucial for quantum integrated photonic technologies such as quantum communications and computing. Silicon photonics is an attractive platform for large-scale quantum integrated circuit due to mature CMOS technology. Here, we will review current quantum computer technology and introduce the integrated quantum photonics platform for single photon manipulation.

[Bio]

■ Current Position

- Senior Researcher at ETRI (2017-present)

■ Previous Positions

- Senior Research Fellow at Cardiff University (2016-2017)

- Postdoctoral Scholar at UCLA (2014-2016)

- Postdoctoral Scholar at UC Davis (2013-2014)

- Research Assistant Professor at KAIST (2011-2013)

- **August 28th, 2019, IEEE Seminar**

Speaker: Prof. Myung Jong Lee Park, Professor, Dept. of Electrical & Computer Engineering, City University of New York

Topic: Toward Secure Intelligent IoT

Attendees: 8 members and 5 non-members

Gwangju Section invited Prof. Myung Jong Lee who is a professor at the Dept. of Electrical & Computer Engineering, City University of New York and also an adjunct professor at the School of Electrical Engineering and Computer Science, Gwangju Institute of Science and Technology (GIST). In this talk, he introduced the technology trends regarding maximum entropy and discussed various issues on IoT such as security, application of AI techniques, and future trend of IoT.



Wednesday, August 28th, 2019, 14:00, EECS B-Bldg. 2nd Floor #203, GIST

Toward Secure Intelligent IoT

Myung Jong Lee, PhD

Professor
Dept. of Electrical & Computer Engineering
City University of New York

Abstract

IoT promises to transform the way we work, live, and play but not without critical challenges. For instance, if the issue of IoT security is not resolved in a timely manner, the envisioned connected world built on IoT, may be a story in the distant future. As many of these IoT devices are resource constrained, equipping security on these devices faces substantial technical challenges. As with many other fields, AI plays the essential role for secure operation of IoT.

This talk first discusses the information technology evolution toward IoT in the view of entropy expansion with examples in communications. Future trends of IoT technologies will be explored in the core areas of IoT including security, machine learning, edge cloud, decentralization, and integration. Discussion also extends to a potential effective approach installing an intrusion detection system inside IoT device itself. Some current research efforts in hardware intrusion detection, COSMOS testbed, mobile edge cloud will be presented, which will be followed by Q& A.

Bio:

Dr. Myung J. Lee received a B.S and an MS from Seoul National University in Korea and Ph.D degree from Columbia University in electrical/electronics engineering. He is currently a professor at the Dept of Electrical & Computer Engineering City University of New York. He is also an adjunct professor at GIST. He was visiting professors to Bellcore, Seoul National University, and Samsung Advanced Institute of Technology. Dr. Lee's research interests include wireless communication networks, 5G, security, secure IoT, mobile cloud computing, V2X, and stochastic computing applications. His researches have been funded by government agencies and leading industries, including, NSF, ARL, Samsung and ETRI. He authored and co-authored over 180 international journal & conference papers, a book (Green IT: Technologies and Applications, Springer)(ed.), book chapters, more than 25 U.S and international patents. Dr. Lee also actively contributes to international standard organizations IEEE and ZigBee (TG chairs for IEEE 802.15.5 & 15.8). Dr. Lee's research group developed the first NS-2 simulator for IEEE 802.15.4, a standard NS-2 distribution widely used for wireless sensor network researches. He received the best paper award at IEEE CCNC 2005 and SMARTGIFT conference 2016 and CUNY Excellence Performance Award.

- **Oct. 4th, 2019, IEEE Seminar**

-Speaker: Dr. Myunghwan Kim, Head of Data Science, Mesh Korea Co., Ltd., Seoul, South Korea

-Topic: Connect Better: Lifecycle of Data Science and AI in Industry

-Attendees: 7 members and 50 non-members

Gwangju Section invited Dr. Myunghwan Kim from Mesh Korea. In this talk, Dr. Kim introduced the social and economical connecting behavior, and showed some examples of the attempts to interpret its underlying patterns by data analysis. Furthermore, he discussed how to apply the insights from the data analysis into the AI-driven services and business, and the lifecycle of such data science in the industry. Finally, Dr. Kim also talked about the skills and the attitudes that each person needs to equip in the data-driven service-oriented industry.



IEEE Seminar

Host: Tae Joon Seok / Language: English

Friday, October 4, 2019, 14:30~

Haerim Hall, EECS-B Bldg. 1st Floor

Connect Better: Lifecycle of Data Science and AI in Industry

Myunghwan Kim, Ph.D.

Mesh Korea, Head of Data Science

[Talk summary]

In the era of highly developed service-oriented business that leads to the 4th industrial revolution, effort towards better understanding of human becomes important to provide more suitable and effective services to consumers. In particular, even now, people all around the world aim to understand the social behavioral patterns of human beings through digitalization and data analysis on social networking or economic behaviors, as well as offer more necessary services to consumers through artificial intelligence (AI).

In this talk, we introduce the social and economical connecting behavior, and show some examples of the attempts to interpret its underlying patterns by data analysis. Furthermore, we discuss how to apply the insights from the data analysis into the AI-driven services and business, and the lifecycle of such data science in the industry. Finally, we also talk about the skills and the attitudes that each person needs to equip in the data-driven service-oriented industry.

[Bio]

■ Education

- * 2003 BS, EE, Seoul National University
- * 2011 MS, Statistics, Stanford University
- * 2014 PhD, EE, Stanford University

- December 1st, 2017, IEEE Seminar
 - Speaker: Dr. Taesu Kim, President, Neosapience, Inc.
 - Topic: Considerations for commercializing machine learning applications
 - Attendees: 11 members and 2 non-members

- **October 17, 2019, IEEE Seminar**
 - Speaker: Dr. Jae Kyung Mun, ETRI, Korea
 - Topic: GaN Semiconductor Devices for RF and Power Applications
 - Attendees: 5 members and 50 non-members
 - Dr. Jae Kyung from ETRI, Korea was invited as a seminar speaker. In this talk, the power electronic devices based on GaN have been introduced. Especially, various wide bandgap materials have been compared to understand the pros/cons of those materials at a certain voltage range. The epi-structure, the fabrication process, and the device characteristics of GaN devices have been briefly explained.
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B.4 Students Activities

- Total number of Student Branches in the Section
N/A
- Number of Student Branches formed in the current year
N/A
- Section level student activities (student congress, paper and other contests, awards etc)
N/A
- Number of active Student Branches (Student Branches who have reported required number of meetings during the year)
N/A
- Summary of Student Branch activities (Student Branch wise with attachment table/information)
N/A

B.5 Affinity Group Activities

- Young Professional (YP)
In this year (2019), there is no activity in the Young Professional Affinity Group (YPAG). The technical board members are aware of the current situation and will try to improve it. For that purpose, a new volunteer for the YPAG should be found.
- Women In Engineering (WIE)
N/A
- Life Member (LM)
N/A

B.6 Awards & Recognition Activities

- Award constituted by the Section
N/A

B.7 Communication Activities (Newsletter, Home Page, E-mail etc.)

- Newsletter (name and number of issues in the year)
N/A
- Home Page of the Section (give the URL and how often it is updated)
N/A
- Other means of contacts with Section members including social media
N/A

B.8 Industry Relations

- Membership growth and retention
N/A
- Activities for/with industrial members
N/A

B.9 Humanitarian Technology Activities

- Humanitarian Technology related activities supported by the Section including collaboration with other OUs.

N/A

- SIGHT Activities

N/A

B.10 Community Activities

- IEEE Social activities (Family day, IEEE day, Engineers Week)

N/A

PART C - OTHERS

C.1 Special Events

- Please briefly describe the importance of special events and the outcomes achieved

N/A

- Funding secured from the IEEE and external sources including sponsorships

N/A

C.2 Relationship with National and International Societies and Non-Government Organizations (NGO)

- Nature of relationship and details of any formal agreement signed

N/A

- Details of joint activities

N/A

- Benefit to IEEE members (for example discounts, access to technical information etc.)

N/A

- Benefit to Section (for example help in membership development, venue facilities, cost saving etc.)

N/A

C3. Collaboration with other IEEE Sections

- Support extended to neighboring Sections

N/A

- Joint activities with any other Section

N/A

C.4 Support extended to Sub-sections & Society Chapters within the Section

- Support extended for organising technical, educational and professional activities

N/A

- Joint activities for membership development

N/A

- Support extended for the formation of a Sub-section or transition of a Sub-section into a full Section

N/A

C.5 Best Practices of your Section (which you would like to share with other Sections for the benefits of members)

C.6 Problems anticipated and suggestions for solutions, if any

PART D - GOALS AND PLANS

D.1 Continuation of project/activity in progress and their implementation plans

D.2 Goals and Future Plans

The number of IEEE Members in Gwangju Section has been increased almost double in the last couple of years. (269 members, Membership Development Report – August 2019) We will investigate the reason of this explosive growth so that we can maintain the number of the section members and also keep pursuing the section growth more strategically. The efforts to recruit new members have been confined in GIST. We will make an effort to diversify the channels of recruiting new members. In 2020, we will have more than 5 technical seminars, networking events for the section members, and promotion events for recruiting new members. In addition, we will seek a route to revive the activity of YPAG in Gwangju.

D.3 Any innovative ideas to make IEEE more creative and value added for sustaining the membership retention and recruitment goals.

D.4 Business Plan for Sustainable Growth and Financial Stability.