

Ji-Woong Choi

Dean of Admissions & Student Affairs, DGIST
(Tenured) Associate Professor, ICE (Info. & Commun. Eng.), DGIST
Affiliate Professor, Brain & Cognitive Sciences, DGIST
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(As of Mar. 2018)

EDUCATION

Mar/00 - Aug/04 **Ph.D.** in Electrical Engineering, **Seoul National University (SNU)**, Seoul, Korea
Thesis: Design of adaptive wireless OFDM transceivers (Advisor: Yong-Hwan Lee)
Mar/98 - Feb/00 **M.S.** in Electrical Engineering, **SNU**, Seoul, Korea
Thesis: Adaptive channel estimation in pilot channel based DS-CDMA systems
Mar/94 - Feb/98 **B.S.** in Electrical Engineering (magna cum laude), **SNU**, Seoul, Korea

PROFESSIONAL EXPERIENCE

Jan/16 - Present **Dean of Admissions & Student Affairs, DGIST** (Daegu Gyeongbuk Institute of Science and Technology), Daegu, Korea
Sept/14 - Present **(Tenured) Associate Professor**, Department of Information & Communication Engineering, DGIST, Daegu, Korea
Sept/17 - Present **Chief Technology Advisor & Outside Director**, VSI, Korea
Jan/12 - Present **Affiliate Professor**, Brain & Cognitive Sciences Department, DGIST
Oct/10 - Aug/14 **Assistant Professor**, Department of Information & Communication Engineering, DGIST
Sept/17 - Present **Outside Director and Chief Technical Advisor (CTA)**, VSI
Aug/07 - Oct/10 **Staff/Senior**(until Nov/09) **Systems Engineer, Marvell Semiconductor Inc.** (ranked 4th worldwide in Fabless semiconductor industry in 2010), Santa Clara, CA, U.S.
- Designed advanced algorithms for next generation systems (LTE and WiMAX): channel/SINR estimation, MIMO techniques, HARQ, synchronization, positioning and resource allocation
July/06 - July/07 **Technical Consultant, GCT Semiconductor Inc.**, San Jose, CA, U.S.
- Developed ISDB-T system (OFDM-based Japanese mobile TV)
- Designed synchronization/channel estimation, interference-limited CDMA and fast-fading OFDM receivers
Nov/05 - July/07 **Postdoctoral Visiting Scholar, Stanford University**, Stanford, CA, U.S. (Advisor: John M. Cioffi)
- Researched on advanced multicarrier wireless communication systems
Sept/04 - Oct/05 **Postdoctor, Inter-University Semiconductor Research Center, SNU**, Seoul, Korea (Military service completed)
- Defined a system framework for OFDM-based fourth generation mobile system
- Performed link-/system-level simulation and designed link adaptation and channel estimation
Mar/00 - Aug/04 **Research Assistant, SNU**, Seoul, Korea
- Led a five-man team for research on next-generation multicarrier systems (Apr/02-Aug/04)
- Developed WCDMA prototype board composed of DSP, FPGA and other peripherals, and conducted floating/fixed point simulation and RTL coding
- Designed pilot pattern, adaptive channel estimation and SIR measurement algorithms
Mar/98 - Feb/00 **Research Assistant, SNU**, Seoul, Korea
- Analyzed downlink spread spectrum systems
- Participated in the development of PSTN modems

FIELD OF RESEARCH INTERESTS

- Communications theory and signal processing
- Advanced communication systems including Vehicular (In-vehicle and V2X), 5G cellular, and IoT systems
- Cyber-physical system (CPS) and resilient system design
- Biomedical communications & signal processing, and wireless body area network (WBAN)

- Invasive and non-invasive brain-machine interface (BMI)
- Magnetic communication and energy transfer system

TEACHING EXPERIENCE

- Fall 1999 Teaching Assistant, Signals and Systems, SNU, Seoul, Korea
- Spring 2002 Teaching Assistant, Queuing Theory, SNU, Seoul, Korea
- Spring 2011/12/13/14/15/16/17/18 Principles of Communication (IC530), DGIST, Daegu, Korea
- Spring 2012/13/14/15/16/17 Anatomy for Convergence (CR520), DGIST, Daegu, Korea (Participant)
- Fall 2011/13/15/17 Wireless and Mobile Communication (IC630), DGIST, Daegu, Korea
- Fall 2012/14/16 Advanced Digital Communication (IC631), DGIST, Daegu, Korea
- Fall 2013/14/15/16 Physiology for Convergence (CR521), DGIST, Daegu, Korea (Principle)

SUPERVISED POSTDOCTOR/POSTMASTER

- Dr. Jaeseok Lee, Oct. 2015~ Aug. 2017, (PhD in 2014, Korea Univ.) , Hanwha system
- Sukhyun Hwang, Feb. 2017~ Aug. 2017, (MS in 2017, DGIST) , ADD
- Dr. Seongeun Ryu, Sept. 2011~Jan. 2013, (PhD in 2011, Soongsil Univ.), LG Electronics (Co-advising with Prof. Kyung-Joon Park)
- Seung-Ik Cho, Aug. 2017~Jan. 2018, (MS in 2016, DGIST), VSI

STUDENTS UNDER SUPERVISION

- Woojin Jeong, Mar. 2018~Present (BS/MS/PhD Combined)
- Jinmo Kim, Mar. 2018~Present (BS/MS/PhD Combined)
- Bomin Kim, Mar. 2018~Present (MS Student)
- Doyoung Lee, Mar. 2018~Present (MS Student, MS/PhD Combined)
- Jinwoo You, Mar. 2017~Present, (BS/MS/PhD Combined)
- Kyumin Kim, Sept. 2017~Present (MS Student)
- Woo Cheol Jin, Seongtak Kang and Shinwook Choi, Mar. 2017~Present (PhD Student, MS/PhD Combined)
- Kyung Tae Kim, Mar. 2016~Feb. 2018, MS, Mar. 2018~Present (PhD Student)
- Eunmin Choi, Mar. 2015~Feb. 2017, MS, Mar. 2017~Present (PhD Student)
- Sung-Ho Lim, Mar. 2014~Present (PhD Student, MS/PhD Combined)
- Hanjoon Kim, Mar. 2013~Present (PhD Student, MS from Kwangwoon Univ.)
- Kyung-Soo Kim, Sept. 2012~Present (PhD Student, MS/PhD Combined)
- Sungmin Han, Mar. 2012~Present (PhD Student, MS/PhD Combined)

STUDENTS UNDER CO-SUPERVISION

- Kyungje Lee, DGIST Robotics Engineering, Feb. 2017~Present, MS Student (Advisor: Sohee Kim)
- Jisub Bae, DGIST Brain and Cognitive Sciences, Feb. 2016~Present, MS Student (Advisor: Cheil Moon)
- Hunjung Shim, Eunjung Kim, DGIST Brain and Cognitive Sciences, Aug. 2015~Feb. 2016, MS Student (Advisor: Sungwoon Yu)
- Sulhwa Jung, DGIST Brain Science, Feb. 2015~Present, MS Student (Advisor: Sungwoon Yu)
- Eunjung Shin, DGIST Robotics Engineering, Feb. 2015~Present, PhD Student (Advisor: Hongsoo Choi)
- Hyejin Chun, DGIST Robotics Engineering, Feb. 2015~Present, MS Student (Advisor: Hongsoo Choi)
- Wonjun Lee, DGIST Robotics Engineering, July 2014~Feb. 2016, MS Student (Advisor: Hongsoo Choi)
- Junghoon Lee, DGIST Robotics Engineering, Feb 2016~Present, MS Student (Advisor: Hongsoo Choi)

SUPERVISED STUDENTS (PAST)

- Kyung Tae Kim, Mar. 2016~Feb. 2018, MS
 - Thesis: Transceiver Optimization of Wireless Power Transfer System with Multiple Transmitters to Signal Receiver
- Bahareh Behboodi, Mar. 2016~Feb. 2018, MS
 - Thesis: Deep Neural Networks for Assessing Functional Connectivity: an fNIRS Study
- Thanawin Trakoolwilaiwan, Sept. 2015~Aug.2017, MS, A*STAR (Singapore)
 - Thesis: Convolutional Neural Network for Functional Near-Infrared Spectroscopy-Based Brain-Computer Interface
- Chankeun Park, Sept. 2015~Aug.2017, MS, ADD
 - Thesis: Performance Improvement of the Uplink WCDMA Scrambling Code Identification Using Multiple Antennas
- Sukhyeon Hwang, Mar. 2015~Feb. 2017, MS, ADD

- Thesis: Magnetic MIMO System using Signal Processing for Robustness to Misalignment
- Eunmin Choi, Mar. 2015~Feb. 2017, MS, DGIST
 - Thesis: System Design and Performance Analysis of Controller Area Network for High Data Rate (CAN-HD)
- Seung-Ik Cho, Mar. 2014~Aug. 2016, MS, VSI
 - Thesis: The Performance Analysis of Non-coherent M-ary DPSK Receiver Applying the Repetition Scheme for Low-power Communications
- Dong Hyuck Jang, Sept. 2013~Aug. 2015, MS, ADD
 - Thesis: Communication Channel Modeling and Capacity Analysis of Controller Area Network (CAN)
- Chan-Ho Jin, Mar. 2013~Feb. 2015, MS, Sporton International
 - Thesis: Channel Modeling for WBAN Systems
- Dong-Woo Yeom, Mar. 2013~Feb. 2015, MS, LG Electronics
 - Thesis: Performance Analysis for Full-Duplex Random Access in Distributed Networks
- Jaesub Shin, Mar. 2012~Feb. 2014, MS, UL Korea
 - Thesis: An Autonomous Interference Avoidance Scheme for D2D Communications through Frequency Overhearing in OFDM System
- Jaewook Cho, Mar. 2012~Feb. 2014, MS, KTL
 - Thesis: Signal Processing Design for Cochlear Implant System using Piezoelectric Sensor
- Sang-Sik Shin, Mar. 2011~Feb. 2013, MS, DTaQ
 - Thesis: Iterative MIMO Detection Based on Dimension Reduction Soft Demodulation
- Inho Choi, Mar. 2011~Feb. 2013, MS, ADD
 - Thesis: Improved Noise Power and SNR Estimation in Severe Fading Channels for OFDM Systems

DGIST UGRP (Undergraduate group research program) SUPERVISED STUDENTS

- June-Sang Yu, hee chang Park, Ho Min Jang, Eunho Kim Feb. 2018 ~ Present, Real-time fNIRS and machine learning-based wheelchair control – 3th yr. undergraduate students
- Woojin Jeon, Hyeju Song, Saeun Jang, Youngchang Ju, Feb. 2018 ~ Present, Car hacking vulnerability and dangerousness analysis focusing on in-vehicle networks– 3th yr. undergraduate students
- Bomin Kim, Seunghyun Kim, Jinwoo You, Doyoung Lee, Yoohyun Lee, Feb. 2017 ~ Dec. 2018, Learning assistance system using brain computer interface (BCI)– 4th yr. undergraduate students
- Chanho Kim, Junseo Park, Jiho Park, Kyungjoo Song, Feb. 2017 ~ Present, Learning assistance system using brain computer interface (BCI)– 3rd yr. undergraduate students
- Jinwoo You, Doyoung Lee, Seungkyu Lee, Huiyong Yoon, Feb. 2016~ Dec. 2016, Particle, sound, wind instrument, and GPU (co-supervision with Prof. Minsoo Kim) – 3rd yr. undergraduate students

UNDERGRADUATE INTURNS

- Jan. 2018, Woojin Jeon, Hyeju Song, Beomdo Kim, Jinmo Kim, Daewon Kim, Heejung Park, Heechang Park (DGIST)
- July 2017, Byungwook Park (Kunkuk Univ.), Kun Lee, Seeun Jang, Homin Jang, Hojun Jung (DGIST)
- Jan. 2017, Yoohyun Lee, Hoseung Song, Yeonjae Shin, Minkun Kim, Sihyun Yang (DGIST)
- July 2016, Shinwoong Yoon, Taeryung Shul (DGIST)
- Jan. 2016, Soyoun Heo (Kyunghee Univ), Woosong Kang (DGIST)
- July 2015: Sunghyun Kim, Sihwan Kim, Woojin Jang, Chajin Lee (DGIST)
- Jan. 2015, Jinwoo Lee, Jaewon Ahn (DGIST)
- July 2014, Seungchun Moon (Inha Univ.), Junho Shin (Kyungpook National Univ.)
- July 2014, Sungeon Kim, Jaehyung Heo, Jinwoo You (DGIST)
- July 2013, Sungho Lim, Seungick Cho (Chungbuk National Univ.)

HIGH SCHOOL R&E STUDENTS

- Mar. 2016 ~ Dec. 2016, Heesoo Kim, Woohyuk Sohn, Jaeyeon Han, Daegu Science High School, Brain Signal-based Robots, (Award: KICS Fall Conference Paper Award: Nov/2016)
- Mar. 2015 ~ Dec. 2015, Seo Eun Kim, Sang Rae Kim, Jong Hyeon Lee, Bon Woo Lee, Daegu Science High School, Brain Signal-based Robots (Award: Samsung Humantech Bronze Award Feb/15, KICS Fall Conference Paper Award: Sept/2015)

PROFESSIONAL ACTIVITIES

- IEEE Senior Member (since 2009)
- Director and Councilor, Korea Information and Communications Society (KICS) (since 2015)

- Director, Open Standards and Internet Association (OSIA), 2017~
- PM Review Board Member, Korea Health Industry Development Institute, 2015. 7~ 2018. 1
- Editor, Journal of Communications and Networks (JCN) (V2X field), 2017~
- Editorial Board Members, Recent Advances in Communications and Network Technology, 2014~
- Lead Guest Editor, International Journal of Antennas and Propagation, Hindawi, Special issue: Near-Field Propagation and Its Applications for Wireless Power and Signal Transfer, 2016
- Guest Editor, Wireless Communications and Mobile Computing, Hindawi, Special issue: Emerging Small Cell Wireless Technologies for 5G: Architectures and Applications, 2017
- Guest Editor in M2M special section of IEEK Journal 2013, CPS special section and Advanced MIMO special section of KICS Journal 2014
- International Journal Co-chair, ICUFN 2017
- Tutorial chair of IEEE ISCE (International Symposium on Consumer Electronics) 2014
- TPC Vice-Chair, JCCI (Joint conference on communications and information), 2017
- 5G and 6G Mobile Communications Workshop TPC Chair, ICUFN 2016
- Technical track (Mobile and wireless communications track) Chair, IEEE ICTC 2011
- Workshop Co-Chair, ICTC 2013 D2D Workshop
- Technical Program Committee Member of
 - 2008 IEEE PIMRC (Personal, Indoor and Mobile Radio Communications Symposium)
 - 2007/2008 IEEE IWCMC (International Wireless Communications and Mobile Computing Conference)
 - 2011 Globecom, 1st Workshop on Distributed Antenna Systems (DAS) for Broadband Mobile Communications
 - 2012 VCSC (International Workshop on Vehicular Communications, Sensing, and Computing)
 - 2012/13/14/15/16 ICCVE (International Conference on Connected Vehicles & Expo)
 - 2012/15/16/17 ICTC (International Conference on ICT Convergence)
 - 2013/14/15/16 WCNC (Wireless Communications and Networking Conference)
 - 2013 APCC (Asia-Pacific Conference on Communications)
 - 2013 APWCS (Asia Pacific Wireless Communications Symposium)
 - 2014/15/16/17 ICUFN (International Conference on Ubiquitous and Future Networks)
 - 2014 IEEE VTC (Vehicular Technology Conference) Spring, 2017 IEEE VTC Fall
 - 2014 IEEE COMNETSAT (International Conference on Communication, Networks and Satellite)
 - 2014/15/16 IEEE ATC (International Conference on Advanced Technologies for Communications)
 - 2014 IEEE/CIC ICC (IEEE/CIC International Conference on Communications in China)
 - 2015 ComManTel (Conference on Computing, Management and Educational Tech)
 - 2015 IEEE Globecom Next generation Workshop
 - 2015 IEEE ISCE (International Symposium on Consumer Electronics)
 - 2015 Korea KICS Next-generation Communications Workshop
 - 2015/17 CIT Conference
 - 2017 International Conference on Information Networking (ICOIN)
- Session chair of JCCI 2012/2013/2015, ICUFN2013, VTC 2014 Spring, ISCE 2014
- Committee Member of
 - Finance Secretary, Coding and Information Theory Society (CITS), Korea Information and Communications Society (KICS)
 - Mobile Communications Society, KICS
 - Communications Society, IEEK (The Institute of Electronics Engineers of Korea)
- Reviewer of numerous Journals and Conferences including
 - IEEE: Trans. Commun., Trans. Vehicular Technol., Trans. Wireless Commun., Trans. Broadcasting, Trans. Signal Processing, Commun. Letters, Wireless Commun. Letters, and Signal Process. Letters
 - IET: Proceedings Commun., Electronics Letters
 - EURASIP: Journal on Wireless Commun. and Networking
 - Major international conference: ICC, Globecom, VTC, PIMRC, ISIT and so on
- Member of Judging Panels for Samsung Humantech Paper Contest, 2011/12/14/16

INVITED TALKS (Conference/Workshop)

- 100Mbps 이상 초고속 차량 네트워크 지원을 위한 Turbo CAN 및 Thunderbus 기술 개발, 2018 국내외 자동차 전장 최신 기술 세미나 Seoul, Apr. 26. 2018 (Domestic).
- Turbo Controller Area Network (Turbo CAN): Next Generation In-Vehicle Networking Supporting +100Mbps and Being Compatible with CAN, ICTC (International Conference on ICT Convergence), Jeju Korea, Oct. 18 2017 (International).

- Brain Signal Processing Technologies using EEG and fNIRS, The Institute of Electronics and Information Engineers, Mar. 14, 2017 (Domestic).
- Signal processing technologies for invasive and non-invasive bio-medical applications, KICS, Seoul, Aug. 10, 2016 (Domestic)
- BER Analysis of CAN Under BPSK Passband CAN-HD Interference, Eunmin Choi, Sungmin Han and Jaeseok Lee (DGIST, Korea); Suwon Kang (GCT Semiconductor, Korea); Ji-Woong Choi (DGIST, Korea), International Conference on Ubiquitous and Future Networks (ICUFN), Vienna, Austria July 5 2016 (International)
- Tutorial, Communications and signal processing technologies for biomedical applications, KICS Winter Conference, Jan. 21. 2016.
- Electrical brain signal pattern analysis in focal cerebral ischemic rats for stroke rehabilitation monitoring, IEEE Nanomed, Hawaii, USA, Nov. 18 2015.
- New Frontiers of Cognitive Systems, International Symposium on Perception, Action, and Cognitive Systems (PACS), Panel Discussion, Oct. 31 2015.
- Channel Capacity Analysis for High Speed Controller Area Network (CAN), ICTC (International Conference on ICT Convergence), Jeju Korea, Oct. 28 2015.
- 5G Mobile Key Technologies, Daegu, Apr. 30, 2015.
- Analysis of D2D system performance with a maximal SINR channel selection strategy, ICTC (International Conference on ICT Convergence), Oct. 23 2014.
- Wireless body area network system for human implantable artificial cochlea, 2014 1st CITS Workshop, Seoul, Korea, Feb. 2014.
- Bio-medical CPS and its applications, DGIST Global International Festival (DGIF), Daegu, Nov. 21~22 2013, Korea (International)
- CPS Communications and applications to biomedical fields, CPS Workshop, KICS, Oct. 22 2013, Kunkuk Univ., Korea (Domestic)
- Trends on D2D communications research, D2D Workshop, KICS, July 5 2013, Sungsil Univ. Korea (Domestic)
- Efficient resource allocation for M2M half duplex FDD (H-FDD) systems, International Conference on Ubiquitous and Future Networks (ICUFN), DaNang, Vietnam, July 4 2013 (International)
- Resource allocation in HFDD (Half Duplex Frequency Division Duplex) for M2M communications, InfoTech-2013, Dalian China, June 21 2013 (International)
- Trends on D2D communications research, JCCI (Joint conference on communications and information), Gyeongju, Korea, May 2 2013 (Domestic)
- Wireless communications for cochlear implants, WPAN/WBAN Standards Workshop, TTA, Jeju Univ. Jeju, Korea, Apr. 26, 2013 (Domestic)
- Smart communications from the perspective of physical layer (PHY), ISET (International Symposium on Embedded Technology), Jeju, Korea May 21, 2011
- Advanced technologies for LTE systems, Special Lecture, 2010 3rd CITS Workshop, Seoul, Korea, Oct. 2010.

INVITED TALKS (Others)

- 바이오 의료 어플리케이션을 위한 신호처리 및 머신러닝 기술, 경북대학교 세포기질연구소 동계심포지엄, Dec. 15. 2017.
- 침습 및 비침습 바이오의료 어플리케이션을 위한 신호처리 기술, 뇌연구원, Aug. 15. 2017.
- Turbo-CAN: High rate in-vehicle communication system, Korea Univ, Oct. 14, 2016.
- Communications and signal processing technologies for biomedical applications, Hanyang Univ, Oct. 7. 2015.
- 5G Mobile Key Technologies, Next Generation Technology Workshop, Gumi IT Institute, June, 4, 2015
- Bio-medical cyber-physical system (CPS) and its applications, IDEC Center, Kyungbook Natioanl Univ., Dec. 19, 2014.
- Wireless communications and signal processing for bio-medical systems, Microrobot & Biomedical Engineering Workshop, DGIST, July 25. 2014.
- Advanced modem technologies and its applications to bio-medical systems, ETRI, Daegu, Korea, Apr. 12. 2013.
- M2M communications, GIST, Gwangju, Korea, Mar. 22 2013.
- Stochastic geometry in wireless communications, SungKyunKwan Univ., Suwon, Korea, Mar. 6 2013.
- Overview of MIMO-OFDM wireless systems including WiFi, WiMAX and LTE, RaonTech, Oct. 22 2012.
- M2M communications, Marvell Semiconductor, CA, USA, July 24 2012.
- Half-duplex FDD (HFDD) in 3GPP, KT, Seoul, July 6. 2012.
- Current communication systems & future trends, Kyungsang Univ. Jinju, Korea, Oct. 2011.
- Introduction to CDMA communications, Short Lectures on High-speed Digital Communication and Networks, Communication Society, The Institute of Electronics Engineers of Korea, Seoul, Korea, Feb. 2011/12/13 (Lecture).
- Advanced Technologies for LTE Systems, Korea Univ., Seoul, Korea, Feb. 2011.
- Mobile WiMAX evolution: Key research areas and practical system design, Korea Univ., Seoul, Korea, Oct. 2008.

INVITED TALKS (To general audience)

- AI 시대 미래 인재와 우리의 진로, 사이언스콘서트, 세바시, Dong-A Univ., Pusan, Sept. 7. 2017.
- 4 차산업혁명을 대비한 미래인재양성, 대구일과학고(Apr/15/2017), 대전과학고(May/18/2017), 대구과학연구원(July/24, Aug/4/2017), 상인고(Nov/8/2017), 대구경북교육청(Nov/18/2017, Jan/23/2018).

HONORS AND AWARDS

- Research Award, Jan. 2017, DGIST
- KICS Fall Conference Paper Award, Nov. 2016, (Jaeyeon Han et al, Daegu Science High School R&E students)
- Samsung Humantech Bronze Award, Feb. 2015 (Seoeun Kim et al, Daegu Science High School R&E students)
- KICS Fall Conference Paper Award, Sept. 2015, (Seoeun Kim et al, Daegu Science High School R&E students)
- Postdoctoral Scholarship from Ministry of Information and Communication, Korea, Nov. 2005 – July 2007
- Silver Award at Samsung Humantech Paper Contest, Samsung Electronics, Feb. 2005
- Best Paper Award, Summer Conference on Commun., Korean Institute of Commun. Sciences (KICS), Korea, Sept. 2003
- Scholarship from Nokia Korea, Korea, Mar. 2000

COMMITTEE SERVICES (DGIST)

- Undergraduate Student Admission and Screening Committee, Chair: Jan/16~ present
- Graduate Student Admission and Screening Committee, Chair: Jan/16~ present
- Student Scholarship and Guidance Committee, Chair, Jan/16~present
- Student Sexual Harassment & Violence, Chair, Jan/16~present
- UGRP Committee, Member, Jan/16~Dec/2016
- Member of Staff Personnel Committee, Member, Jan/16~present
- Academic Affairs Committee, Member, Jan/16~present
- Wearable Smart Device TF, Member, Dec/15~present
- Student Admission and Screening Committee, Chair: Dec/10~ Mar/13
- Graduate Student Admission and Screening Committee, Member: Apr/13~Dec/15
- Curriculum Committee, Member: Dec/2010~July/2011
- Convergence Research Task Force Team, Member: Mar/2011~July/2011
- Informatization Task Force Team, Member: Mar/2011~Dec/2016

PROJECTS (Current)

- [1] Korea Research Foundation (KRF), Development of multi-modal sensing and control for brain functional homeostasis, PI, 2017.11~2022.12, \$8,000,000
- [2] Korea Research Foundation (KRF), Development of mobile platform for Alzheimer's disease (AD) diagnosis and relief using AI based neuro-feedback, PI, 2017.11~2021.10, \$800,000
- [3] Ministry of Science, ICT & Future Planning, Korea, DGIST, Smart convergence technologies for UAV safety control in urban areas, PI, 2017.1~2021.12, \$3,000,000.
- [4] Ministry of Education, Science and Technology (MEST), Development of fusion parts for 3.5 Tesla 6 channel magnetic stimulation and information feedback for a cure for intractable brain disease, Participant, 2016.3~2019.12
- [5] MEST, Development of microbiorobotic systems for surgical treatment of chronic total occlusion, Participant, 2015.6~2019.5
- [6] ADD, Signal Processing Research Center, Part 2-4, Participant, 2015.10~2020.12
- [7] Korea National Research Fund (NRF), Magnetic Communications and Energy Transfer in Hostile Environments, PI, 2015.5~2018.4, \$300,000
- [8] Samsung Electronics, Physiological Tactile Sensor Developments, 2015.6~2018.11. Co-PI, \$1,000,000
- [9] Ministry of Science, ICT & Future Planning, Resilient Cyber-Physical Systems Research, Participant, 2014.4~2022.2,
- [10] Ministry of Science, ICT & Future Planning, Korea, DGIST, Rehabilitation and replacement technology for brain damage employing electrical method, Participant, 2010.1~2019.12

PROJECTS (Past)

- [1] Korea National Research Fund (NRF), Development of bi-directional multi-channel neural electrodes and

- implantable wireless power/data transmission modules, 2016.9~2017.2, Participant
- [2] Daegu Science High School R&E Program, Learning assistance system study by using brain imaging technology), 2016.3~2016.12, PI, \$10,000
 - [3] Daegu Science High School R&E Program, Brain Signal-based Robots, 2015.3~2015.12, PI, \$10,000
 - [4] ETRI, MICS Band Modem Development for Medical Implants, 2013.10~2014.4, PI, \$35,000.
 - [5] DASTEK, Application development for two-way smartphone interface, 2013.1~2013.5, PI, \$30,000.
 - [6] Citus, Half Duplex FDD Technologies for LTE-Advanced M2M Applications, 2012.7~2012.12, PI, \$20,000
 - [7] Ministry of Education, Science and Technology (MEST), Korea, Research on Intra-body Wireless Systems for Bio-medical Implants, 2012. 5 ~ 2015. 4, PI, \$135,000
 - [8] High Risk High Return (HRHR) Project, DGIST, Artificial Wireless Implant Technology for Rehabilitation of Human Sensory System, 2012.5 ~2013.12, PI, \$90,000
 - [9] Marvell Semiconductor (Consulting), Algorithm Design for 3GPP LTE systems, 2011.1~2012.2, \$30,000.

PUBLICATIONS

Book Chapter

- [1] J.-W. Choi, J. Lee, H. Kwon and I. Kang, Chapter 8: Efficient MIMO receiver design for next generation wireless systems (R. Mahmoudi and K. Iniewski, Low Power Emerging Wireless Technologies, CRC press, Feb. 2013, Print ISBN: 978-1-4665-0701-2, eBook ISBN: 978-1-4665-0702-9).

Journals (submitted or in preparation)

14 papers in total

- [1] H. -J. Kim, K. Kim, S. Han, D.-W. Seo, and J. -W. Choi, "Non-coupling coil array allowing many independent channels for magnetic communication," IEEE Access, submitted (CA, Top 20%).
- [2] H. -J. Kim, E. Choi, K. Kim, S. Han, S. -H. Lim, D.-W. Seo, and J. -W. Choi, "Spatial domain simultaneous information and power transfer for magnetic MIMO channels using non-coupling array," IEEE Access in preparation (CA).
- [3] H. -J. Kim, S. Hwang, and J. -W. Choi, "Implementation of near-field magnetic MIMO communication system and performance evaluation with practical situations," IEEE Antennas and Propagation Magazine in preparation (CA).
- [4] H. -J. Kim, K. -S. Oh, K. J. Han, and J. -W. Choi, "Impedance matching to consider potential vector based dynamic path loss model for high efficient power transfer," IEEE Trans. Antennas and Wireless Propagation Letters in preparation (CA).
- [5] K. T. Kim, H. -J. Kim, and J. -W. Choi, "Magnetic beamforming with non-coupling antenna pattern as transfer coils for longer distance and high efficiency," IEEE Trans. Power Electronics in preparation (CA).
- [6] K. T. Kim, H. -J. Kim, and J.-W. Choi, "High Efficient Wireless Powering Pad with Non-coupling Coil Pattern," IEEE Trans. Antennas and Propagation, in preparation (CA).
- [7] M. Sim, K. H. Lee, K. S. Shin, J. H. Shin, J.-W. Choi, H. Choi, C. Moon, Y. Cho, S. N. Cha, J. I. Sohn, and J. E. Jang, "Artificial 'pain' feeling generation based on physical sensing and electrical signal processing by mimicking a human sensory system," submitted to Nature Biomedicine.
- [8] S. Han, J. Lee, D. W. Yeom, and J.-W. Choi, "Performance analysis of full-duplex random access in D2D communications," IEEE Commun. Letters, in preparation (CA).
- [9] S. Han, J.-W. Choi, J. Kim, "Numerical analysis of millimeter-wave frequency sharing between cellular systems and fixed service systems for 5G network deployment," IEEE Trans. Mobile Computing, in preparation (Co-CA)
- [10] S. Lee, K. Lee, S. Kim, M. Je, T. Lee, J.-E. Jang, J.-W. Choi, and C. Moon K. Kim, and J.-W. Choi, "Motor Function Tasks Combining with Precise intra-Cortical Stimulation Improve Functional Recovery after mCAO of Rats via Neural Plasticity Modulation," submitted to Nature Communications (Co-CA).
- [11] S. Han, J. Lee, T. Kwon, and J.-W. Choi, "Performance Analysis on DPSK Modulation Employing Symbol Repetition and Interleaving," submitted to International Journal of Communication Systems (CA).
- [12] S.-H. Lim, S Han, J. Lee and J.-W. Choi, "Decoy signal-based strategic beamforming against high-power reactive jamming attacks," under 2nd review, IEEE Trans. Veh. Technol. (CA)

International Journals (published or to appear)

48 papers in total

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