

Hyeon Kyu Lee

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PERSONAL DATA

- Birth: 9st December 1991, in Republic of Korea
- Nationality: Korean
- Family Status: Older Brother
- Language: First language Korean, Good in English

EDUCATION

Mar. 2017 ~ Present	Kwangwoon University Department of Electronic and Communications Engineering	Seoul, Republic of Korea
	Thesis: <i>Master/PhD integrated course in Electronic and Communication Engineering</i> <i>Advisor: Prof. Young-Seok Choi</i>	
Mar. 2010 ~ Feb. 2017	Gangneung-Wonju National University Department of Electronics Engineering <i>Bachelor of Science in Electronics Engineering</i> <i>Honors: summa cum laude (GPA 4.3/4.5)</i>	Gangneung, Republic of Korea

RESEARCH INTEREST

- **Brain-Computer Interfaces (BCI)**
 - ✓ Biomedical and Statistical signal processing
 - ✓ Deep Learning for signal processing
 - ✓ Electroencephalography (EEG) analysis

PUBLICATIONS (SCI ONLY)

1. **H. K. Lee**, Y.-S. Choi, "Application of Continuous Wavelet Transform and Convolutional Neural Network in Decoding Motor Imagery Brain-Computer Interface" *Entropy*, 21, 1199, **2019**.
2. **H. K. Lee**, Y.-S. Choi, "Enhancing SSVEP-Based Brain-Computer Interface with Two-Step Task-Related Component Analysis" *Sensors*, 21, 1199, **2021**.
3. **H. K. Lee**, Y.-S. Choi, "[get ready for submission](#)"
4. **H. K. Lee**, J.-H. Lee, J.-O. Park, and Y.-S. Choi, "[get ready for submission](#)"

PATENTS

1. **H. K. Lee**, Y.-S. Choi, "Analysis method of convolutional neural network based on wavelet transform for identifying motor imagery brain waves" (움직임 상상 뇌신호 인식을 위한 웨이블릿 변환 기반의 컨볼루션 신경망 분석 방법)
Korea - Patent No.10-2096565
2. J.-H. Lee, **H. K. Lee**, Y.-S. Choi, "Method for forming Robust Common Spatial Patterns using Lp-norm for EEG based Motor Imagery BCI" (뇌전도 기반 움직임 심상 뇌 컴퓨터 인터페이스를 위한 강건한 Lp-norm 기반 공통 공간 패턴 구성 방법)
Korea – Patent Application No.10-2020-0135225
3. J.-H. Kim, **H. K. Lee**, J.-H. Lee, J.-O. Park, Y.-S. Choi, "BB" (아아)
Korea – Patent Application No.

INTERNATIONAL CONFERENCES

1. **H. K. Lee**, Y.-S. Choi, "A Convolution Neural Networks Scheme for Classification of Motor Imagery EEG based on Wavelet Time-Frequency Image", International Conference on Information Networking (ICOIN 2018), Jan. 2018.
2. **H. K. Lee**, Y.-S. Choi, "Classification of motor imagery brain rhythm using convolutional neural network based on wavelet transform", uHealthcare, Dec. 2018 – oral.
3. **H. K. Lee**, J.-H. Lee, J.-O. Park, Y.-S. Choi, "Data-driven Data Augmentation for Motor Imagery Brain-Computer Interface", International Conference on Information Networking (ICOIN 2021), Jan. 2021.

DOMESTIC CONFERENCES

1. **H. K. Lee**, Y.-S. Choi, "A Convolutional Neural Network based on Wavelet Transform for Identifying Motor Imagery Brain Waves", Korea Software Congress 2017, Dec. 2017. – oral.
2. **H. K. Lee**, Y.-S. Choi, "A Convolutional Neural Network with Wavelet Transform for Classification of Motor Imagery Brain Signal", Korea Computer Congress 2018, June. 2018.
3. **H. K. Lee**, Y.-S. Choi, "Improved Frequency Recognition Using Two-Step Task-Related Component Analysis for SSVEP-Based BCI", Korea Computer Congress 2019, June. 2019. – oral.
4. **H. K. Lee**, Y.-S. Choi, "Two-Step Task-Related Component Analysis for Enhancing the Performance of SSVEP Frequency Recognition", The 29th Joint Conference on Signal Processing in The Institute of Electronics and Information Engineers Congress, Sep. 2019. – oral.
5. J.-H. Lee, **H. K. Lee**, and Y.-S. Choi, "Robust Common Spatial Patterns using Lp-norm for EEG based Motor Imagery BCI", The 29th Joint Conference on Signal Processing in The Institute of Electronics and Information Engineers Congress, Sep. 2019. – oral.
6. **H. K. Lee**, D.-Y. Lee, and Y.-S. Choi, "Classification Framework of Motor Imagery EEG Signals based on Long Short-Term Memory", Korea Software Congress 2019, Dec. 2019.
7. **H. K. Lee**, J.-H. Lee, and Y.-S. Choi, "An Improved Motor Imagery Brain-Computer Interface based on a Deep Learning Framework with Data Augmentation", Korea Computer Congress 2020, July. 2020. – oral.
8. J.-H. Lee, **H. K. Lee**, and Y.-S. Choi, "Robust Common Spatial Patterns based on Generalized Lp-norm for Motor Imagery EEG Brain-Computer Interface", Korea Computer Congress 2020, July. 2020.

9. J.-H. Kim, **H. K. Lee**, J.-H. Lee, J.-O. Park, and Y.-S. Choi, "Violent and Nonviolent Situations Recognition based on Korean Dialogue Using BERT Language Model", Korea Computer Congress 2021, Jul. 2021.

AWARDS AND HONORS

2019 Outstanding paper award, The 29th Joint Conference on Signal Processing in The Institute of Electronics and Information Engineers Congress, Korea

2020 Honored as Outstanding in Speech Recognition track, 1st AI Grand Challenge, Institute for Information & Communication Technology Promotion (IITP), Korea

Funding : \$ 200 million

2020 3rd Prize, in Speech Recognition track, 2th Artificial Intelligence (AI) Grand Challenge (Speech Recognition track), Institute for Information & Communication Technology Promotion (IITP), Korea

Funding : \$ 570 million