

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,
4. **H. K. Lee**, J.-H. Lee, Y.-S. Choi,

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

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**, 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, 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, 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**, 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, 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

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| 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