# Seong Jae, Park

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## Career Summary

- Master's degree in Electrical Engineering, Bachelor's degree in Mathematics
- Specialized : ML, DL, Image & signal processing, Compressive sensing, Frequency analysis

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| Feb. 2021 ~ Present | **HUINNO Co. Ltd.**<br>*A.I., Data scientist* | Seoul, Korea |
| Mar. 2019 ~ Feb. 2021 | **Kwangwoon University**<br>Department of Electrical Engineering<br><br>Thesis: Blended-transfer learning for compressed-sensing cardiac CINE MRI<br>Advisor: Chang-Beom Ahn<br>*M.S. in Electrical Engineering* | Seoul, Korea |
| Mar. 2014 ~ Feb. 2019 | **Kwangwoon University**<br>Department of Mathematics<br><br>Thesis: Myocardial image segmentation using CNN<br>Advisor: Jong-woo Lee<br>*B.S. in Mathematics* | Seoul, Korea |
| Mar. 2014 ~ Feb. 2019 | **Kwangwoon University**<br>Department of Electrical Engineering<br><br>Advisor: Seung-ho Song<br>*B.S. in Electrical Engineering* | Seoul, Korea |

## Research Interests

**Magnetic Resonance Imaging (MRI):**

Compressed-sensing, Image Reconstruction, Image Segmentation, Artifact correction, Parallel imaging, fast imaging.

**Computed Tomography (CT):**

Cone-beam CT image reconstruction, Metal artifact reduction, Compressed-sensing, Low-dose system, fast imaging.

**Electrocardiogram (ECG/EKG):**

12-lead classification, Single-lead classification, Beat detection, ECG captioning.

**Artificial Intelligence (AI):**

Generative models (AE, Score-based, Diffusion), Conditional & Multi-modal model, Representation learning, Knowledge distillation Super resolution, Style transfer.

## Publications

- **S.J. Park**, J.H. Yoon, C.B. Ahn, "Compressed-sensing cardiac CINE MRI using neural network with transfer learning," Journal of Institute of Korean electrical and electronic engineering, 23(4), 2019, pp. 293-299.
- **S.J. Park**, C.B Ahn, "Blended-transfer learning for compressed-sensing cardiac CINE MRI," Investigative Magnetic Resonance Imaging, 25(1), 2021, *DOI***:** 10.13104/imri.2021.25.1.10
- **S.J. Park**, C.G. Lim, C.B. Ahn, "Network slimming for compressed-sensing cardiac CINE MRI," Electronic Letters, *DOI***:** 10.1049/ell2.12084
- C.G. Lim, **S.J. Park,** C.B. Ahn, "Tile-net for compressed-sensing cardiovascular CINE MRI," Magnetic Resonance Imaging, *DOI***:** 10.1016/j.mri/2021.09.001
- **S.J. Park***, H. Han*, et al., "Towards high generalization performance on electrocardiogram classification," *DOI***:** 10.23919/CinC53138.2021.9662737
- J. Jang, **S.J. Park**, et al., "CNN-based two step R peak detection method: Combining segmentation and regression.," *DOI***:** 10.1109/EMBC48229.2022.9871227
- H. Han, **S.J. Park**, et al., "Improving generalization performance of electrocardiogram classification models," under review
- K. Ha, **S.J. Park**, et al., "A SimSiam-based Generalized Model Training Technique for Classification of ECG from Heterogeneous Devices", BigComp, under review
- S. Chon, K. Ha, **S.J. Park**, et al., "An ECG Beat Classification Method using Multi-kernel ResNet with Transformer", BigComp, under review

## Patents

- Chang-Beom Ahn, **Seong Jae Park**, "SYSTEM AND METHOD OF GENERATING MAGNETIC RESONANCE IMAGE USING DEEP ARTIFICIAL NEURAL NETWORK" (Korea – Application No.10-2020-0008807).
- Jaeseong Jang, **Seong Jae Park** et. al., "METHOD, SYSTEM AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM FOR DETECTING AND CLASSIFYING BEAT IN ELECTROCARDIOGRAM SIGNAL" (Korea – Application No.10-2020-0084605).

## Awards and Honors

- Best Poster Award, Korean Society for Imaging Science and Technology (KSIST), 2019.
- Best Poster Award, International Congress on Magnetic Resonance Imaging (ICMRI), 2020.
- 1st Prize on 3, 4 leads classification, PhysioNet, 2021.
- 2nd Prize on 2, 6, 12 leads classification, PhysioNet, 2021.

## Project

- Dental Computed Tomography (CT) Metal Artifact Reduction (MAR) & Low-dose system, Genoray, Seong-Nam (2018).
- Development of hybrid medical imaging system based on algorithm and data, Kwangwoon University, Korea (2019 ~ 2020).
- Arrhythmia classification on ECG, HUINNO Co. Ltd., Seoul (2021.02 ~).
- Beat detection, HUINNO Co. Ltd., Seoul (2021.08 ~).
- Wave captioning, HUINNO Co. Ltd., Seoul (2022.09 ~).