TAE HYOUNG **KIM**

iMediSync Inc.
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Machine Learning Researcher

Github
Blog
Youtube
Huggingface

Education

2015 - 2019	**UNIST,** Electronic Engineering, 1st Major Human Factor Engineering, 2nd Major	*Bachelor*
2019 - 2021	**UNIST,** Brain-Computer Interface Lab (BCILAB)	*Master*

Programming

.py	.m	.r	.cpp
Python Pytorch	MATLAB	R	C++ Arduino

Proects

2022.04–2022.06

Real-Time Wav2vec2 for Korean

PERSONAL PROJECT

I performed the transfer learning by applying the Korean dataset (Ksponspeech) to the pre-trained (Wav2Vec-xlsr-53) model. A service was established to provide recognition results for real-time voice data. It is available in my Github repository.

Skills: NLP, Speech-to-Text (STT), Automatic Speech Recognition (ASR)

2021.10–2022.06

Prediction model for Depression

IMEDISYNC

I made the prediction model for depression using EEG data. After the pre-processing, feature was extracted by background knowledge and selected based on Ensemble based feature importance. SVM model shows accuracy of over 90% in binary classification. Recently, I'm also trying to apply Deep-learning based SOTA models such as EEGNet, Shallow ConvNet etc.

Skills: Brain Signal Processing, Feature Extraction and Selection, Deep Learning Modeling, Statistics

Languages

Korean	native
English	● ● ○

Hobbies

Piano, Cooking, Drum, Weight

Skills

NLP
Speech To Text (STT)
Word embedding
Sentiment analysis

Machine Learning
Statistical analysis
Feature extraction
Feature selection
Feature visualization
Classifier modeling
Apply SOTA models

Brainwave
EEG / EcoG / Spike
Experimental design
Preprocessing
Resting-state / ERP

Heart rate variability
ECG / PPG
Preprocessing
Normative Database
Stress detector

2021.03–2021.10 **Denoising Algorithm for HRV**
iMediSync
Denoising algorithm for ECG and PPG signal based on Pan-tompkin algorithm. This was adopted as a standard denoising algorithm for over 1,300 data in the company.
Skills: Heart Signal Processing

Research Experience

2021 - Now	**iMediSync** AI Research Team	*ML Researcher*
2019 - 2021	**UNIST** Brain-Computer Interface Lab (BCILAB)	*Graduate student*
2018 - 2019	**UNIST** Brain-Computer Interface Lab (BCILAB)	*Research intern*
2017 - 2018	**SNU** Music and Audio Research Group (MARG)	*Research intern*

Certificates & Grants

2020 Advanced Data Analytics Semi-Professional (ADsP) *Korea*

International Conference and Exhibition

2019 *Society for Neuroscience (SfN)*, Chicago.
2022 *CES Show*, Las Vegas.

Publication (SCI / SCIE)

2022 **iSyncWave: dry sensor-based multipurpose EEG device with potential to replace wet sensor-based EEG devices**
Frontiers in Neuroimaging
Under Review

2022 **Prediction model for Depression using sex and age-matched EEG biomarker**
Frontiers in Psychiatry
Under Revision

2022 **Decoding Imagined Musical Pitch from Human Scalp Electroencephalogram**
IEEE TNSRE
Under Review

2021 **Cortical representation of musical pitch in event-related potentials**
Cognitive Neurodynamics
Under Revision