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강연제목: Machine learning methods for functional near-infrared spectroscopy/기능적 근적외선 분광법을 위한 머신 러닝 기술

Abstract:

Functional near-infrared spectroscopy (fNIRS) is a non-invasive neuroimaging technique that measures concentration changes in oxygenated and reduced hemoglobin in the cerebral cortex. Unlike other brain imaging technologies, The fNIRS has been gaining significant attention due to its high ease of use, robustness against motion artifacts, excellent portability, and reasonable affordability. As a result, it has been widely used in various neuro-engineering research areas, such as brain-computer interfaces, medicine, the development of multimodal brain imaging systems, and hyperscanning studies. This presentation covers the overall preprocessing, feature extraction, feature selection, and machine learning algorithms for machine learning using fNIRS signals. Additionally, it examines the impact of the rapid advance of deep learning technology on fNIRS-related research. Finally, we discuss the points to consider when applying deep learning techniques to fNIRS studies.

Brief Biosketch

Dr. Jaeyoung Shin received his Ph.D. from Korea University majoring in computer and radio communication engineering in 2013. Since then, he has worked in the Department of Brain and cognitive engineering. From 2014 to 2016, He was with Berlin Institute of Technology as a postdoctoral researcher. Since 2017, he has worked as a research professor at Hanyang University, Seoul. He focused on developing functional near-infrared spectroscopy and EEG-based brain-computer interface systems. Currently, he has been an assistant professor in the Department of electronic engineering at Wonkwang University, Iksan, Korea since March 2019. His current research topics include brain-computer interfaces and digital therapeutics (DTx) with functional near-infrared spectroscopy.