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Presentation Title: Subject-independent EEG-based emotion estimation using continuously indexed domain generalization (CIDG)

Abstract:

Human emotion is a complex psychophysiological process triggered by consciously and unconsciously perceiving stimulus or situation, and influences individual's rational decision making, perception, and cognition. Estimating human emotions has been playing a vital role in various area, including safe driving, mental health monitoring, neuromarketing, etc. Electroencephalography (EEG)-based methods have been most actively studied to estimate individual emotion states in recent years. However, large inter-subject variability of EEG has been an obstacle for the practical use of EEG-based emotion estimation. In this study, we proposed a novel EEG-based emotion estimation approach based on continuously indexed domain generalization (CIDG) extracting subject-invariant features by exploiting subject differences. Our results showed that the proposed approach could subject-independently estimate emotional states of individual with higher accuracy than the conventional approach. In conclusion, we expect that the proposed approach will be helpful for practical application of EEG- based emotion estimation technology in various fields.

Brief Biosketch

Hodam Kim is currently a postdoctoral researcher at George W. Woodruff School of Mechanical Engineering, Center for Human-Centric Interfaces and Engineering, Georgia Institute of Technology. He received his B.S. degree from the Department of Biomedical Engineering at Hanyang University in 2016, and Ph.D. from the Department of Electronic Engineering at Hanyang University in 2022, respectively. His research interests include wearable devices, human-computer interfaces, and affective computing.