先端科学技術研究科　修士論文要旨

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要旨			

Due to inter- and intra-subject differences, conventional machine learning methods are yet to achieve a breakthrough in electroencephalography (EEG) classification. Extracting subject-session-invariant classification features and calibrating the model for new subjects are critical for constructing better classification models. These features shall improve the classification performance of the new subjects' data. To fulfill these objectives, we propose a novel classification framework with session-specific transformation (aligners) and adversarial domain adaptation (ADA). We use resting-state EEG to calibrate the model for a new subject. This imposes little additional burden on the user and is beneficial for real-world applications. We applied our method to a public EEG dataset during a spatial attention task. We found that the proposed model could outperform the one without aligners and ADA when using the dataset with a larger number of subjects. Also, the proposed model extracted classification features that were discriminative and subject-invariant, and they were also in line with existing neurophysiological findings. These results suggest that incorporating aligners and ADA into the EEG classification model could broaden the real-world application of the Brain-Computer Interface.