

Adaptive Multiview Fusion Transformer for EEG-Based Emotion Recognition

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Abstract

Emotion recognition is crucial for applications like human-computer interaction, safe driving, and remote education, with EEG-based methods providing more authentic insights than facial or speech-based approaches. In this paper, we propose an Adaptive Multiview Fusion Transformer (AMFT) that effectively fuses Differential Entropy (DE) and Power Spectral Density (PSD) features in EEG signals. AMFT consists of three main components—a Multi-Perspective Embedder (MPE), a Dual Cross Attention Module (DCAM), and a ClsTransformerEncoder (CTE)—which use multiview projection and iterative cross-attention to combine DE and PSD features. Experiments on the SEED-VII dataset show that AMFT achieves higher accuracy and F1 scores in both multi-class and binary-class emotion recognition tasks, with improved stability compared to existing methods. Ablation studies confirm the key role of the multiview embedder and cross-attention module in boosting performance, offering new insights for EEG-based emotion recognition and biomedical signal analysis. Our code is available at <https://github.com/sizhiyier/AMFT>.