

Tagging Continuous Labels for EEG-based Emotion Classification

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EEG-based emotion classification has long been a critical task in the field of affective brain-computer interface (aBCI). The majority of leading researches construct supervised learning models based on labeled datasets. Several datasets have been released, including different kinds of emotions while utilizing various forms of stimulus materials. However, they adopt discrete labeling methods, in which the EEG data collected during the same stimulus material are given a same label. These methods neglect the fact that emotion changes continuously, and mislabeled data possibly exist. The imprecision of discrete labels may hinder the progress of emotion classification in concerned works. Therefore, we develop an efficient system in this paper to support continuous labeling by giving each sample a unique label, and construct a continuously labeled EEG emotion dataset. Using our dataset with continuous labels, we demonstrate the superiority of continuous labeling in emotion classification through experiments on several classification models. We further utilize the continuous labels to identify the EEG features under induced and non-induced emotions in both our dataset and a public dataset. Our experimental results reveal the learnability and generality of the relation between the EEG features and their continuous labels.