



ESTIMATING COGNITIVE STATE USING EEG SIGNALS (ThuAmPO3)

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★ Abstract :

Using EEG signals to estimate cognitive state has drawn increasing attention in recently years, especially in the context of brain-computer interface (BCI) design. However, this goal is extremely difficult because, in addition to the complex relationships between the cognitive state and EEG signals that yields the non-stationarity of the features extracted from EEG signals, there are artefacts introduced by eye blinks and head and body motion. In this paper, we present a classification system, which can estimate the subject's cognitive state from the measured EEG signals. In the proposed system, a mutual information based method is employed to reduce the dimensionality of the features as well as to increase the robustness of the system. A committee of three classifiers was implemented and the majority voting results of the committee are taken to be the final decisions. The results of a preliminary test with data from freely moving subjects performing various tasks as opposed to the strictly controlled experimental set-ups of BCI provide strong support for this approach.