Machine Learning Approaches For Decoding Attention Modulations of Sensory Representation From EEG

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Attending to a feature value enhances its sensory representation. This phenomenon is often observed in search paradigms and has become a fundamental building block in attention research (For instance, Wolfe's guided search model). However, the influence of simultaneously attending to multiple feature values has all been explored in the last decade and is the subject of ongoing debate. We utilized machine-learning techniques to preprocess and decode representations from EEG during a detection paradigm. Results indicate that, in terms of signal detection theory, we had lower sensitivity and EEG decoding accuracy in multiple-item conditions. We conclude that while there is no hard limit on attentional capacity, there are drawbacks to increased attention loads in terms of false alarms.