

Creativity and Machine Learning: Divergent Thinking EEG Analysis and Classification

Carl Stevens

University of Arkansas, Fayetteville, Arkansas, United States

Darya Zabelina

University of Arkansas , Fayetteville, Arkansas, United States

Abstract

Prior research has shown that greater EEG alpha power (8-13 Hz) is characteristic of greater creativity. This study investigates the potential for machine learning to classify more and less creative brain states. Participants completed an alternate use task, in which they thought of normal or uncommon (more demanding) uses for everyday objects (e.g., brick). We hypothesized that alpha power and reaction time would be greater for uncommon uses, and that a trained machine learning model would be able to reliably classify data from the two conditions. Participants responded much faster in the normal condition, compared to uncommon; alpha was significantly greater for the uncommon condition; and 73.3% classification accuracy was attained when a trained model was applied to new data. Future research will attempt to implement neurofeedback training to maintain optimally creative states.