

An Analysis of the Temporal Aspects of Visual Attention Processing Using Rapid Series Visual Processing (RSVP) Data

Authors : Shreya Borthakur, Aastha Vartak

Abstract : This Electroencephalogram (EEG) project on Rapid Visual Serial Processing (RSVP) paradigm explores the temporal dynamics of visual attention processing in response to rapidly presented visual stimuli. The study builds upon previous research that used real-world images in RSVP tasks to understand the emergence of object representations in the human brain. The objectives of the research include investigating the differences in accuracy and reaction times between 5 Hz and 20 Hz presentation rates, as well as examining the prominent brain waves, particularly alpha and beta waves, associated with the attention task. The pre-processing and data analysis involves filtering EEG data, creating epochs for target stimuli, and conducting statistical tests using MATLAB, EEGLAB, Chronux toolboxes, and R. The results support the hypotheses, revealing higher accuracy at a slower presentation rate, faster reaction times for less complex targets, and the involvement of alpha and beta waves in attention and cognitive processing. This research sheds light on how short-term memory and cognitive control affect visual processing and could have practical implications in fields like education.

Keywords : RSVP, attention, visual processing, attentional blink, EEG

Conference Title : ICABAC 2023 : International Conference on Attentional Blink and Attentional Control

Conference Location : Amsterdam, Netherlands

Conference Dates : September 11-12, 2023