

ABSTRACT

The prevalence of mental health concerns among college students is growing concerning, as indicated by the rise in anxiety disorders impacting over a thousand students annually on campuses, primarily instigated by academic, emotional, and social pressures. This work seeks to create a cohesive system that integrates video-based visual stimuli with EEG data acquisition and analysis to investigate cerebral responses to emotional inputs. The system comprises two primary components: a Windows application named EEG Analyzer, which presents video stimuli and captures respondent data, and an EEG signal classification module utilizing Muse devices and MATLAB for signal processing via Butterworth filtering and Fast Fourier Transform (FFT). Experiments were performed on ten participants with the aid of psychologists, leading to EEG signal classifications predominantly characterized by delta and gamma brainwaves. The findings revealed that 60% of participants displayed predominant gamma waves, signifying heightened concentration, and 40% exhibited delta waves linked to profound relaxation. A usability assessment conducted through a questionnaire with 30 participants revealed a significant degree of user satisfaction. This system has the capacity to function as a non-invasive and adaptive instrument for preliminary mental condition assessment in academic settings, grounded in neuropsychological methodologies.

Keyword : Brainwaves, EEG, EEG Analyzer application, FFT, Neuropsychology, Stimulus video