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Modeling phasmophobia (fear of ghosts) using electroencephalogram

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**Abstract:**

Extreme fears towards ghosts and entities are defined as phasmaphobia. Those diagnosed with phasmophobia symptoms should control their own fears to avoid phasmaphobia attack. In this work, we present the development of phasmophobia detection electroencephalogram database (PDED). PDED consists of an average of 45 minutes electroencephalography (EEG) recordings from eight electrodes situated on the frontal lobe of the brain area. A real-time fear assessment was conducted simultaneously with the EEG recording by the participant. Five different stimuli were used to induce fear in our experiment. 599 EEG epochs related to fear were extracted based on the timestamp recorded by each individual. Asymmetry relation ratio (ARR) techniques were used on these EEG to detect the presence of fear. The quality of long duration of EEG recording from PDED in recognizing fear was thoroughly presented based on ARR. In this study, 91.5% of fear emotion managed to be detected from these epochs. Using PDED, it is also proven that the changes of ARR reflected positive correlation towards the changes of the level of fear. Analysis using emotion recognition rate (ERR) curves indicated that, two electrodes, namely F7 and F8, were sufficient to recognized 88% of fear from the recordings