

OBSERVATION OF THE EFFECTS OF PLAYING GAMES WITH THE HUMAN BRAIN WAVES

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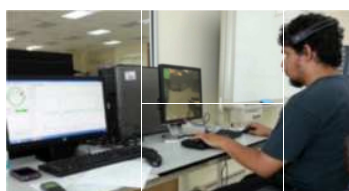
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Graphic abstract



Abstract

The purpose of this paper is to observe the human brain waves when a person playing video games. The game proposed is Counter Strike (CS) 1.6. There are 30 samples of human brain wave will be collected. The EEG signal will be recorded before playing a game and after playing a game. The threshold value is used to filter the data collected to acquire clean brain waves. Then, extraction of sub-band Alpha and Beta is done by Band-pass filter. Power Spectral Density (PSD) is performed in analysing the brain waves to acquire peak amplitude of the Alpha and Beta sub-band frequencies. The pattern of Alpha and Beta is carried out by using the histogram to observe the relationship between games and mind state of humanity. It is observed that the Beta-band increase and Alpha-band decrease after the samples playing game.

Keywords: game; human brain waves; Alpha-band; Beta-band

Abstrak

Tujuan kertas ini adalah untuk melihat gelombang otak manusia apabila seseorang bermain permainan video. Permainan dicadangkan adalah Counter Strike (CS) 1.6. Terdapat 30 sampel gelombang otak manusia akan dikumpulkan. Syarat EEG akan direkodkan sebelum bermain permainan dan selepas bermain permainan. Nilai ambang digunakan untuk menapis data yang dikumpulkan untuk memperoleh gelombang otak bersih. Kemudian, pengeluaran sub-band Alpha dan Beta dilakukan oleh penapis Band-pass. Power Spectral Density (PSD) dilakukan dalam menganalisis gelombang otak untuk memperolehi amplitud puncak sub-band Alpha dan Beta. Corak Alpha dan Beta diperhatikan menggunakan histogram untuk melihat perkaitan antara permainan dan keadaan minda manusia. Adalah diperhatikan bahawa peningkatan Beta-band dan penurunan Alpha-band selepas sampel bermain permainan.

Kata kunci: permainan; gelombang otak manusia; Alpha-band; Beta-band