Music Recommendation System via Emotion Recognition Using EEG

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Concerning the growth in size and high demand of online market, it is important for these platforms to offer better service and seek the users' need. Researchers have suggested various recommendation systems with different perspectives and criteria. However, these systems did not consider the fundamental issue of emotion. The main reason for which we listen to music is to have an emotional impact. Thus, emotional state of the user should be a key variable to understand his/her need. The purpose of this study is to design and develop a music recommendation system based on user's emotion using electroencephalogram (EEG). The main objectives of this research are music classification and user comprehension. Music classification is the process of relating music to emotion in order to classify it by emotional criteria. Emotions were scored according to a Pleasure Arousal Dominance (PAD) scale using Self-Assessment Manikin (SAM). Musical features were extracted using MATLAB MIR tool box. The data was analyzed using multivariate regression. User comprehension is the process of understanding the users' emotional state. The International Affective Digitized Sound (IADS) was used as auditory stimulus. The brain activity was recorded using EEG. Multi-layer perceptron method was used to understand this stimulus-brain response relation. In this paper, significant correlation between music and emotion was derived by decoding EEG signals. These results suggest a recommendation system with fundamental perspective and potential applications in music therapy field.