EEG-Based Aesthetics Preference Measurement with 3D Stimuli using Wavelet Transform

Abstract

This study investigates on aesthetics preference measurement of human using electroencephalogram (EEG) for virtual motion 3D shapes. The 3D shapes are generated using the Gielis superformula in bracelet-like shapes. EEG signals were collected by using a wireless medical grade EEG device, B-Alert X10 from Advance Brain Monitoring. Wavelet transforms were used to decompose the signals into 5 different bands, alpha, beta, gamma, delta and theta. Linear Discriminant analysis (LDA) and K-Nearest Neighbor (KNN) were used as classifiers to train and test different combinations of the features. Classification accuracy of up to 82.14% could be obtained using KNN with entropy of beta, gamma, delta and theta rhythms as features from channels Fz, POz and P4.