https://github.com/hi-akshat/Emotion-Recogniton-from-EEG-Signals/blob/master/README.md

We used discrete wavelet transform (DWT) to extract EEG features. A series of wavelet coefficients were obtained by stretching and shifting the EEG signals using the mother wavelet function.

In our project, the window of 4 s was used for each EEG channel and each window overlaps the previous one by 2 s, for a total of 29 windows.

Then, the data of each window were decomposed 4 times by using db4 DWT and extracting all the high frequency components as four frequency bands, namely, gamma, beta, alpha and theta.

Decomposition of EEG signal into different frequency bands using DWT

Frequency band Frequency range (Hz) Frequency bandwidth (Hz) Decomposition level

Theta 4–8 4 D4 Alpha 8–16 8 D3 Beta 16–32 16 D2 Gamma 32–64 32 D1

‘The active frequency band of epileptic seizures is mainly 3-30 Hz. Therefore, during preprocessing, we used a bandpass filter of 0.5-40 Hz to filter out signals outside the active frequency band of epilepsy.’

Finally,the entropy and energy of each frequency band were calculated as features. Thus, there are 2 features in each band for each channel. There are 20 (2\*10) features in 10 channels, and the numbers of features are 28, 36 and 64 in 14, 18 and 32 channels, respectively.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7881082/>

These features include standard deviation, mean, variance, median, kurtosis, skewness, entropy, moment, power, maximum and minimum EEG signals.