Analysis of Brain Function and Classification of Sleep Stage EEG using Daubechies Wavelet

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Recently, wavelet transforms have been applied to various problems in many fields. In this paper, we propose the application of the Daubechies wavelet to the detection of several important characteristic waves in electroencephalograms (EEGs), which are used to diagnose sleep stages and cognitive mental tasks. Sleep staging is one of the most important tasks in EEG diagnosis. However, it can be subjective as it depends on the doctor's skill and is omit labor-intensive. In this regard, the development of an automatic diagnosis system is imperative in order to reduce the doctor's workload and to provide an accurate quantitative diagnosis of sleep stage EEGs. The method proposed in this paper is an important base for understanding subjects' cognitive state. Experimental results obtained using the implemented system demonstrate that this approach could reduce the doctor's workload and provide an accurate diagnosis of brain functions.

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