In this paper, a new model of multi-level transfer function radial wavelet neural network using quantum computing is achieved. This model is applied to analyze and classify the electroencephalographic (EEG) signals. The independent component analysis (ICA) is used as processing after normalization of these signals. Some features are extracted from the data using the clustering technique (CT). A new factor that combines the accuracy and the time of classification is suggested to evaluate the performance of the proposed model with other previous models. This factor represents the accuracy to time ratio (ATR). The average accuracy of the proposed quantum radial wavelet neural network (QRWNN) model is 90.56125% at 50 minutes. The ATR value is 1.8112, which shows the superiority of the proposed model.
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**Index Terms**

Computer Science

Artificial Intelligence

**Keywords**

EEG Signals
Neural Networks
Quantum Computing
Radial Basis Functions
Wavelet Transforms

Radial Wavelet Neural Networks