عنوان مقاله:

Connection Optimization of a Neural Emotion Classifier Using Hybrid Gravitational Search Algorithms

محل انتشار:

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نویسندگان:

Mansour Sheikhan
Mahdi Abbasnezhad Arabi
Davood Gharavian

خلاصه مقاله:

Artificial neural network is an efficient model in pattern recognition applications, but its performance is heavily dependent on using suitable structure and connection weights. This paper presents a hybrid heuristic method for obtaining the optimal weight set and architecture of a feedforward neural emotion classifier based on Gravitational Search Algorithm (GSA) and its binary version (BGSA), respectively. By considering various features of speech signal and concatenating them to a principal feature vector, which includes frame-based Mel frequency cepstral coefficients and energy, a rich medium-size feature set is constructed. The performance of the proposed hybrid GSA-BGSA-neural model is compared with the hybrid of Particle Swarm Optimization (PSO) algorithm and its binary version (BPSO) used for such optimizations. In addition, other models such as GSA-neural hybrid and PSO-neural hybrid are also included in the performance comparisons. Experimental results show that the GSA-optimized models can obtain better results using a lighter network structure.

کلمات کلیدی:

emotion recognition, speech processing, neural network, connection optimization, structure optimization, gravitational search algorithm