

EEG CLASSIFICATION USING RADIAL BASIS PSO NEURAL NETWORK FOR BRAIN MACHINE INTERFACES

Abstract:

Brain Machine Interfaces use the cognitive abilities of patients with neuromuscular disorders to restore communication and motor functions. At present, only EEG and related methods, which have relatively short time constants, can function in most environments, they also require relatively simple and inexpensive equipment. In this paper we propose a mental task classification algorithm using a Particle Swarm Optimization (PSO) for a Radial basis Neural Network. Features are extracted from EEG signals that are recorded during five mental tasks, namely baseline-resting, mathematical multiplication, geometric figure rotation, letter composing and visual counting. PCA features extracted from the task signals are used the neural net to classify different combinations of two mental tasks. Results obtained show average classification rates ranging from % to %.