

Cooperative Learning for Biomedical Signal Processing and Recognition

Abstract

Advances in sensor networks and analysis of multichannel data such as those of body sensor networks and big data assessment, require cooperative learning as the consequence of communications between the agents or nodes in the network. In a more complex cases where the human body is involved in executing multiple and different tasks simultaneously, the learning process is subject to both learning and differentiating between the sensor groups. In this talk, the concept of connectivity, as applied to electroencephalograms, followed by cooperative learning and the theory involved will be explored. Next, the concept of multitask diffusion adaptation and learning will be discussed. Finally, in a number of applications to simulated and real data, we will see how cooperative learning can model a complex biological system as well as restoration of movement related brain potentials for a Parkinsonian patient and detection and tracking the changes in the brain event related potentials due to habituation and dementia.