Technical ear training aims to improve the listening of sound engineers so they can skillfully modify and edit the structure of sound. Despite recent increasing interest in listening ability and subjective evaluation in the field of audio- and acoustic-related fields and the subsequent appearance of various technical ear-training methods, the subject of how to provide efficient training for a self-trainee has not yet been studied. This paper investigated trainees' performances and showed that an (inherent or learned) ability to correctly describe spectral differences using the terms of a parametric equalizer (center frequency, Q, and gain) was different for each person. To cope with such individual differences in spectral identification, the authors proposed a novel method that adaptively controls the training task based on a trainee's prior performances. In detail, the method estimates the weakness of the trainee, and generates a training routine that focuses on that weakness. Subsequently, we tried to determine whether the proposed method—adaptive feedback—helps self-learners improve their performance in technical listening that involves identifying spectral differences. The results showed that the proposed method could assist trainees in improving their ability to identify differences more effectively than the counterpart group. Together with other features required for effective self-training, this adaptive feedback would assist a trainee in acquisition of timbre-identification ability.
Detecting single firings of individual neurons is a difficult process because the signals are weak to start with and are not isolated from the rest of the electrical activity within the brain. Large groups of coherent neurons, perhaps a few thousand to...