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Poster presentation

A self-adaptive burst-detection algorithm

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A self-adaptive, time-scale invariant single-unit spike train analysis technique is introduced to detect burst firings in neurons. This burst-detection method is an adaptive algorithm that uses the characteristic firing patterns statistics within and between bursts to identify the inter-burst period, intra-burst period and burst duration. Bursts in this self-adaptive method are identified when the inter-burst periods (interspike intervals between bursts) exceed a threshold for the intra-burst periods (the sum of interspike intervals within a burst). Iterative use of this algorithm can also be used for the detection of finer structure of bursts, i.e., micro-bursts within a macro-burst, independent of the time-scale. By iterative-use of timing statistics of the spike train, this burst-detection technique can identify bursts not only self-adaptively but also independent of the time-scale of the burst-firing pattern. This auto-adaptive algorithm provides a time-scale invariant automated method for micro-burst within a macro-burst when applied iteratively. It succeeds to detect various micro-bursts with minimal *ad hoc* assumptions or criteria about the specific structure of the burst-firing patterns in neurons.