Performance Challenges in Current Multi-lead Electrocardiogram QRS Detection Systems

Maxim Dashouk, Zhe Zhang, Carolyn Lall and Yu Chen*

Draeger Medical Systems
Inc.

Modern QRS detectors in patient monitoring system must provide accurate results even interfering noise is being present. This task is also complicated by heterogeneous and non-uniform nature of patient population. Certain beat morphologies demand significant increase in complexity of the beat detection algorithms. At the same time, it is important to take system-wide approach to the beat detection problem and include artifact rejection and baseline correction challenges. Here we argue the importance of such approach to be able to successfully handle non-trivial input data. We also explain how this approach can improve the QRS detection performance in commercial patient monitoring systems. The performance benchmarks are presented by being tested on proprietary and public ECG databases.