

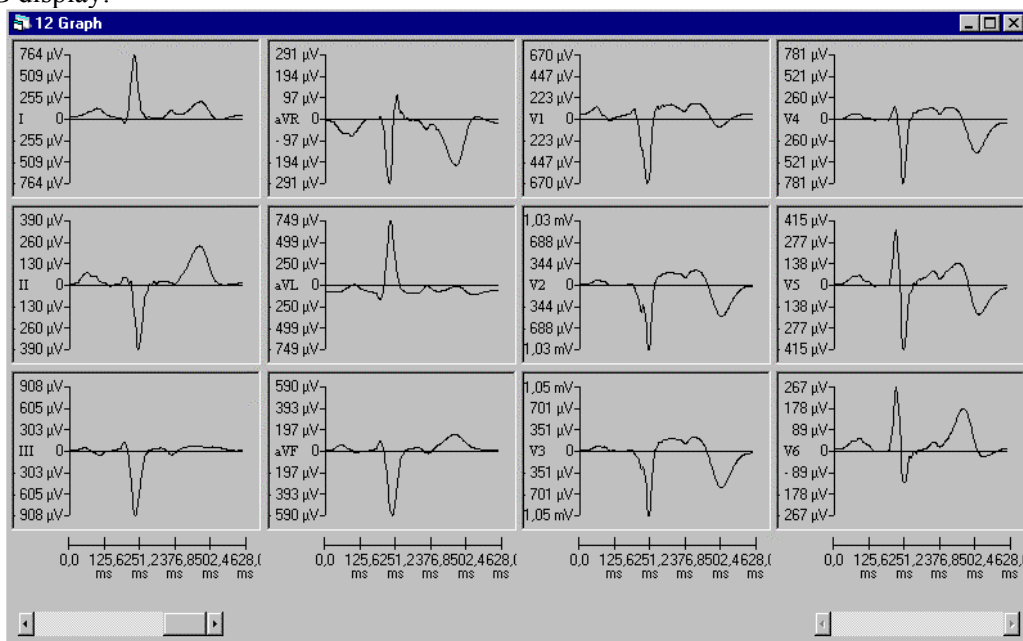
Electrocardiogram analysis and diagnostic

Objective:

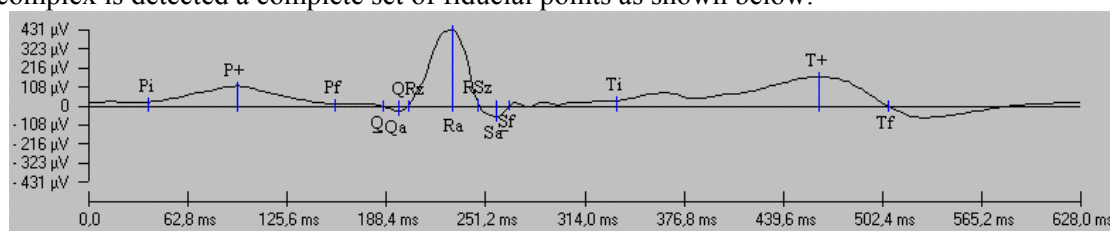
The project has in view the development of a 12-lead ECG advanced version of a former system that was developed for 3-lead ECGs working at S. João Hospital since 1983. (This system was successfully evaluated in the frame of a European project.)

Methods and Results:

The software runs under Windows and uses ECG signals sampled at 500 Hz with a 16 bits resolution and acquired during 10 seconds. It has a MDI user interface allowing the inspection of 3-lead and 12-lead ECGs with arbitrary zoom and starting point. Next figure shows a 12-lead ECG display.



Signal pre-processing involves 50 Hz noise as well as baseline wander removal using a decimation-interpolation approach with 3 decimating stages, followed by triangular filtering ($f_c = 2$ Hz) ending with linear interpolation. Signal processing involves the detection of ECG QRS wave complexes and the determination of a typical (average) complex. On this clean typical complex is detected a complete set of fiducial points as shown below.



Diagnostic algorithms using the well known Minnesota code have been implemented. Other diagnostic criteria will be inserted in the near future. Patient data, ECGs and processing results are kept in a data base.

A module for rhythm analysis is in current progress.

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