

# HRVTool – an Open-Source Matlab Toolbox for Analyzing Heart Rate Variability

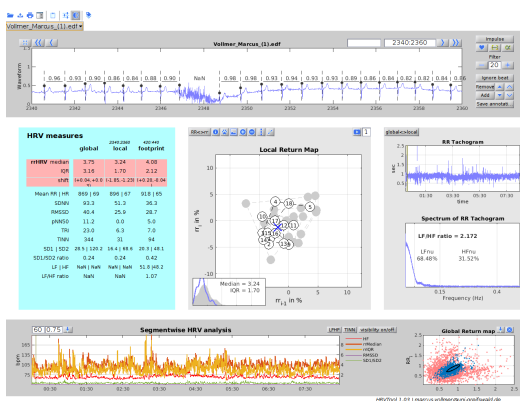
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**Motivation:** Many software tools for ECG processing are commercial. New innovative and alternative features for heart rate variability analysis (HRV) and improved methods in ECG preprocessing cannot be incorporated. Moreover, software manuals are lacking of clarity and often conceal the exact calculation methods that makes clinical interpretation difficult, and reproducibility is reduced.

**Software description:** HRVTool provides an open-source and intuitive user-friendly environment for the analysis of heart rate variability in Matlab. The software supports the processing of ECG, pulsatile waveforms and RR intervals from various sources (Polar hrm, mat and text files containing raw data, PhysioNet ecg files, Hexoskin wav files, European Data Format edf files, BIOPAC ACQ data, and ISHNE Holter Standard Format) and an integrated heart beat detector locates R peaks or pulse waves from raw data. Visual inspection, and manual adjustments of beat locations are possible and the corresponding annotation file can be saved in a standard Matlab format.

HRV statistics are automatically computed in a sliding window to evaluate the alteration over time. Experimental periods can be labeled and HRV metrics can be exported. Furthermore, the animation of intervals supports pattern identification. Moreover the Matlab class (HRV.m) includes functions for windowed HRV computation that can be used for batch processing. Open-source code is provided at <http://marcusvollmer.github.io/HRV>.



Screenshot of HRVTool.