PFEIFER: A MATLAB Based Platform for Preprocessing Cardiac Electrograms

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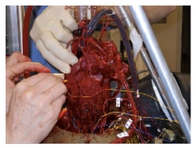
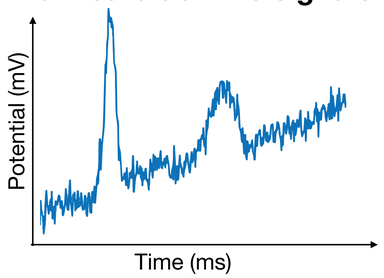
PURPOSE OF PFEIFER

Patient recordings

Animal experiments

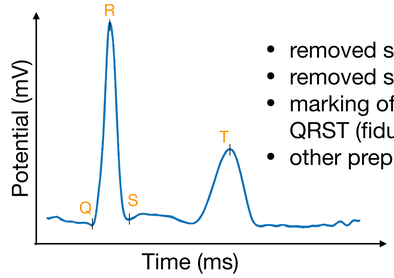


Raw cardiac time signals



GUI based cardiac signal processing toolbox

Processed cardiac time signals

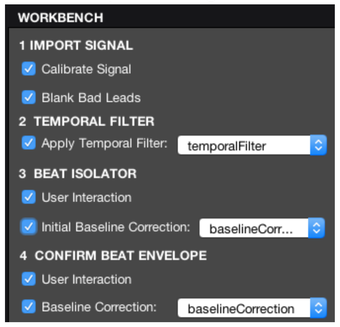


- removed signal drift
- removed signal noise
- marking of specific time instants QRST (fiducials)
- other preprocessing tasks

TYPICAL WORK FLOW

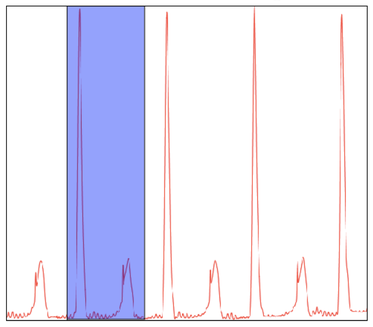
Setup PFEIFER

Import cardiac time signals & choose processing tasks.



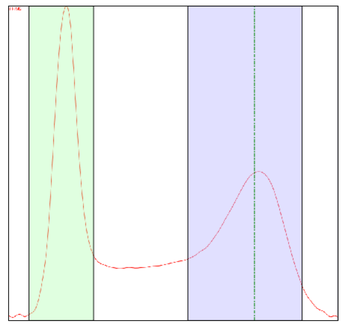
BEAT ISOLATION:

Use your mouse to select the start & end of a beat in RMS of signal.



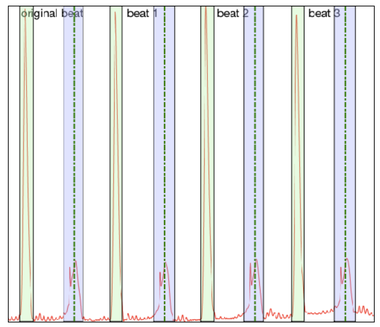
MANUAL FIDUCIALIZING:

Mark fiducials within a beat using your mouse.



AUTOMATIC FIDUCIALIZING:

Manual fiducial is used to automatically fiducialize the next 30-50 beats



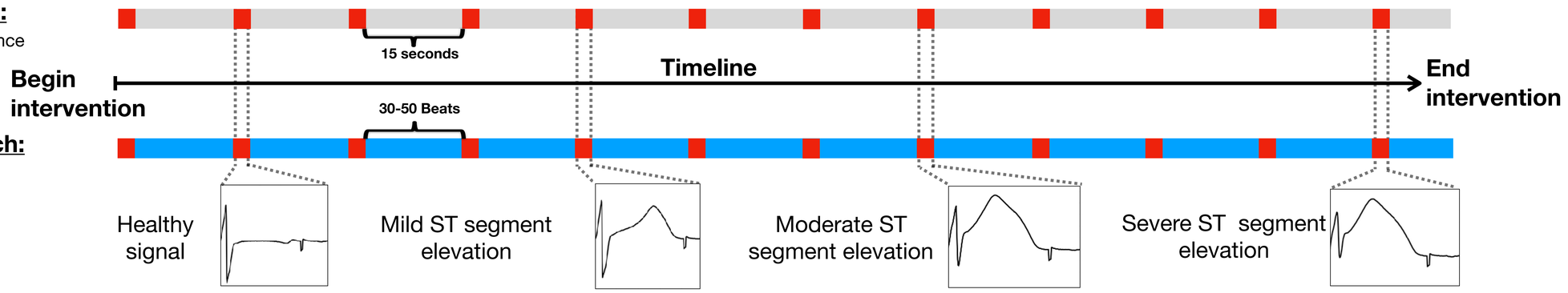
BENEFIT OF PFEIFER

The manual approach:

Mark fiducials manually ( ) once every 15 seconds.
Leave beats in between unfiducialized ( ).

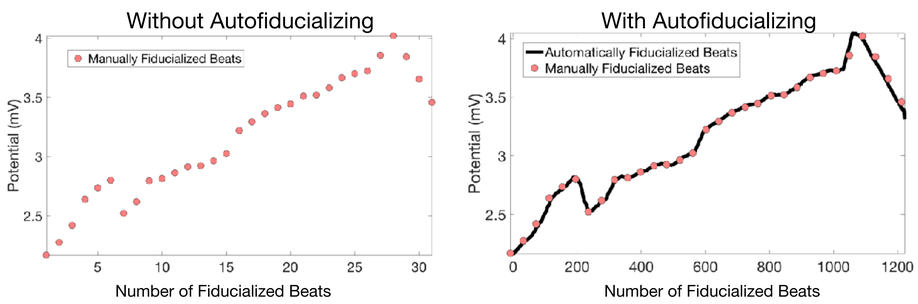
The PFEIFER approach:

PFEIFER autofiducializes ( ) beats in between manually fiducialized beats ( ).



VALIDATION

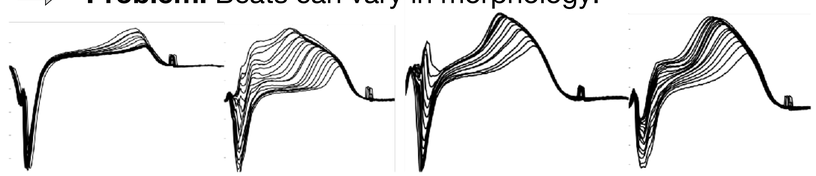
Tracking of the ST segment over an intervention



ADVANTAGE OF OUR METHOD

Alternatives to manual fiducializing: Rule-based fiducializing

Problem: Beats can vary in morphology:



Rule based fiducializing can fail, especially on ischemic electrograms

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