ECG biomedical signal processing
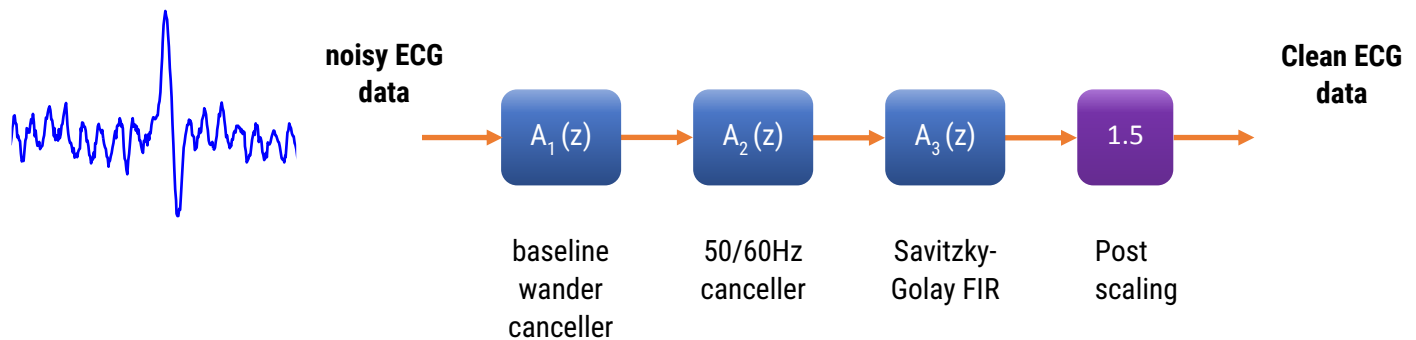
HIGHLIGHTS

▶ Complete front-end ECG filtering solution
▶ Baseline wander canceller
▶ 50/60Hz powerline interference canceller
▶ Savitzky-Golay lowpass filter
▶ Measurement noise reduction
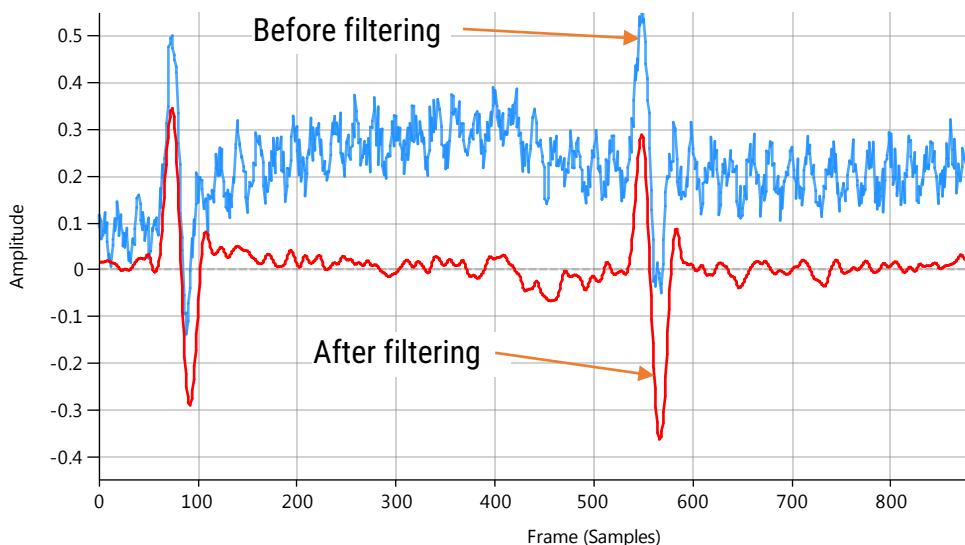▶ Peak sharpness preservation
▶ Export design to Matlab, C and more

DESCRIPTION

ASN Filter designer's ECG biomedical reference design provides designers with a complete front-end filtering solution for ECG measurement applications. Simply import your datasets into the tool and interactively fine-tune the filter cascade cut-off frequencies in real-time with ASN FilterScript in order to suit your application requirements. Advanced Savitzky-Golay FIR lowpass filtering minimises the effects of measurement noise while preserving the sharpness of the peaks.
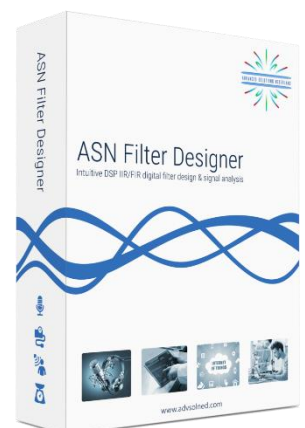
REFERENCE DESIGN IP BLOCKS

noisy ECG data → $A_1(z)$ [baseline wander canceller] → $A_2(z)$ [50/60Hz canceller] → $A_3(z)$ [Savitzky-Golay FIR] → 1.5 [Post scaling] → Clean ECG data

TYPICAL FILTERING RESULT

Before filtering

After filtering

APPLICATIONS

▶ Sports & Fitness (heart rate)
▶ Patient vital sign monitoring
▶ Biomedical research

Download a free demo: www.advsolned.com/asn_filter_designer.html
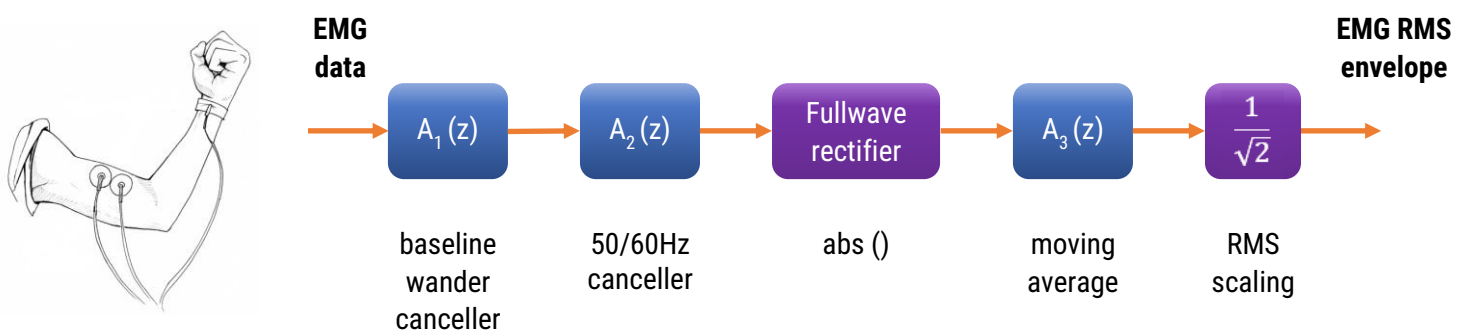
EMG biomedical signal processing

HIGHLIGHTS

▶ Complete filtering solution for EMG RMS envelope measurement (filters, fullwave rectifier and scaling)
▶ Baseline wander canceller
▶ 50/60Hz powerline interference canceller
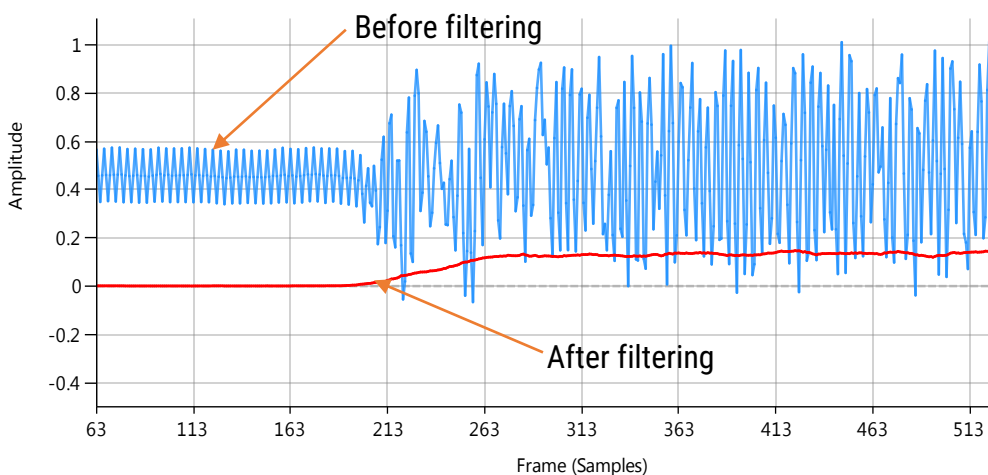▶ Export design to Matlab, C and more

DESCRIPTION

ASN Filter designer's EMG biomedical reference design provides designers with a complete front-end filtering solution for EMG RMS envelope measurement applications. Simply import your datasets into the tool and interactively fine-tune the filter cascade cut-off frequencies in real-time with ASN FilterScript in order to suit your application requirements. Fullwave rectification and scaling are integrated in the filter cascade for direct RMS envelope amplitude measurement.

REFERENCE DESIGN IP BLOCKS

EMG data → $A_1(z)$ → $A_2(z)$ → Fullwave rectifier → $A_3(z)$ → $\dfrac{1}{\sqrt{2}}$ → **EMG RMS envelope**

- $A_1(z)$: baseline wander canceller
- $A_2(z)$: 50/60Hz canceller
- Fullwave rectifier: abs ()
- $A_3(z)$: moving average
- $\dfrac{1}{\sqrt{2}}$: RMS scaling

TYPICAL FILTERING RESULT

Before filtering

After filtering

Amplitude vs Frame (Samples)

APPLICATIONS

▶ Gesture MMI control
▶ Robotics & automation
▶ Biomechanics research

ASN Filter Designer
Intuitive DSP IIR/FIR digital filter design & signal analysis

Download a free demo: www.advsolned.com/asn_filter_designer.html