Signal, Image and Video Processing manuscript No.
(will be inserted by the editor)

Supplementary Material for the Paper: Comparison of Different Methods to Suppress Muscle Artifacts in EEG Signals

Alina Santillán-Guzmán · Ulrich Heute · Ulrich Stephani · Andreas Galka

Received: date / Accepted: date

In the following, additional signals, spectra, and comparisons of the figures of merit used in the paper are displayed, numbered as Figs. 7-13 in continuation of the figures in the paper.

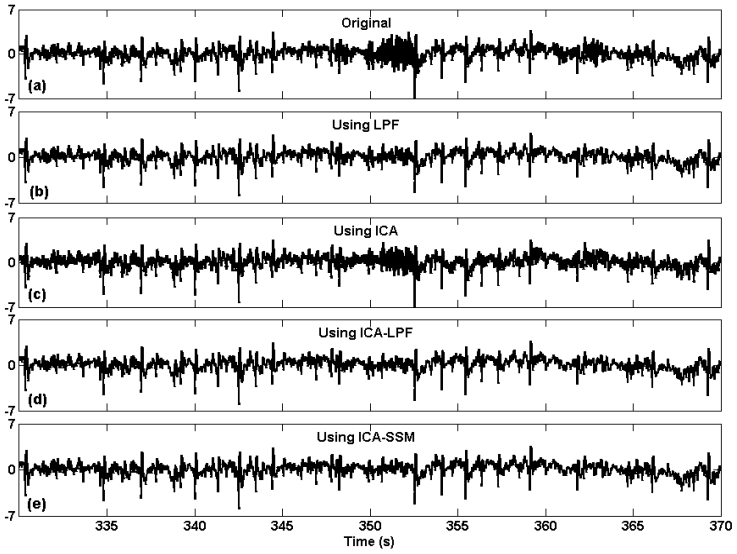

Fig. 7 Signal CP6 of P1_Subset$_{Right2}$ before filtering (a), after LPF (b), after ICA (c), after ICA-LPF (d), and after ICA-SSM (e). The details of this data set are given in subsection 5.6.1 in the paper.

A. Santillán-Guzmán (✉), U. Heute: Faculty of Engineering, Christian-Albrechts-University of Kiel, Kaiserstr. 2, 24143 Kiel, Germany. E-mail: alina_santillan@yahoo.com.mx
A. Santillán-Guzmán, Universidad Popular Autónoma del Estado de Puebla, 21 Sur 1103 Barrio Santiago, 72410 Puebla, México
U. Stephani: Dept. Neuropediatrics, Christian-Albrechts-University of Kiel, Schwanenweg 20, 24105 Kiel, Germany.
A. Galka: Inst. Med. Psychology Med. Sociology, Christian-Albrechts-University of Kiel, Preußerstr. 1-9, 24105 Kiel, Germany.

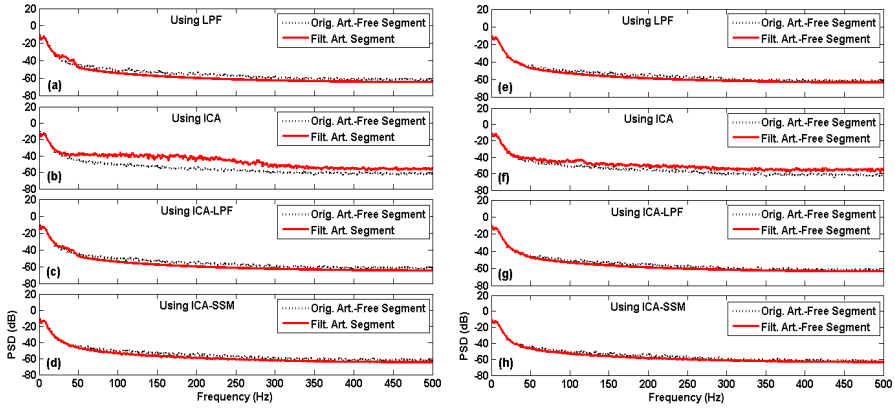

Fig. 8 Power spectra of signal CP6 from P1_Subset$_{Right2}$. Dotted line (a-h): Power spectrum of the segment without artifacts of the original signal. Continuous line (a-d): Power spectrum of the segment with artifacts after (a) LPF, (b) ICA, (c) ICA-LPF, (d) ICA-SSM; (e-h): Power spectrum of the artifacts-free segment after (e) LPF, (f) ICA, (g) ICA-LPF, (h) ICA-SSM. The details of this data set are given in subsection 5.6.1 in the paper.

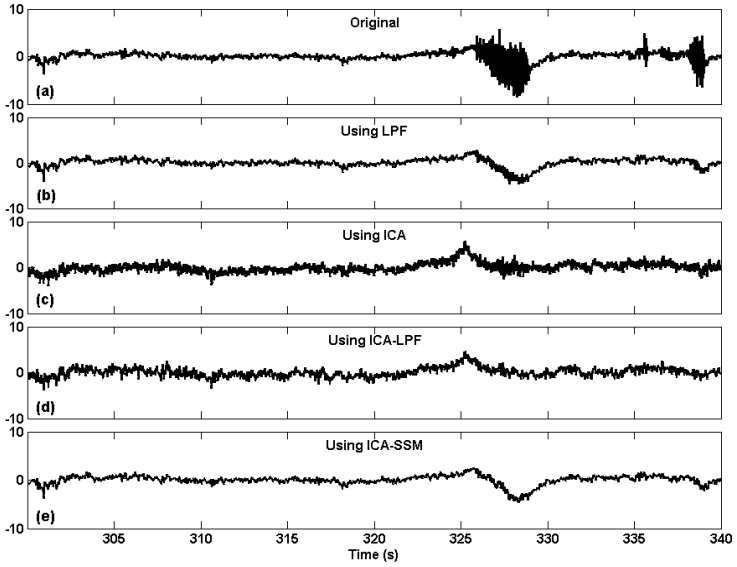

Fig. 9 Signal F8 of P1_Subset$_{Frontal}$ before filtering (a), after LPF (b), after ICA (c), after ICA-LPF (d), and after ICA-SSM (e). The details of this data set are given in subsection 5.6.2 in the paper.

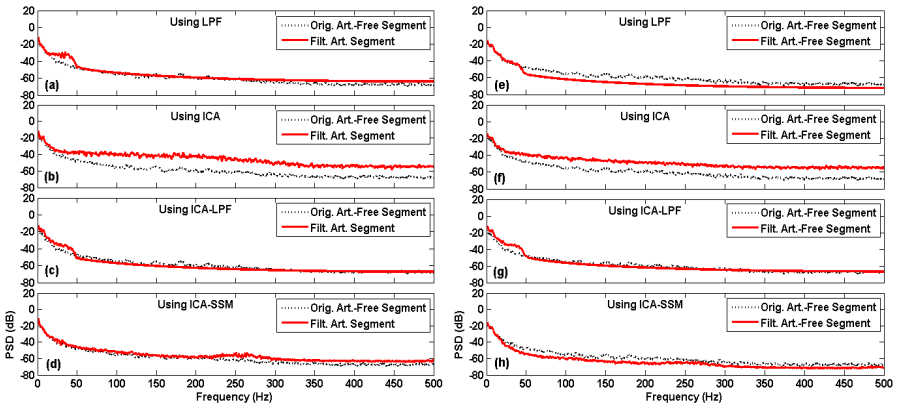

Fig. 10 Power spectra of signal F8 from P1_Subset$_{Frontal}$. Dotted line (a-h): Power spectrum of the segment without artifacts of the original signal. Continuous line (a-d): Power spectrum of the segment with artifacts after (a) LPF, (b) ICA, (c) ICA-LPF, (d) ICA-SSM; (e-h): Power spectrum of the artifacts-free segment after (e) LPF, (f) ICA, (g) ICA-LPF, (h) ICA-SSM. The details of this data set are given in subsection 5.6.2 in the paper.

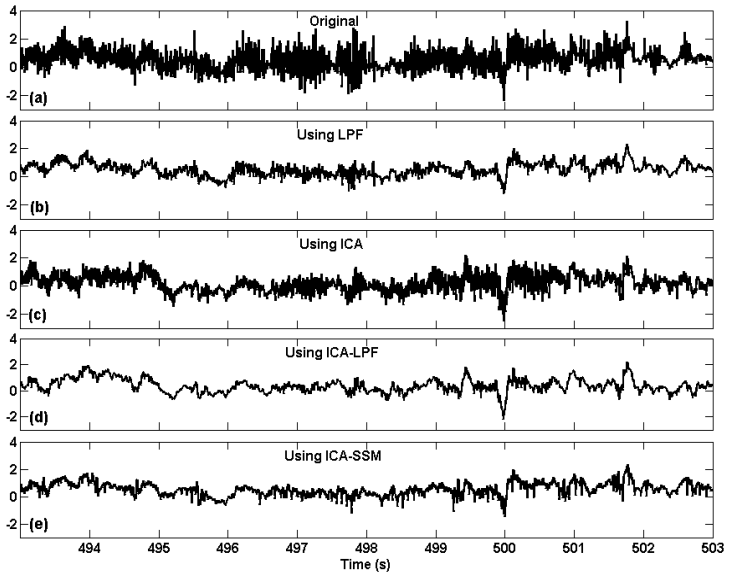

Fig. 11 Segment of 10 s length (out of 150 s) of signal P8 of P2_Subset$_{Seizure}$ before filtering (a), after LPF (b), after ICA (c), after ICA-LPF (d), and after ICA-SSM (e).The details of this data set are given in subsection 5.6.3 in the paper.

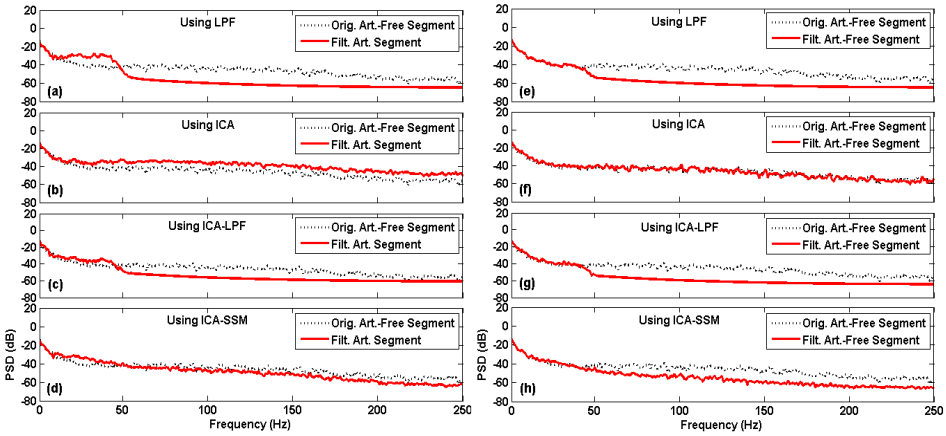

Fig. 12 Power spectra of signal P8 from P2_Subset$_{Seizure}$. Dotted line (a-h): Power spectrum of the segment without artifacts of the original signal. Continuous line (a-d): Power spectrum of the segment with artifacts after (a) LPF, (b) ICA, (c) ICA-LPF, (d) ICA-SSM; (e-h): Power spectrum of the artifacts-free segment after (e) LPF, (f) ICA, (g) ICA-LPF, (h) ICA-SSM.The details of this data set are given in subsection 5.6.3 in the paper.

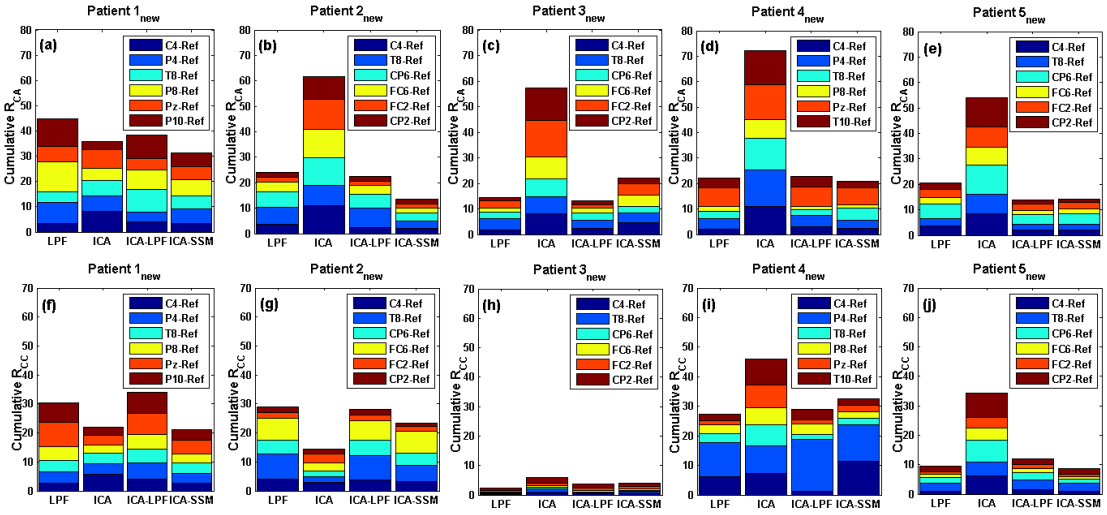

Fig. 13 Individual-sensor and cumulative measures R_{CA} (a-e) and R_{CC} (f-j) after each filtering technique: LPF, ICA, ICA-LPF and ICA-SSM for five epilepsy patients. These quantitative results shown graphically, are also displayed in Table 2 in the paper.