**Winer Filter Artifact Prediction and Removal for Neural Electrical Stimulation**

**and Brain Machine Interfaces**

**The accompanying neural data examples and artifact removal code are outlined in the publication:**

**Sadeghi et al. (2019) Optimal Multichannel Artifact Prediction and Removal for Neural Stimulation and Brain Machine Interfaces. Front. in Neuroscience**

<https://doi.org/10.3389/fnins.2020.00709>

**The archive includes a MATLAB implementation of the artifact removal procedure and examples from the above citation.**

**Code and Examples**

**The following MATLAB code are provided. On most of the files you can type ‘help filename’ to obtain details of the function syntax and its input and output parameters.**

ExampleArtifactRemoval1.m – bilateral cochlear implant example

ExampleArtifactRemoval2.m – Multi-Channel electrical stimulation example

electricalstimartifactremoval.m - routine generates Wiener filters, predicts and

removes artifacts

wienermimo.m - Multi-Input Multi-Output Wiener filter

artifact prediction implementation.

wienerfft.m - FFT based wiener filter implementation (single

input single output)

bandpass.m, lowpass.m - B-spline filters as described in Roark and

Escabi (1999; **DOI:**[10.1109/78.747777](https://doi.org/10.1109/78.747777))

**The two example functions contain documentation of the procedures used to generate the artifact prediction filters. Additional details can also be found in** electricalstimartifactremoval.m **and** wienermimo.m.

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