Supplemental Data

Section 5.3

Here, we present a sensitivity analysis for the choice of the offset (± 0.2 ms) where a spike is classified as a detected spike.

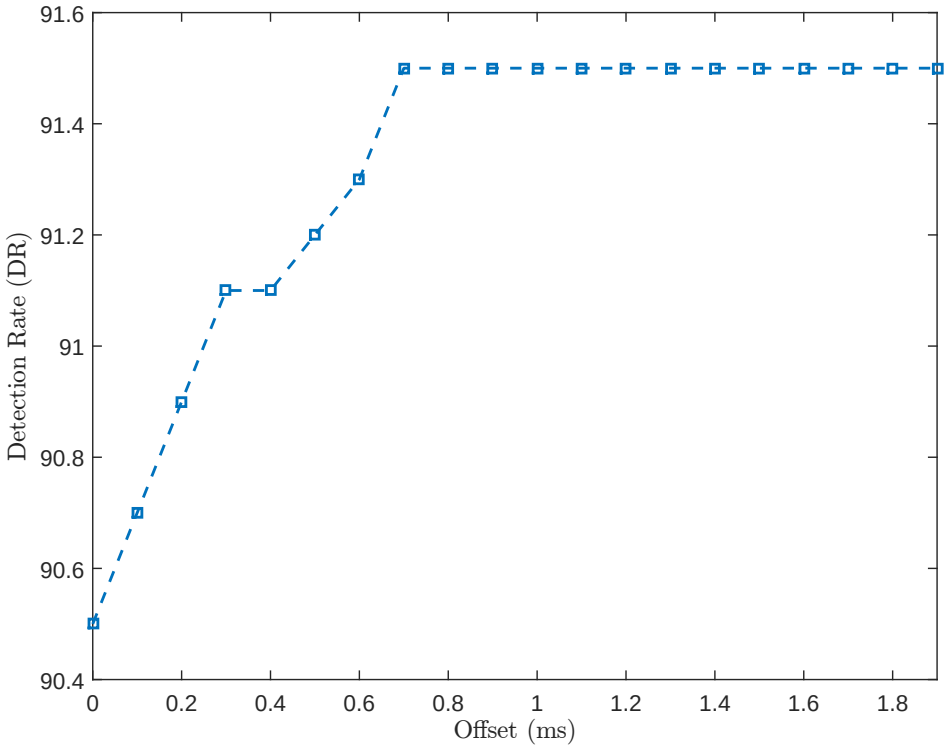

Figure 1. Sensitivity analysis of the offset based on the SWTTEO algorithm and an SNR of 4

Section 6.3

This section summarizes the results for the parameter sweep for current state-of-the-art algorithms.

WTEO

The choice of the wavelet is the only parameter which can be chosen freely based on the HAB dataset. The sampling rate of 10 kHz requires a maximum decomposition level of 2 as mentioned in the paper.

Table 1. Parameter sweep for the WTEO Algorithm for different wavelets. A decomposition level of two was used.

Wavelet	mDR	Wavelet	mDR
db1	60.160	sym7	58.818
db7	36.236	coif4	38.536
sym4	62.063	bior3.9	62.400
sym5	62.809	rbio3.9	61.400

SWT

The parameter sweep for the best wavelet for the SWT algorithm can be seen in the following table.

Table 2. Parameter sweep for the SWT Algorithm for different wavelets. A decomposition level of 5 was used.

Wavelet	mDR	Wavelet	mDR
db1	70.909	sym7	69.609
db7	49.764	coif4	64.636
sym4	71.327	bior3.9	64.945
sym5	73.900	rbio3.9	70.572

HBBSD

The following table shows the different mDR values for different filter length for the HBBSD algorithm. The choice of the maximum firing rate of 50 Hz does not influence the result. Hence we stick the recommendation in the original paper.

Table 3. Parameter sweep for the filter length of the HBBSD algorithm.

Filter length in ms	mDR
10	78.439
11	79.846
12	80.014
13	80.524
14	80.612
15	80.603
16	80.191

PTSD

The parameters for the PTSD algorithm are evaluated in the following tables.

Table 4. Parameter sweep for the peak lifetime period.

Peak Lifetime period in ms	mDR
0.3	64.454
0.4	75.818
0.5	77.272
0.6	76.818
0.7	75.727

Table 5. Parameter sweep for the refractory period.

Refractory period in ms	mDR
1.0	78.363
1.1	78.455
1.2	78.636
1.3	78.636
1.4	78.546
1.5	78.546