Supplementary Materials

EMG-Based reaching prediction for upper limb rehabilitation: a systematic analysis of factors affecting the classification accuracy

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In this Supplementary Materials, we present additional figures referenced in the main manuscript that provide a deeper insight into the results.

Figure S.1 shows the classification accuracy of the K-Nearest Neighbors (KNN) algorithm across different time window lengths, numbers of features, and muscles analyzed, using a Leave-One-Subject-Out (LOSO) validation strategy.

Figure S.2 presents the classification accuracy of the Support Vector Machine (SVM) algorithm under the same conditions: varying time window lengths, numbers of features, and muscles, with LOSO validation.

Figure S.3 illustrates the classification accuracy of the SVM algorithm using a holdout validation strategy. Accuracies are shown across different time window lengths, numbers of features, and muscles.

Finally, Figure S.4 shows the classification accuracy of the Bagged Tree (BT) algorithm, also using a holdout validation strategy. Accuracies across different time window lengths, numbers of features, and muscles are presented.

REFERENCES

[1] Crameri, F., Shephard, G. E., & Heron, P. J. (2020). The misuse of colour in science communication. Nature Communications, 11(1), 5444. https://doi.org/10.1038/s41467-020-19160-7

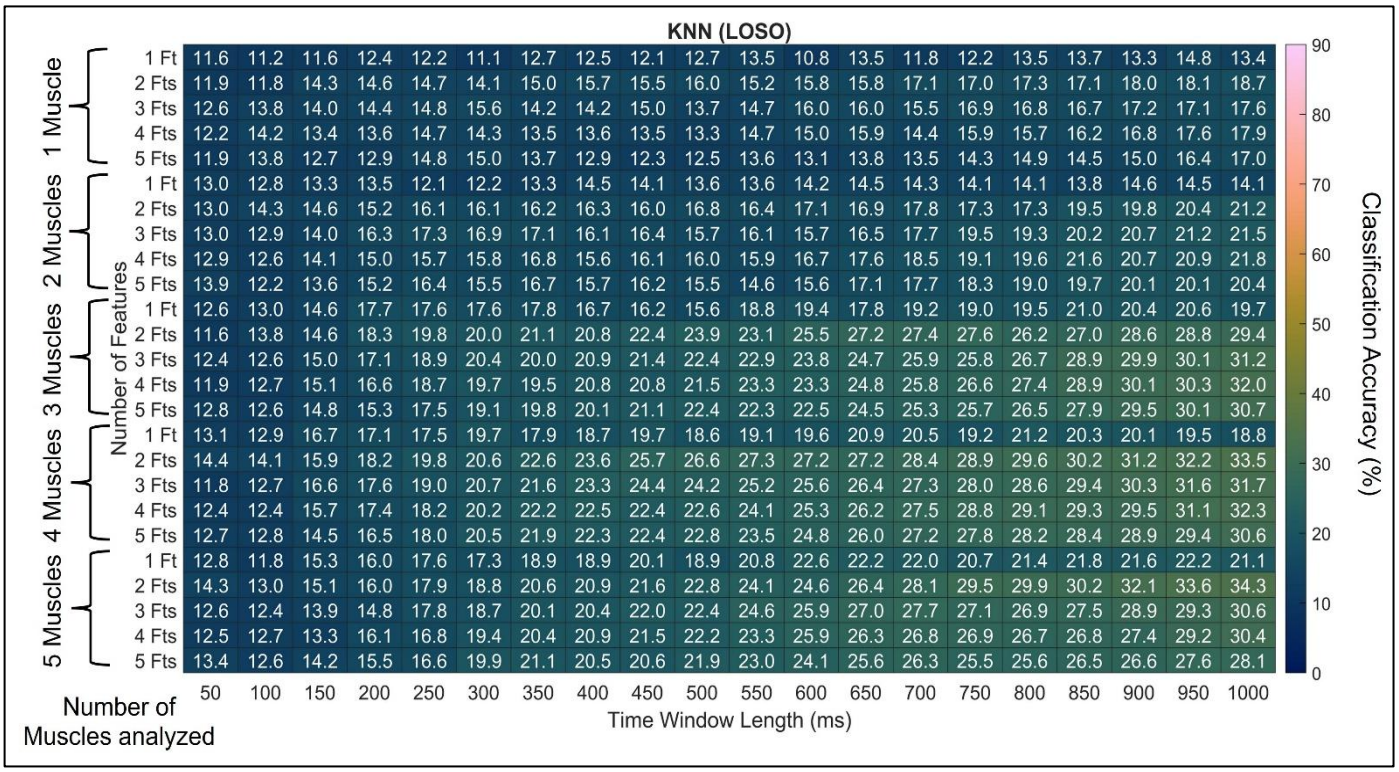

Fig. S.1. Heatmap summarizing KNN classifier accuracy with the Leave-One-Subject-Out validation method. The x-axis indicates the time window length in milliseconds, while the y-axis represents the number of features (Fts) used for the analysis (1 Ft to 5 Fts), with curly brackets indicating the number of muscles from which the features were extracted. Color intensity follows the Batlow scale, progressing from low values of accuracy in deep blue to high values of accuracy in bright yellow, ensuring perceptual uniformity and accessibility [1].

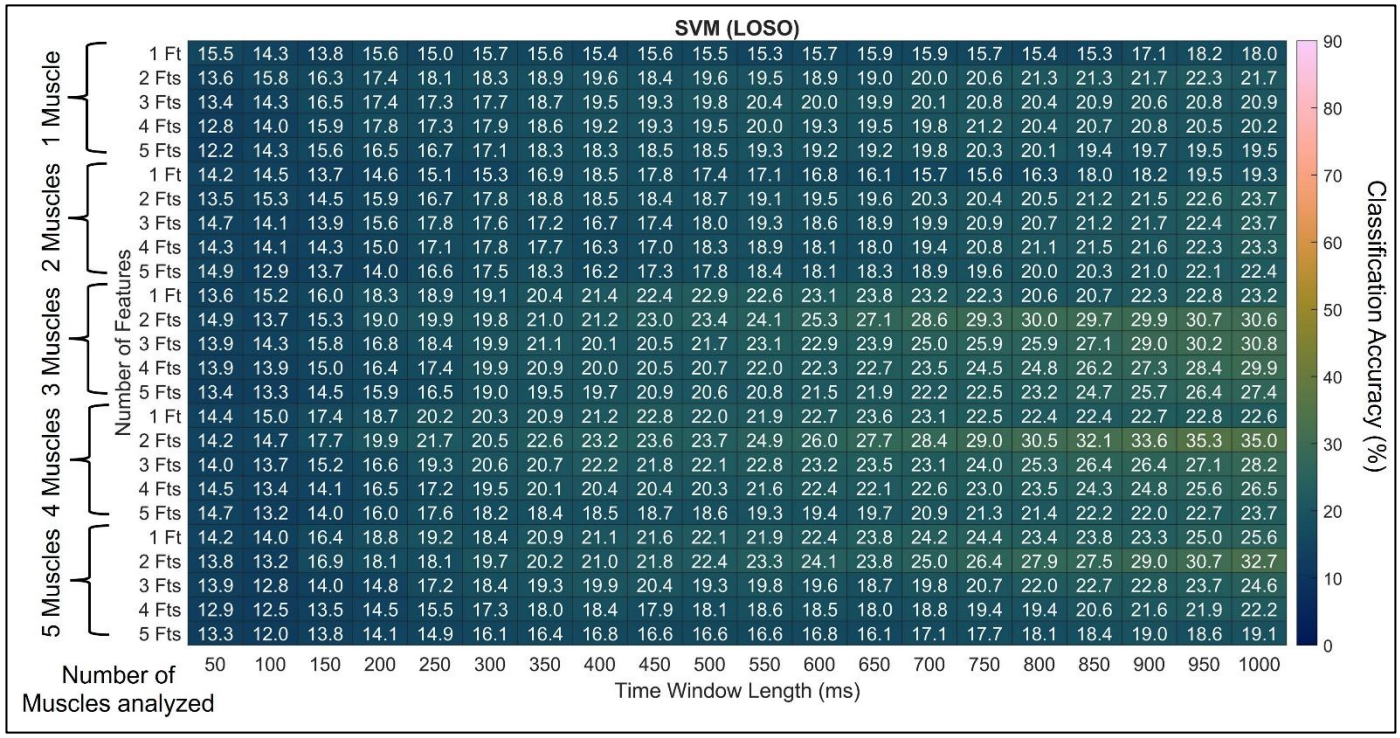

Fig. S.2. Heatmap summarizing KNN classifier accuracy with the Leave-One-Subject-Out validation method. The x-axis indicates the time window length in milliseconds, while the y-axis represents the number of features (Fts) used for the analysis (1 Ft to 5 Fts), with curly brackets indicating the number of muscles from which the features were extracted. Color intensity follows the Batlow scale, progressing from low values of accuracy in deep blue to high values of accuracy in bright yellow, ensuring perceptual uniformity and accessibility [1].

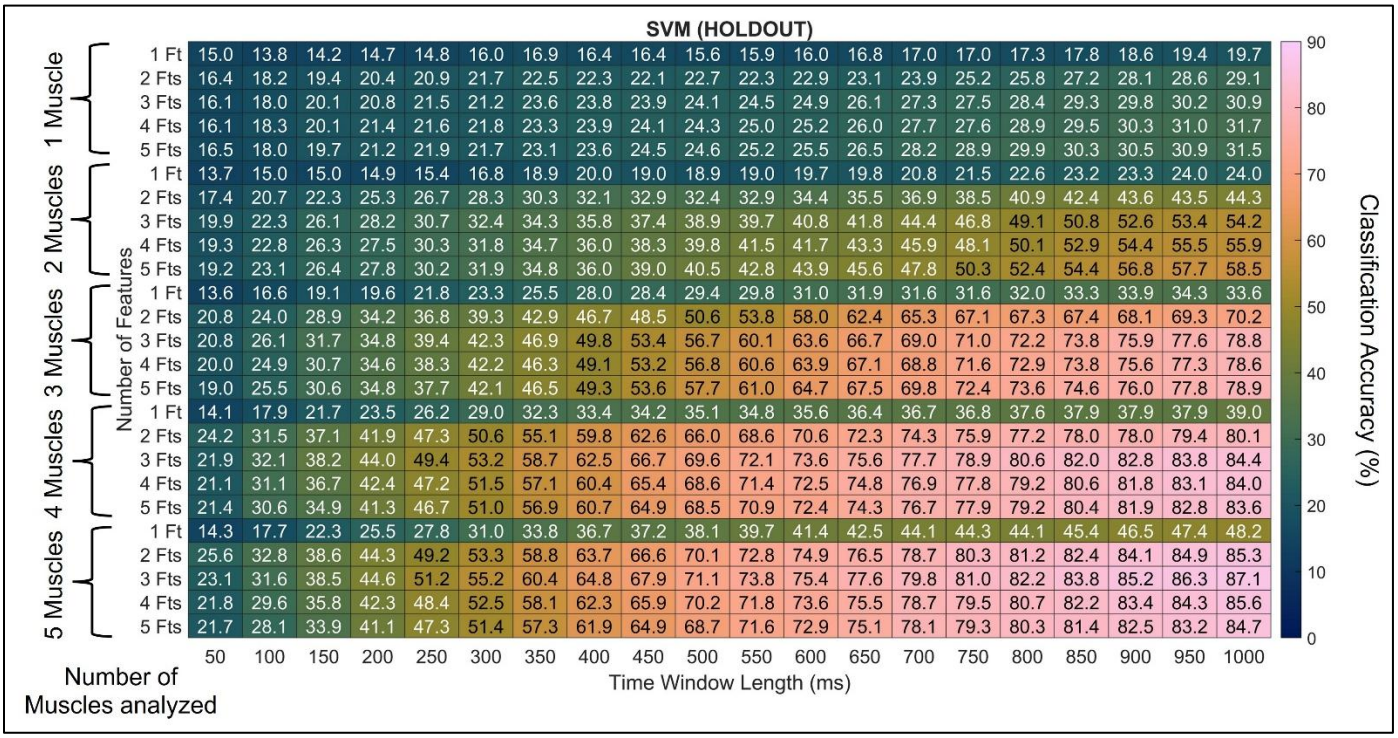

Fig. S.3. Heatmap summarizing SVM classifier accuracy with the holdout validation method. The x-axis indicates the time window length in milliseconds, while the y-axis represents the number of features (Fts) used for the analysis (1 Ft to 5 Fts), with curly brackets indicating the number of muscles from which the features were extracted. Color intensity follows the Batlow scale, progressing from low values of accuracy in deep blue to high values of accuracy in bright yellow, ensuring perceptual uniformity and accessibility [1].

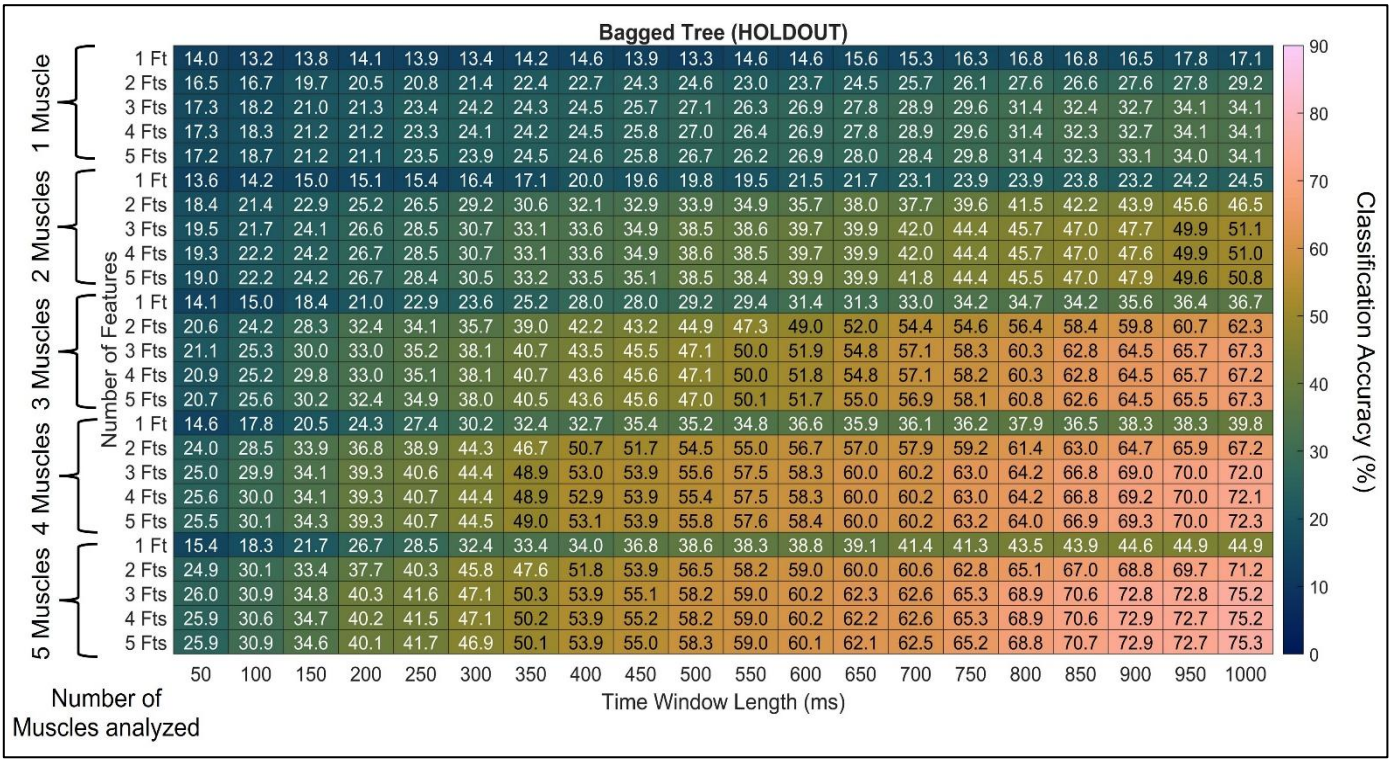

Fig. S.4. Heatmap summarizing the Bagged Tree classifier accuracy with the holdout validation method. The x-axis indicates the time window length in milliseconds, while the y-axis represents the number of features (Fts) used for the analysis (1 Ft to 5 Fts), with curly brackets indicating the number of muscles from which the features were extracted. Color intensity follows the Batlow scale, progressing from low values of accuracy in deep blue to high values of accuracy in bright yellow, ensuring perceptual uniformity and accessibility [1].