Overprocessing in functional Near-Infrared Spectroscopy (fNIRS)

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Abstract. **Significance**: Overprocesssing occurs when we exceed on reasonable processing to extract the information from observations. Overprocessing can severely affect interpretation of results, e.g. increasing false positives.

Aim: This paper introduces the problem of overprocessing to the fNIRS community.

Approach: The theoretical underpinnings revealing the existence of the problem are given, and the problem is formally stated. Two major avenues to approach the problem are presented.

Results: The transfer function is discussed as a plausible and non-trivial processing and analysis pipeline that from an arbitrary experimental observation $\mathbf{x}_i$ lands us into the hypothesis $\mathbf{x}_h$. The analysis of such transfer function and the analysis of the problem geometry are discussed as potential ways to constraint the problem.

Conclusions: At present, the fNIRS community lacks criteria to alleviate the risk of overprocessing. This draft intends to raise awareness on this largely unknown issue.

Keywords: fNIRS, overprocessing, data analysis, signal processing, transfer function.

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Coming soon!