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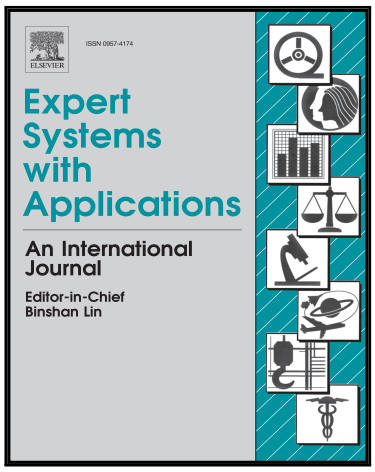

Supervised Machine Learning Scheme For Electromyography-based Pre-fall Detection System

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Supervised Machine Learning Scheme For Electromyography-based Pre-fall Detection System

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Point-to-Point responses

We thank the Referees for raising a number of important points. We have addressed all the points raised by them and we have marked red the answers that have been applied to comply their comments .

Reviewer #1: The paper provides a marginal contribution compared to the previous work of the same authors. In this respect the novelty of the work is very limited.

This paper deals with the development of a real-time detector of lack of balance relying on signals captured by wearable EMG sensors. The topic is interesting even though not novel. As matter of facts,
these authors have already published at least one paper dealing with a very similar topic (Leone 2015).
In this respect, it seems that this paper provides a marginal incremental contribution compared to their previous work. In addition, the paper needs to be significantly reorganized to allow the reader to easily understand its main contribution, Methods and Results.
Overall, due to these reasons, I do not think that the paper, as it is, is suitable for publication.
Following, my detailed comments.
I would suggest the authors to better organize the section in paragraphs, thus making reading easier. For instance, the Introduction can be reorganized in 5/6 paragraphs thus allowing the reader to easier understand the different issues.

We would like to thank the Referee for his/her comments on the organization of the introduction. We have reorganized it in 6 paragraphs, in order to clarify the several issues.

I would suggest the authors to rephrase the whole text changing terms "falls" or "pre-fall" in "lack of balance". Actually, the proposed strategy, as well as many others reported in literature, does not properly allow for detecting a fall. It rather detects a lack of balance that may result in a fall.
Specifically, not all lacks of balance result in a fall albeit all lacks of balance abruptly modify the EMG patterns due to the reactive/corrective neuromuscular response.

We thank the Referee for his/her suggestions on the use of the terms “falls” or “pre-falls”. We have replaced them in the revised version by “lack of balance”, as we could. Indeed as expressed in your comment, the topic deals with the description of a strategy for the lack balance detection, suitable for the fall risk real-time detection.

Introduction, 2nd paragraph: aim of the study. In my opinion, the aim of the work consists in investigating a strategy to detect a lack of balance based on the analysis of the EMG signals. To develop a "software framework" sounds like a more generic purpose and the "pre-fall detection strategy" may be one of its main components. However, in this paper,

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