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A robust myoelectric pattern recognition using online sequential extreme learning machine for finger movement classification.

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Abstract

A robust myoelectric pattern-recognition-system requires a system that should work in the real application as good as in the laboratory. However, this demand should be handled properly and rigorously to achieve a robust myoelectric system. Electrode shift is an issue that usually emerges when dealing with robustness issue. In daily life, the placement of electrodes becomes a significant issue that can downgrade the performance of the system. This paper proposed a new way to overcome the robustness issue by conducting an update to the system to anticipate changes in the future such as electrode shift, improvement in muscle strength or any other issue. Such update will be used to generate an adaptation. The adaptation is done according to the user's need by employing an online sequential extreme learning (OS-ELM) to learn the training data chunk by chunk. OS-ELM enables the myoelectric system to learn from a small number of data to avoid cumbersome training process. The day-to-day experiment shows that the proposed system can maintain its performance on average accuracy around 85% whereas the non-adaptive system could not.

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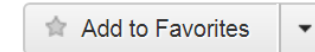
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