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BioGauges: Toward More Objective Evaluation of Biometrically-Based Interfaces

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ABSTRACT

In an effort to better understand and fully characterize human interaction with biometrically-based interfaces, the BioGauges method and toolset are presented. BioGauges provide a mechanism for determining the range, reliability, and granularity of control possible for a user operating a biometrically-based interface. We first demonstrate the method with a study of ten able-bodied people characterizing two different continuous biometrically-based interfaces with a thresholded task. Then, we further demonstrate the method by assessing the spatial granularity of two continuous biometrically-based interfaces for five people with varying stages of paralysis due to amyotrophic lateral sclerosis (ALS).

Keywords

Biometrically-based interface, brain-computer interface, electroencephalography, functional near-infrared, galvanic skin response, controllability.