WEANING FROM MECHANICAL VENTILATION: FEATURE EXTRACTION FROM A STATISTICAL SIGNAL PROCESSING VIEWPOINT (TueAmPO3)

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Abstract :

Clinicians' decision for mechanical aid discontinuation is a challenging task that involves a complete knowledge of a great number of clinical pa− rameters, as well as its evolution in time. Respiratory pattern variability appears as a useful extubation readiness indicator, and thus can be used as an informative feature in a statistical pattern recognition framework. Reliable assessment of this variability involves a set of signal processing techniques that should be carefully evaluated for statistical validity. This paper evaluates different variability extraction techniques aimed to build a Bayesian classifier for weaning readiness decision. As a conclusion, Sam− ple Entropy is selected as the best performance extraction method. By calculating it over tidal volume signals, and with mean respiratory ra− tes as additional input patterns, a 2D Bayesian classifier is constructed with principal component analysis selection. The obtained misclassifica− tion probability (Pe = 0,2141) is acceptable if compared with performance of single feature classifiers.

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