



A new approach to sample entropy of multi-channel signals: application to EEG signals

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Résumé en anglais	<p>In this paper, we propose a new algorithm to calculate sample entropy of multivariate data. Over the existing method, the one proposed here has the advantage of maintaining good results as the number of channels increases. The new and already-existing algorithms were applied on multivariate white Gaussian noise signals, pink noise signals, and mixtures of both. For high number of channels, the existing method failed to show that white noise is always the most irregular whereas the proposed method always had the entropy of white noise the highest. Application of both algorithms on MIX process signals also confirmed the ability of the proposed method to handle larger number of channels without risking erroneous results. We also applied the proposed algorithm on EEG data from epileptic patients before and after treatments. The results showed an increase in entropy values after treatment in the regions where the focus was localized. This goes in the same way as the medical point of view that indicated a better health state for these patients.</p>
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