



Refined composite multiscale permutation entropy to overcome multiscale permutation entropy length dependence

Submitted by Anne Humeau-Heurtier on Wed, 09/23/2015 - 21:13

Titre	Refined composite multiscale permutation entropy to overcome multiscale permutation entropy length dependence
Type de publication	Article de revue
Auteur	Humeau-Heurtier, Anne [1], Wu, Chiu-Wen [2], Wu, Shuen-De [3]
Editeur	Institute of Electrical and Electronics Engineers
Type	Article scientifique dans une revue à comité de lecture
Année	2015
Langue	Anglais
Pagination	2364-2367
Volume	22
Titre de la revue	IEEE Signal Processing Letters
ISSN	1070-9908
Résumé en anglais	Multiscale permutation entropy (MPE) has recently been proposed to evaluate complexity of time series. MPE has numerous advantages over other multiscale complexity measures, such as its simplicity, robustness to noise and its low computational cost. However, MPE may lose statistical reliability as the scale factor increases, because the coarse-graining procedure used in the MPE algorithm reduces the length of the time series as the scale factor grows. To overcome this drawback, we introduce the refined composite MPE (RCMPE). Through applications on both synthetic and real data, we show that RCMPE is much less dependent on the signal length than MPE. In this sense, RCMPE is more reliable than MPE. RCMPE could therefore replace MPE for short time series or at large scale factors.
URL de la notice	http://okina.univ-angers.fr/publications/ua13940 [4]
DOI	10.1109/LSP.2015.2482603 [5]

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