

# Testing statistical hypotheses based on weighted divergence measures

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In this presentation we are first concerned with a class of hypotheses tests for goodness of fit and homogeneity between two samples. This type of tests is constructed based on a particular type of discrepancy measures called weighted divergences. These measures allow us to focus on specific subsets of the support without, at the same time, losing the information of the others. With this method we achieve a significantly more sensitive test than the classical ones, with comparable error rates. The appropriate asymptotic theory is presented according with Monte Carlo simulations for assessing the performance of the proposed test statistics.

We will also briefly present a class of test statistics based on the family of weighted  $\phi$ -divergences for general order Markov chains. A weight matrix treats the issue of the presence (or not) of prior information on the transitions of the system. That methodology could be adapted in the framework of homogeneity or goodness-of-fit for Markov chains.

The first part of our presentation is based on [2].

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## Références

- [1] M. L. Menéndez, J. A. Pardo, L. Pardo, Csiszar's  $\phi$ -divergences for testing the order in a Markov chain. *Statistical Papers*, 42, 313-328, 2001.
- [2] T. Gkelsinis, A. Karagrigoriou, V. S. Barbu, Statistical Inference based on weighted divergence measures with simulations and applications, *Statistical Papers*, 125, 2022. DOI : <https://doi.org/10.1007/s00362-022-01286-z>