sp_test Documentation

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PW

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CONTENTS

Contents:

CHAPTER

ONE

AUTODOC TEST

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class multivariate_te.**Multivariate_te**(*max_lag*, *min_lag*, *cmi_calculator_name*, *target*, *source_set=None*)

Set up a network analysis using multivariate transfer entropy.

Set parameters necessary for network inference using transfer entropy (TE). To perform network inference call analyse_network() on an instance of the data class.

Parameters

- **max_lag** – maximum number of steps into the past to look for informative samples (maximum temporal search depth)
- **min_lag** – minimum number of steps into the past to look for informative samples (minimum temporal search depth)
- **cmi_calculator_name** – string with the name of the calculator to be used for TE estimation
- **target** – index of the target process
- **source_set** – list of process indices used as potential sources (default: all possible processes, i.e., all processes other than the target process)

analyse_network
perform network inference on data, has to be run to first to write results to other attributes

conditional_full
samples in the full conditional set

conditional_sources
samples in the conditional set coming from souces

conditional_target
samples in the conditional set coming from target

current_value
index of the current value in TE estimation

estimator_name
estimator used for TE estimation

max_lag
maximum temporal search depth

min_lag
minimum temporal search depth

pvalue_omnibus
p-value of the omnibus test

pvalue_individual_sources
array of p-values for TE from individual sources to the target

sign_ominbus
statistical significance of the over-all TE

sign_individual
array of booleans, indicates statistical significance of TE from individual sources to the target

source_set
list with indices of source processes

target
index of target process

analyse_network(*data*)
Find multivariate transfer entropy between sources and a target.

Find multivariate transfer entropy between all source processes and the target process. Uses multivariate, non-uniform embedding found through information maximisation (see Faes, ???, and Lizier, 2012). This is done in four steps (see Lizier and Faes for details): (1) find all relevant samples in the target processes' own past, by

iteratively adding candidate samples that have significant conditional mutual information (CMI) with the current value (conditional on all samples that were added previously)

2. find all relevant samples in the source processes' pasts (again by finding all candidates with significant CMI)
3. prune the final conditional set by testing the CMI between each sample in the final set and the current value, conditional on all other samples in the final set
4. statistics on the final set of sources (test for over-all transfer between the final conditional set and the current value, and for significant transfer of all individual samples in the set)

CHAPTER

TWO

INDICES AND TABLES

- genindex
- modindex
- search

m

A

C

E

M

P

S

T