

Types of attributes and methods of the SpectralAnalyzer class

Notation

- I denotes the number of items.
- C denotes the number of separate categories associated with the items.
- V_c denotes the number of separate values in the category c .
- N denotes the number of nodes.
- P denotes the number of patterns.
- Y denotes the number of years for which observations exist.

Attributes

observations: list

CODE	vector(character)	YEAR	numeric
CODE	vector(character)	YEAR	numeric
...
CODE	vector(character)	YEAR	numeric

items: named vector(character)

items_categories: data.frame

	category 1	category 2	...	category C
item 1	factor	factor	...	factor
item 2	factor	factor	...	factor
...
item I	factor	factor	...	factor

categories_colors: list(named vector(character))

\$category1

value 1	character
value 2	character
...	...
value V_1	character

\$category2

value 1	character
value 2	character
...	...
value V_2	character

...

\$categoryC

value 1	character
value 2	character
...	...
value V_C	character

target: character

count: numeric

min_length: numeric

max_length: numeric

status_limit: numeric

nodes: data.frame

node	length	weight
vector(character)	numeric	numeric

nodes_per_year: matrix

	year 1	year 2	...	year Y
node 1	numeric	numeric	...	numeric
node 2	numeric	numeric	...	numeric
...
node N	numeric	numeric	...	numeric

n_links: matrix

	node 1	node 2	...	node N
node 1	numeric	numeric	...	numeric
node 2	numeric	numeric	...	numeric
...
node N	numeric	numeric	...	numeric

nodes_links: data.frame

endpoint.1	endpoint.2	items	weight
numeric	numeric	character	numeric

obs_patterns: matrix

	pattern 1	pattern 2	...	pattern P
node 1	logical	logical	...	logical
node 2	logical	logical	...	logical
...
node N	logical	logical	...	logical

patterns: data.frame

pattern	year	frequency	weight	order	specificity	status
vector(character)	numeric	numeric	numeric	numeric	numeric	character

patterns_per_year: matrix

	year 1	year 2	...	year Y
pattern 1	numeric	numeric	...	numeric
pattern 2	numeric	numeric	...	numeric
...
pattern P	numeric	numeric	...	numeric

p_links: matrix

	pattern 1	pattern 2	...	pattern P
pattern 1	numeric	numeric	...	numeric
pattern 2	numeric	numeric	...	numeric
...
pattern P	numeric	numeric	...	numeric

patterns_links: data.frame

endpoint.1	endpoint.2	items	weight	year
numeric	numeric	character	numeric	numeric

Methods

spectral.analyzer(**observations**: see attribute **observations**, **items**: see data.frame below,
target: character, **count**: numeric, **min_length**: numeric, **max_length**: numeric,
status_limit: numeric): SpectralAnalyzer

item	name	category 1	category 2	...	category C
character	character	Factor	factor	...	factor

reset(**object**: SpectralAnalyzer, **from**: numeric)

list_obs_per_year() : see attribute **nodes_per_year**

list_separate_obs() : see attribute **nodes**

count_links(**entities**: character) : see attributes **n_links** and **p_links**

search_links(**entities**: character) : see attributes **nodes_links** and **patterns_links**

list_separate_patterns(**target**: character, **count**: numeric, **min_length**: numeric,
max_length: numeric): data.frame

pattern	weight
vector(character)	numeric

list_patterns_by_obs() : see attribute **obs_patterns**

list_patterns_per_year() : see attribute **patterns_per_year**

compute_patterns_characteristics() : see attribute **patterns**

compute_specificity(**patterns**: list(vector(numeric)), **frequencies**: vector(numeric),
weights: vector(numeric)): vector(numeric)

compute_ksi_threshold(**reporting_indexes**: vector(numeric)): numeric

compute_ri_threshold(**reporting_indexes**: vector(numeric), **ksi**: numeric): numeric

compute_reporting_indexes(patterns: list(vector(numeric)), t: numeric, period: numeric):

data.frame

pattern	ri
vector(character)	numeric

check_params_for_RI(t: numeric, period: numeric): list

t	numeric
period	numeric

compute_reporting_indexes_limits(patterns: list(vector(numeric)), first_limit: numeric, t: numeric, period: numeric): data.frame

pattern	ri_2	ri_period
vector(character)	numeric	numeric

define_dynamic_status(patterns: list(vector(numeric)), status_limit: numeric, t: numeric, period: numeric): data.frame

pattern	Status
vector(character)	character

spectrum_chart(patterns_characteristics: see attribute patterns, identifiers: character, path: character, name: character, title: character): data.frame

ID	pattern	frequency	weight	order	specificity	status
numeric	vector(character)	numeric	numeric	numeric	numeric	character

plot_spectrum_chart(patterns_characteristics: see attribute patterns, weights_by_node_type: see data.frame below, title: character)

complex_nodes	simple_node
numeric	numeric

compute_pattern_distribution_in_nodes(patterns: list(vector(numeric))): list

[[**"weight_distribution"**]]:

1	vector(numeric)
2	vector(numeric)
...	...
P	vector(numeric)

[[**"length_distribution"**]]:

1	vector(numeric)
2	vector(numeric)
...	...
P	vector(numeric)

spectrosome_chart(entities: character, characteristics: see attribute nodes or patterns, identifiers: character, nb_graphs: numeric, min_link_weight: numeric, size_range: vector(numeric), vertex_size: character, vertex_col: character, clusters: numeric, highlight: numeric, use_names: logical, n.cutoff: numeric, c.cutoff: numeric, display_mixt: logical, path: character, name: character,

title: character, ...): list

[["vertices"]]:

ID	node	length	weight	degree
numeric	vector(character)	numeric	numeric	numeric

or (depends on the value of **entities**)

ID	pattern	frequency	weight	order	specificity	status	degree
numeric	vector(character)	numeric	numeric	numeric	numeric	character	numeric

[["edges"]]:

ID	endpoint.1	endpoint.2	items	weight
numeric	numeric	numeric	character	numeric

or (depends on the value of **entities**)

ID	endpoint.1	endpoint.2	items	weight	year
numeric	numeric	numeric	character	numeric	numeric

[["coords"]]: list(matrix)

	x	y
vertex 1	numeric	numeric
vertex 2	numeric	numeric
...
vertex P	numeric	numeric

cluster_text(**graph**: see matrix below, **links**: see attributes **nodes_links** and **patterns_links**,

display: numeric, **highlight**: numeric, **use_names**: logical, **cutoff**: numeric)

	x	y
vertex 1	numeric	numeric
vertex 2	numeric	numeric
...
vertex P	numeric	numeric

cluster_chart(**entities**: character, **characteristics**: see attribute **nodes** or **patterns**, **item**: numeric,

identifiers: character, **use_name**: logical, **n.cutoff**: numeric, **vertex_size**: character,

size_range: vector(numeric), **vertex_col**: character, **c.cutoff**: numeric,

display_mixt: logical, **path**: character, **name**: character, **title**: character, ...): list

[["vertices"]]:

ID	node	length	weight	degree
numeric	vector(character)	numeric	numeric	numeric

or (depends on the value of **entities**)

ID	pattern	frequency	weight	order	specificity	status	degree
numeric	vector(character)	numeric	numeric	numeric	numeric	character	numeric

[["edges"]]:

ID	endpoint.1	endpoint.2	items	weight
numeric	numeric	numeric	character	numeric

or (depends on the value of **entities**)

ID	endpoint.1	endpoint.2	items	weight	year
numeric	numeric	numeric	character	numeric	numeric

[["coords"]]: matrix

	x	y
vertex 1	numeric	numeric
vertex 2	numeric	numeric
...
vertex P	numeric	numeric

network_density(links: see attribute **nodes_links** or **patterns_links**): numeric

degree(ID: numeric, links: see attribute **nodes_links** or **patterns_links**): numeric

tree_chart(patterns_characteristics: see attribute **patterns**, identifiers: character, use_names: logical, n.cutoff: numeric, display_status: logical, display_text: character, c.cutoff: numeric, path: character, name: character, title: character): data.frame

ID	pattern	frequency	weight	order	specificity	status
numeric	vector(character)	numeric	numeric	numeric	numeric	character

plot_tree_chart(patterns_characteristics: see attribute **patterns**, items_category: see data.frame below, category: character, c.cutoff: numeric, use_names: logical, n.cutoff: numeric, display_status: logical, display_text: character, title: character)

item	category
character	character

extract_rules(from: character | list, pruning: logical, as_sets: logical, ...): data.frame

antecedent		consequent	support	confidence	lift	count
vector(character)	=>	character	numeric	numeric	numeric	numeric

or (**antecedent** and **consequent** types depend on the value of **as_sets**. Presence of **count** or **itemset** depends on the value of **from**)

antecedent		consequent	support	confidence	lift	itemset
factor	=>	factor	numeric	numeric	numeric	numeric

save_characteristics(entities: character, characteristics: see attribute **nodes** or **patterns** or return of function **extract_rules**, ...)

extract_nodes_from_items(**nodes_characteristics**: see attribute **nodes**, **items**: vector(numeric),
presence: character): see attribute **nodes**

extract_nodes_from_characteristic(**nodes_characteristics**: see attribute **nodes**,
characteristic: character, **value**: numeric,
condition: character): see attribute **nodes**

extract_nodes_from_category(**nodes_characteristics**: see attribute **nodes**,
category: character | numeric, **value**: character,
target: character): see attribute **nodes**

check_access_for_category(**category**: character | numeric, **value**: character)

extract_patterns_from_items(**patterns_characteristics**: see attribute **patterns**,
items: vector(numeric), **presence**: character): see attribute **patterns**

extract_patterns_from_characteristic(**patterns_characteristics**: see attribute **patterns**,
characteristic: character, **value**: numeric,
condition: character): see attribute **patterns**

extract_patterns_from_status(**patterns_characteristics**: see attribute **patterns**,
value: vector(character), **condition**: character): see attribute **patterns**

extract_patterns_from_category(**patterns_characteristics**: see attribute **patterns**,
category: character | numeric, **value**: character,
target: character): see attribute **patterns**

get_links(**entities** : character, **characteristics**: see attribute **nodes** or **patterns**): see attribute
nodes_links or **patterns_links**

get_isolates(**entities**: character, **characteristics**: see attribute **nodes** or **patterns**): see attribute
nodes or **patterns**

get_non_isolates(**entities**: character, **characteristics**: see attribute **nodes** or **patterns**): see attribute
nodes or **patterns**

get_complexes(**entities**: character, **characteristics**: see attribute **nodes** or **patterns**,
category: character | numeric, **target**: character, **min_nb_values**: numeric): see
attribute **nodes** or **patterns**