

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.
- 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: 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

target: character

count: numeric

min_length: numeric

max_length: numeric

status_limit: 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

nodes: data.frame

node	length	weigh
vector(character)	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

Source	Target	ID	items	weight
numeric	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_per_year: matrix

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

patterns: data.frame

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

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

Source	Target	ID	items	weight	year
numeric	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)

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

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**, path: character, name: character, title: character): data.frame

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

create_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**, nb_graph: numeric, min_link_weight: numeric, vertex_size: character, path: character, name: character, title: character, ...): list

[[**"vertices"**]]:

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

or

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

[[**"edges"**]]: see attribute **nodes_links** or **patterns_links**

cluster_text(graph: see matrix below, links: see attribute **patterns_links**)

	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, **vertex_size**: character, **path**: character, **name**: character, **title**: character, ...): list
[["vertices"]]:

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

or

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

[["edges"]]: see attribute **nodes_links** or **patterns_links**

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**, **display_text**: character, **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

create_tree_chart(**patterns_characteristics**: see attribute **patterns**,

items_category: see data.frame below, **category**: character, **cutoff**: numeric, **display_text**: character, **title**: character)

item	category
character	character

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

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

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