

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.
- + denotes public attributes and methods (i.e. exported attributes and methods).
- – denotes private attributes and methods (i.e. attributes and methods not exported).

Class attributes

- **STATUS_PERSISTENT**: character
- **STATUS_DECLINING**: character
- **STATUS_EMERGENT**: character
- **STATUS_LATENT**: character

- **NODES**: character
- **PATTERNS**: character
- **RULES**: character
- **NODES_OR_PATTERNS**: character
- **NODES_PATTERNS_OR_RULES**: character

Attributes

+ **observations**: list

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

+ **items**: named vector(character) or named vector(numeric)

+ **items_categories**: data.frame

	category 1	category 2	...	category C
item 1	factor	factor	...	factor
item 2	factor	factor	...	factor
...
item l	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

+ **status_colors**: vector(character)

+ **parameters**: list(**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, **verbose**: logical): SpectralAnalyzer

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

+ **reset**(**object**: SpectralAnalyzer, **from**: numeric, **verbose**: logical)

– **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(pc: character or see attribute patterns, identifiers: character, sort: logical, title: character, path: character, name: character)**: data.frame

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

– **plot_spectrum_chart(pc: 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**(nopc: character or see attribute **nodes** or **patterns**, identifiers: character, nb_graphs: numeric, min_link_weight: numeric, vertex_size: character or numeric or vector(numeric), size_range: vector(numeric), vertex_col: character or vector(character), clusters: numeric, highlight: numeric, use_names: logical, n.cutoff: numeric, c.cutoff: numeric, display_mixt: logical, title: character, path: character, name: character, ...): list

[[{"vertices"}]:

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

or (depends on the type of entities contained in **nopc**)

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 type of entities contained in **nopc**)

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**(**nopc**: character or see attribute **nodes** or **patterns**, **item**: numeric, **identifiers**: character, **use_name**: logical, **n.cutoff**: numeric, **vertex_size**: character or numeric or vector(numeric), **size_range**: vector(numeric), **vertex_col**: character or vector(character), **c.cutoff**: numeric, **display_mixt**: logical, **title**: character, **path**: character, **name**: character, ...): list

[["vertices"]]:

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

or (depends on the type of entities contained in **nopc**)

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 type of entities contained in **nopc**)

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

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

- **plot_tree_chart**(**pc**: 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

- + **co_occurrence_chart**(**items**: see attribute **items**, **category**: vector or numeric, **min_occ**: numeric, **max_occ**: numeric, **use_names**: logical, **n.cutoff**: numeric, **c.cutoff**: numeric, **sort_by**: character, **vertex_size**: numeric, **vertex_alpha**: numeric, **vertex_margin**: numeric, **label_size**: numeric, **label_margin**: numeric, **edge_tension**: numeric, **edge_alpha**: numeric, **palette**: character, **palette_direction**: numeric): ggplot2 graph

- + **extract_rules**(**from**: character or 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**(**characteristics**: character or see attribute **nodes** or **patterns** or return of function **extract_rules**, ...)

- + **get_nodes**(**nc**: character or see attribute **nodes**, **element**: character or numeric, **value**: numeric or vector(numeric) or character or vector(character), **condition**: character): see attribute **nodes**
- **get_nodes_from_items**(**nc**: character or see attribute **nodes**, **items**: vector(numeric), **condition**: character): see attribute **nodes**
- **get_nodes_from_characteristic**(**nc**: character or see attribute **nodes**, **characteristic**: character, **value**: numeric, **condition**: character): see attribute **nodes**
- **get_nodes_from_category**(**nc**: character or see attribute **nodes**, **category**: character or numeric, **value**: character, **condition**: character): see attribute **nodes**

- + **get_patterns**(**pc**: character or see attribute **patterns**, **element**: character or numeric, **value**: numeric or vector(numeric) or character or vector(character), **condition**: character): see attribute **patterns**
- **get_patterns_from_items**(**pc**: character or see attribute **patterns**, **items**: vector(numeric), **condition**: character): see attribute **patterns**

- **get_patterns_from_characteristic**(**pc**: character or see attribute **patterns**,
characteristic: character, **value**: numeric, **condition**: character):
see attribute **patterns**
- **get_patterns_from_status**(**pc**: character or see attribute **patterns**, **value**: vector(character),
condition: character): see attribute **patterns**
- **get_patterns_from_category**(**pc**: character or see attribute **patterns**,
category: character or numeric, **value**: character,
condition: character): see attribute **patterns**
- + **get_links**(**nopc**: character or see attribute **nodes** or **patterns**): see attribute **nodes_links** or
patterns_links
- + **get_isolates**(**nopc**: character or see attribute **nodes** or **patterns**): see attribute **nodes** or **patterns**
- + **get_non_isolates**(**nopc**: character or see attribute **nodes** or **patterns**): see attribute **nodes** or
patterns
- + **get_complexes**(**nopc**: character or see attribute **nodes** or **patterns**,
category: character or numeric, **condition**: character, **min_nb_values**: numeric):
see attribute **nodes** or **patterns**
- **check_access_for_category**(**category**: character or numeric, **value**: character, **stop**: logical): logical
- **get_nopc**(**nopc**: character or see attribute **nodes** or **patterns**, **entities**: character): see attribute
nodes or **patterns**
- **which_entities**(**npr**: see attribute **nodes** or **patterns** or return of function **extract_rules**,
entities: character): character