

# Attribute and method types of the SpectralAnalyzer class

Notation:

- $I$  designates the number of items.
- $C$  designates the number of separate categories associated with the items.
- $N$  designates the number of nodes.
- $P$  designates the number of patterns.
- $Y$  designates the number of years for which observations exist.

## Attributes

**observations:** list

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

**items:** vector(numeric)

**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:** data.frame

node	year	weight	length
vector(numeric)	numeric	numeric	numeric

**nodes:** data.frame

node	length	weight
vector(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

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(numeric)	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
numeric	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(numeric)	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(numeric)	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(numeric)	numeric	numeric

**define\_dynamic\_status**(patterns: list(vector(numeric)), status\_limit: numeric, t: numeric, period: numeric): data.frame

pattern	Status
vector(numeric)	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(numeric)	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, vertex\_size: character, path: character, name: character, title: character): list

[[ "vertices" ]]:

ID	node	length	weight
numeric	vector(numeric)	numeric	numeric

or

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

[[ "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, **item**: numeric, **vertex\_size**: character, **path**: character, **name**: character, **title**: character): list

[["vertices"]]:

ID	node	length	weight
numeric	vector(numeric)	numeric	numeric

or

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

[["edges"]]: see attribute **nodes\_links** or **patterns\_links**

**save\_characteristics**(**entities**: character, **characteristics**: see attribute **nodes** or **patterns**, ...)

**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\_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**

**check\_access\_for\_category**(**category**: character | numeric, **value**: character)

**extract\_patterns\_from\_category**(**category**: character | numeric, **value**: character,  
**target**: character): see attribute **patterns**

**extract\_nodes\_from\_category**(**category**: character | numeric, **value**: character,  
**target**: character): see attribute **nodes**