Package 'causalimage'

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Title causalimage: Smart Description Here

Version 2.0

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Description Description here.

Depends R (>= 3.3.3)

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Encoding UTF-8

LazyData true

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Imports Rsolnp

RoxygenNote 7.1.2

R topics documented:

`causalimage` *causalimage*

Description

This function (1) generates simulated causal structures using images and also (2) performs estimation using the methods described in CITES.

Usage

```
causalimage(
  dag,
  treatment = NULL,
  image_pool = NULL,
  analysis_level = "scene",
  control = list(),
  ...
)
```

Arguments

dag	*(character string)* An input DAG specifying causal structure. This input should be of the form `'i->t,i->y,t->y,....'` Currently, only one node in a DAG can be an image (this should be labeled "i"). The non-image nodes can have arbitrary string labels. The image can be a confounder, effect moderator, effect mediator. If the image is to be used as a moderator, use the notation, `t-i>y`.
treatment	*(character string, optional)* In estimation mode, users specify the treatment variable here. If `treatment` is specified, users must provide other data inputs to the DAG (see `...`).
image_pool	*(character string, optional)* The path to where analysis specific images are located. This can be specified both in simulation and estimation mode. If not specified, the simulation uses a pool of Landsat images from Nigeria.
analysis_level	*(character string, default is `'scene'`)* Defines the unit of analysis used in the simulation framework. This is ignored in estimation mode, where the unit of analysis is inferred from the data dimensions.
control	*(list)* A list containing control parameters in the data generating process.
...	*(optional)* In estimation mode, users input the data matrices associated with the non-image nodes of `DAG` and image node `i`. For example, if `x` is a DAG node, users must, in estimation mode, supply data to `x` in a form that can be coerced to a tensor.

Value

A list:

- In *simulation mode*, the function returns a list with as many elements as unique nodes in DAG. Each element represents the simulated data.
- In *estimation mode*,the function returns an estimated treatment effect with 95% confidence intervals.

References

- CITES

Examples

```
#set seed
set.seed(1)

# Simulation mode
#simulatedData <- causalimage('r->i, i->t, t->y, r->y')
```

```
#print(names(simulatedData))

# Estimation mode
#estimatedResults <- causalimage('r->i, i->t, t->y, r->y', y=y, r=r, y=y', treatment='t')
#print( estimatedResults )
```

`estimate` *estimate*

Description

Implements ...

Usage

```
estimate(dag = NULL, ...)
```

Arguments

DAG	'DAG'.

Value

A list consiting of

- Items.

References

- References here

Examples

```
#set seed
set.seed(1)

#Geneate data
x <- rnorm(100)
```

`simulate` *simulate*

Description

Implements ...

Usage

```
simulate(dag = NULL, ...)
```

Arguments

`DAG`	'DAG'. An input DAG specifying causal structure. Only one node in a DAG can be an image. The image can be a confounder, effect moderator, effect mediator,

Value

A list consiting of

- Items.

References

- References here

Examples

```
#set seed
set.seed(1)

#Geneate data
x <- rnorm(100)
```

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