

# Package ‘OpenRepGrid.ic’

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**Title** Interpretive Clustering for Repertory Grids

**Type** Package

**LazyLoad** yes

**Description** Shiny UI to identify cliques of related constructs in repertory grid data.  
See Burr, King, & Heckmann (2020) <doi:10.1080/14780887.2020.1794088> for a description of the interpretive clustering (IC) method.

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**Imports** graphics, grDevices, utils, shiny, shinyjs, shinyBS, shinythemes, shinyWidgets, shinydashboard, shinydashboardPlus, shinycssloaders, shinyFeedback, rintrojs, formattable, openxlsx, DT, magrittr, tidyverse, dplyr, stringr, reshape2, scales, splines, igraph, testthat, tidyr

**Suggests** knitr, rmarkdown, covr

**Encoding** UTF-8

**URL** <https://github.com/markheckmann/OpenRepGrid.ic>

**BugReports** <https://github.com/markheckmann/OpenRepGrid.ic/issues>

**RoxygenNote** 7.1.1

**NeedsCompilation** no

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**R topics documented:**

calculate_similarity . . . . .	2
check_excel_input . . . . .	2
create_excel_output . . . . .	3
ic . . . . .	3
network_graph_images . . . . .	4
OpenRepGrid.ic . . . . .	5

<b>Index</b>	<b>7</b>
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calculate\_similarity    *Calculate similarity matrix*

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**Description**

Calculate similarity matrix

**Usage**

```
calculate_similarity(x, min_matches = 6)
```

**Arguments**

x	Grid data.
min_matches	Minimal number of matches to considers constructs as related.

---

check\_excel\_input    *Check if Excel input file contains valid data*

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**Description**

Check if Excel input file contains valid data

**Usage**

```
check_excel_input(x)
```

**Arguments**

x	Data from Excel input file.
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create\_excel\_output     *Create output Excel file*

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### Description

Loads the supplied workbook and adds calculations

### Usage

```
create_excel_output(file, data = list())
```

### Arguments

file	Path to workbook.
data	Named list of data objects to add to Excel file. The following contents are expected: TODO

### Value

Path to saved file.

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ic     *Launch app in browser*

---

### Description

Launch app in browser

### Usage

```
ic(display.mode = "auto", launch.browser = TRUE)
```

### Arguments

display.mode	auto by default, can also be showcase. See <a href="#">runApp</a> .
launch.browser	Boolean, set TRUE (default) to open the app in the browser. See <a href="#">runApp</a> .

### Examples

```
if (interactive()) {  
  ic()  
}
```

---

network\_graph\_images *Build network graph plots*

---

### Description

Detects maximal cliques and saves images of network graphs into tempfile. Tempfile paths and info on cliques are returned.

### Usage

```
network_graph_images(  
  x,  
  min_clique_size = 3,  
  show_edges = TRUE,  
  min_matches = 6,  
  label_wrap_width = 15,  
  label_max_length = -1,  
  indicate_direction = TRUE,  
  colorize_direction = TRUE,  
  clique_fill = "#000000D",  
  seed = 0  
)
```

### Arguments

x	A dataframe with a grid.
min_clique_size	Minimal size of cliques to be considered.
show_edges	Whether to show edges in plot.
min_matches	Minimal number of matching scores between constructs to be marked as related.
label_wrap_width	Width of wrapped element label text.
label_max_length	Trim element label at max length characters.
indicate_direction, colorize_direction	Indicate direction of relatedness by +/- sign and edge color respectively.
clique_fill	Fill color of polygon encircling clique constructs. Use NA for no filling.
seed	Seed number passed to set.seed. Will determine the orientation of the graph.

## Description

The **OpenRepGrid.ic** package implements *Interpretive Clustering (IC)* as outlined in [Burr, King, and Heckmann \(2020\)](#). The authors describe a variant of construct clustering which uses a procedure from graph theory called **maximal cliques enumeration**. Given a similarity measure, in our case the number of matching scores between two constructs, a network graph of relatedness between constructs is construed. A clique is a group of constructs which are all mutually related, given some cut-off criterion for relatedness (e.g. 6 matching scores in a grid with 7 elements). While the paper also describes an offline approach to identify the construct cliques, this software automates the process. Under the hood, the package uses the `igraph` package for clique identification.

The package also contains a shiny based UI you can start via the function `ic()`. Visit <http://ic.openrepgrid.org> for an online version. Below you find an example of how to process a repgrid in an Excel file using code only.

## References

Burr, V. King, N. & Heckmann, M. (2020) The qualitative analysis of repertory grid data: Interpretive Clustering, *Qualitative Research in Psychology*, DOI: 10.1080/14780887.2020.1794088

## Examples

```
# The shiny package is just a small UI wrapper around the
# the workhorse core functions. Here is how to call them.

library(tidyverse)
library(openxlsx)
library(igraph)
library(OpenRepGrid.ic)

file <- system.file("extdata", "sylvia.xlsx", package = "OpenRepGrid.ic")
file_out <- str_replace(file, ".xlsx$", " CLIQUES.xlsx") %>% basename

x <- read.xlsx(file)          # read grid
tests <- check_excel_input(x) # check if input format is correct
l <- network_graph_images(x, min_clique_size = 3,
                          show_edges = TRUE,
                          min_matches = 6) # produce images
file_tmp <- create_excel_output(file, l)   # create Excel file

# copy Excel to working dir (commented out to avoid file generation during testing)
#file.copy(file_tmp, file_out, overwrite = TRUE)

# calculation results used in network_graph_images
# some of them are also contained in Excel file
s <- calculate_similarity(x)
s
```



# Index

\* **OpenRepGrid.ic**

OpenRepGrid.ic, [5](#)

\* **package**

OpenRepGrid.ic, [5](#)

calculate\_similarity, [2](#)

check\_excel\_input, [2](#)

create\_excel\_output, [3](#)

ic, [3](#)

network\_graph\_images, [4](#)

OpenRepGrid.ic, [5](#)

runApp, [3](#)