

# Package ‘giacR’

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**Title** Interface to the Computer Algebra System 'Giac'

**Version** 1.0.1

**Description** 'Giac'

<[https://www-fourier.ujf-grenoble.fr/~parisse/giac/doc/en/cascmd\\_en/cascmd\\_en.html](https://www-fourier.ujf-grenoble.fr/~parisse/giac/doc/en/cascmd_en/cascmd_en.html)>  
is a general purpose symbolic algebra software. It powers the graphical interface 'Xcas'. This package allows to execute 'Giac' commands in 'R'.

**License** GPL-3

**URL** <https://github.com/stla/giacR>

**BugReports** <https://github.com/stla/giacR/issues>

**Imports** chromote (>= 0.1.2), jsonlite, pingr, processx, R6, utils

**Encoding** UTF-8

**RoxygenNote** 7.2.3

**SystemRequirements** Chromium-based browser (Google Chrome, Brave, ...)

**NeedsCompilation** no

**Author** Stéphane Laurent [aut, cre],  
Renée De Graeve [cph] (Giac),  
Bernard Parisse [cph] (Giac)

**Maintainer** Stéphane Laurent <laurent\_step@outlook.fr>

**Repository** CRAN

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Giac

R6 class to access to Giac

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## Description

Creates an object allowing to execute Giac commands.

## Methods

### Public methods:

- [Giac\\$new\(\)](#)
- [Giac\\$execute\(\)](#)
- [Giac\\$implicitization\(\)](#)
- [Giac\\$close\(\)](#)

**Method new():** Create a new Giac instance.

*Usage:*

```
Giac$new(chromePath = find_chrome())
```

*Arguments:*

chromePath path to the Chrome executable (or Chromium, Brave, etc); if find\_chrome() does not work, you can set the environment variable CHROMOTE\_CHROME to the path and it will work

*Returns:* A Giac object.

**Method execute():** Execute a Giac command.

*Usage:*

```
Giac$execute(command, timeout = 10000)
```

*Arguments:*

command the command to be executed given as a character string  
timeout timeout in milliseconds

*Returns:* The result of the command in a character string.

*Examples:*

```
if(!is.null(chromote::find_chrome())) {  
  giac <- Giac$new()  
  giac$execute("2 + 3/7")  
  giac$execute("integrate(ln(x))")  
  giac$close()  
}
```

**Method implicitization():** Gröbner implicitization (see examples)

*Usage:*

```
Giac$implicitization(
  equations,
  relations = "",
  variables,
  constants = "",
  timeout = 10000
)
```

*Arguments:*

equations comma-separated equations

relations comma-separated relations, or an empty string if there is no relation; the relations between the constants must be placed first, followed by the relations between the variables

variables comma-separated variables

constants comma-separated constants, or an empty string if there is no constant

timeout timeout in milliseconds

*Returns:* The implicitization of the equations.

*Examples:*

```
library(giacR)
if(!is.null(chromote::find_chrome())) {
  giac <- Giac$new()
  giac$implicitization(
    equations = "x = a*cos(t), y = b*sin(t)",
    relations = "cos(t)^2 + sin(t)^2 = 1",
    variables = "cos(t), sin(t)",
    constants = "a, b"
  )
  giac$close()
}
```

**Method** close(): Close a Giac session

*Usage:*

```
Giac$close()
```

*Returns:* TRUE or FALSE, whether the session has been closed.

**Examples**

```
## -----
## Method `Giac$execute`
## -----

if(!is.null(chromote::find_chrome())) {
  giac <- Giac$new()
  giac$execute("2 + 3/7")
  giac$execute("integrate(ln(x))")
  giac$close()
}
```

```
## -----  
## Method `Giac$implicitization`  
## -----  
  
library(giacR)  
if(!is.null(chromote::find_chrome())) {  
  giac <- Giac$new()  
  giac$implicitization(  
    equations = "x = a*cos(t), y = b*sin(t)",  
    relations = "cos(t)^2 + sin(t)^2 = 1",  
    variables = "cos(t), sin(t)",  
    constants = "a, b"  
  )  
  giac$close()  
}
```

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