

# Package ‘delayed’

April 29, 2024

**Title** A Framework for Parallelizing Dependent Tasks

**Version** 0.5.0

**Description** Mechanisms to parallelize dependent tasks in a manner that optimizes the compute resources available. It provides access to ``delayed`` computations, which may be parallelized using futures. It is, to an extent, a facsimile of the 'Dask' library (<<https://www.dask.org/>>), for the 'Python' language.

**Depends** R (>= 3.2.0)

**Imports** R6, igraph, future, rstackdeque, rlang, data.table, visNetwork, uuid, BBmisc, progress, R.utils, R.oo

**Suggests** testthat, knitr, rmarkdown, shiny

**License** GPL-3

**URL** <https://tlverse.org/delayed/>

**BugReports** <https://github.com/tlverse/delayed/issues>

**Encoding** UTF-8

**VignetteBuilder** knitr

**RoxygenNote** 7.2.0

**NeedsCompilation** no

**Author** Jeremy Coyle [aut, cre, cph] (<<https://orcid.org/0000-0002-9874-6649>>),  
Nima Hejazi [ctb] (<<https://orcid.org/0000-0002-7127-2789>>)

**Maintainer** Jeremy Coyle <jeremyrcoyle@gmail.com>

**Repository** CRAN

**Date/Publication** 2024-04-29 17:40:02 UTC

## R topics documented:

Delayed	2
delayed	2
eval_delayed	3
find_delayed_error	3

FutureJob . . . . .	4
plot.Delayed . . . . .	4
plot_delayed_shiny . . . . .	5
Scheduler . . . . .	5
SequentialJob . . . . .	6

<b>Index</b>	<b>7</b>
--------------	----------

---

Delayed	<i>Delayed class that manages dependencies and computes when necessary</i>
---------	--

---

### Description

Delayed class that manages dependencies and computes when necessary

### Examples

```
d <- delayed(3 + 4)
methods::is(d, "Delayed")
d$compute()
```

---

delayed	<i>Generates Delayed Version of an Expression</i>
---------	---

---

### Description

A Delayed version of a function may be called to generate Delayed objects

### Usage

```
delayed(expr, sequential = FALSE, expect_error = FALSE, timeout = NULL)
```

```
delayed_fun(fun, sequential = FALSE, expect_error = FALSE)
```

### Arguments

expr	expression to delay
sequential	if TRUE, never parallelize this task
expect_error	if TRUE, pass error to downstream tasks instead of
timeout	specify a time limit for computation halting computation
fun	function to delay

**Examples**

```
d <- delayed(3 + 4)
d$compute()
adder <- function(x, y) {
  x + y
}
delayed_adder <- delayed_fun(adder)
z <- delayed_adder(3, 4)
z$compute()
```

---

eval_delayed	<i>Helper Function to Evaluate Delayed</i>
--------------	--

---

**Description**

Helper Function to Evaluate Delayed

**Usage**

```
eval_delayed(to_eval, timeout = Inf)
```

**Arguments**

to_eval	a list as generated from Delayed\$prepare_eval()
timeout	a timeout indicating when to terminate the job

---

find_delayed_error	<i>Find error in delayed chain</i>
--------------------	------------------------------------

---

**Description**

Searches through a network of delayed objects for the first object with state "error"

**Usage**

```
find_delayed_error(delayed_object)
```

**Arguments**

delayed_object	the object in which an error occurred
----------------	---------------------------------------

**Examples**

```
delayed_error <- delayed_fun(stop)
error_message <- "this is an error"
broken_delayed <- delayed_error(error_message)
broken_delayed$expect_error <- TRUE
result <- broken_delayed$compute()
```

---

FutureJob

*Future Delayed Jobs*


---

### Description

A Job that leverages the future framework to evaluate asynchronously.

### Examples

```
library(future)
plan(multicore, workers = 1)
d <- delayed(3 + 4)
sched <- Scheduler$new(d, FutureJob, nworkers = 1)
```

---

plot.Delayed

*Plot Method for Delayed Objects*


---

### Description

Plot Method for Delayed Objects

### Usage

```
## S3 method for class 'Delayed'
plot(x, color = TRUE, height = "500px", width = "100%", ...)
```

### Arguments

x	An object of class Delayed for which a task dependency graph will be generated.
color	If TRUE, color-code nodes according to status, and display legend
height	passed to visNetwork
width	passed to visNetwork
...	Additional arguments (passed to visNetwork).

### Examples

```
adder <- function(x, y) {
  x + y
}
delayed_adder <- delayed_fun(adder)
z <- delayed_adder(3, 4)
z2 <- delayed_adder(z, 4)
z2$sequential <- TRUE
z3 <- delayed_adder(z2, z)
plot(z3)
```

---

plot\_delayed\_shiny      *Animated Representation a Task Dependency Structure*

---

**Description**

uses shiny

**Usage**

```
plot_delayed_shiny(scheduler)
```

**Arguments**

scheduler      the scheduler to animate

**Examples**

```
## Not run:
adder <- function(x, y) {
  x + y
}
delayed_adder <- delayed_fun(adder)
z <- delayed_adder(3, 4)
z2 <- delayed_adder(z, 4)
z2$sequential <- TRUE
z3 <- delayed_adder(z2, z)
plot_delayed_shiny(z3)

## End(Not run)
```

---

Scheduler      *Scheduler class that orders compute tasks and dispatches tasks to workers*

---

**Description**

Scheduler class that orders compute tasks and dispatches tasks to workers

**Examples**

```
d <- delayed(3 + 4)
sched <- Scheduler$new(d, SequentialJob)
sched$compute()
```

---

SequentialJob

*Sequential Delayed Jobs*

---

**Description**

A Job that will evaluate immediately (i.e., in a sequential fashion), blocking the current process until it completes.

**Examples**

```
d <- delayed(3 + 4)
sched <- Scheduler$new(d, SequentialJob)
```

# Index

Delayed, [2](#)  
delayed, [2](#)  
delayed\_fun (delayed), [2](#)  
  
eval\_delayed, [3](#)  
  
find\_delayed\_error, [3](#)  
FutureJob, [4](#)  
  
plot.Delayed, [4](#)  
plot\_delayed\_shiny, [5](#)  
  
Scheduler, [5](#)  
SequentialJob, [6](#)