

Package ‘proffer’

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Title Profile R Code and Visualize with 'Pprof'

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URL <https://github.com/r-prof/proffer>,
<https://r-prof.github.io/proffer/>

BugReports <https://github.com/r-prof/proffer/issues>

Description Like similar profiling tools, the 'proffer' package automatically detects sources of slowness in R code. The distinguishing feature of 'proffer' is its utilization of 'pprof', which supplies interactive visualizations that are efficient and easy to interpret. Behind the scenes, the 'profile' package converts native Rprof() data to a protocol buffer that 'pprof' understands. For the documentation of 'proffer', visit <https://r-prof.github.io/proffer/>. To learn about the implementations and methodologies of 'pprof', 'profile', and protocol buffers, visit <https://github.com/google/pprof>, <https://developers.google.com/protocol-buffers>, and <https://github.com/r-prof/profile>, respectively.

Depends R (>= 3.3.0)

Imports cli (>= 2.0.0), parallelly (>= 1.26.0), pingr (>= 2.0.1), processx (>= 3.4.0), profile (>= 1.0), RProtoBuf (>= 0.4.14), utils, withr (>= 2.1.2)

Suggests testthat (>= 2.1.0)

SystemRequirements Graphviz (<https://www.graphviz.org/>), pprof (<https://github.com/google/pprof>)

RoxygenNote 7.2.3

NeedsCompilation no

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proffer-package *proffer: profile R code with pprof*

Description

It can be challenging to find sources of slowness in large workflows, and the proffer package can help. Proffer runs R code and displays summaries to show where the code is slowest. Proffer leverages the pprof utility to create highly efficient, clear, easy-to-read interactive displays that help users find ways to reduce runtime. The package also contains helpers to convert profiling data to and from pprof format and visualize existing profiling data files. For documentation, visit <https://r-prof.github.io/proffer/>.

Author(s)

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References

<https://github.com/r-prof/proffer>

Examples

```
# TBD
if (identical(Sys.getenv("PROFFER_EXAMPLES"), "true")) {
# Start a pprof virtual server in the background.
px <- pprof(replicate(1e2, sample.int(1e4)))
# Terminate the server.
px$kill()
}
```

install_go

Install pprof and Go on Linux

Description

On Linux, this function actually installs Go, which comes with its own installation of pprof. On Mac and Windows, the function simply points the user to a link to download the installer. Assumes amd64 architecture.

Usage

```
install_go(destination = Sys.getenv("HOME"), version = "1.19.5", quiet = FALSE)
```

Arguments

destination	Only relevant to Linux, full path to the Go installation with the pprof and Go executables. Defaults to <code>Sys.getenv("HOME")</code> , which means the default Go installation path is <code>file.path(Sys.getenv("HOME"), "go")</code> . That means the Go binary will be at <code>file.path(Sys.getenv("HOME"), "go/bin/go")</code> and pprof will be at <code>file.path(Sys.getenv("HOME"), "go/pkg/tool/linux_amd64/pprof")</code> . You will need to set environment variables in your <code>.Renv</code> file, e.g. <code>PROFFER_PPROF_BIN=/home/you/go/pkg/tool/linux_amd64/pprof</code> and <code>PROFFER_GO_BIN=/home/you/go/bin/go</code> . <code>usethis::edit_r_envron()</code> is helpful for this.
version	Character, a version string such as "1.19.5".
quiet	Logical, whether to suppress console messages.

Details

On Linux, users will need to set the environment variables `PROFFER_PPROF_BIN` and `PROFFER_GO_BIN` using `usethis::edit_r_envron()`. Typically, if `destination` is `/home/you`, then typically those lines look like `PROFFER_GO_BIN=/home/you/go/pkg/tool/linux_amd64/pprof` `PROFFER_PPROF_BIN=/home/you/g`

pprof

*Profile R code and visualize with pprof.***Description**

Run R code and display profiling results in a local interactive pprof server. Results are collected with `record_pprof()`.

Usage

```
pprof(
  expr,
  host = "localhost",
  port = proffer::random_port(),
  browse = interactive(),
  verbose = TRUE,
  ...
)
```

Arguments

<code>expr</code>	R code to run and profile.
<code>host</code>	Host name. Set to "localhost" to view locally or "0.0.0.0" to view from another machine. If you view from another machine, the printed out URL will not be valid. For example, if <code>pprof()</code> or <code>serve_pprof()</code> prints "http://0.0.0.0:8080", then you need to replace 0.0.0.0 with your computer's name or IP address, e.g. "http://my_computer.com:8080".
<code>port</code>	Port number for hosting the local pprof server. Chosen randomly by default.
<code>browse</code>	Logical, whether to open a browser to view the pprof server.
<code>verbose</code>	Logical, whether to print console messages such as the URL of the local pprof server.
<code>...</code>	Additional arguments passed on to <code>Rprof()</code> via <code>record_pprof()</code> .

Value

A `processx::process$new()` handle. Use this handle to take down the server with `$kill()`.

Examples

```
if (identical(Sys.getenv("PROFFER_EXAMPLES"), "true")) {
  # Start a pprof virtual server in the background.
  px <- pprof(replicate(1e2, sample.int(1e4)))
  # Terminate the server.
  px$kill()
}
```

pprof_path

Show the path to the pprof executable.

Description

Defaults to the PROFFER_PPROF_BIN environment variable. Otherwise, it searches your Go lang installation for pprof.

Usage

pprof_path()

Details

See <https://github.com/r-prof/proffer#installation> for setup instructions.

Value

Character, path to pprof it exists and "" otherwise.

Examples

```
if (identical(Sys.getenv("PROFFER_EXAMPLES"), "true")) {  
  pprof_path()  
}
```

pprof_sitrep

Verify pprof installation

Description

Check if pprof and its dependencies are installed.

Usage

pprof_sitrep()

Examples

pprof_sitrep()

random_port	<i>Choose a random free TCP port.</i>
-------------	---------------------------------------

Description

Choose a random free TCP port.

Usage

```
random_port(lower = 49152L, upper = 65535L)
```

Arguments

lower	Integer of length 1, lower bound of the port number.
upper	Integer of length 1, upper bound of the port number.

Details

This function is a simple wrapper around `parallely::freePort()` with the default port range covering ephemeral ports only.

Value

Port number, positive integer of length 1.

Examples

```
random_port()
```

record_pprof	<i>Profile R code and record pprof samples.</i>
--------------	---

Description

Run R code and record pprof samples. Profiles are recorded with `record_rprof()` and then converted with `to_pprof()`.

Usage

```
record_pprof(expr, pprof = tempfile(), ...)
```

Arguments

expr	An R expression to profile.
pprof	Path to a file with pprof samples. Also returned from the function.
...	Additional arguments passed on to <code>Rprof()</code> via <code>record_rprof()</code> .

Value

Path to a file with pprof samples.

Examples

```
if (identical(Sys.getenv("PROFFER_EXAMPLES"), "true")) {  
  # Returns a path to pprof samples.  
  record_pprof(replicate(1e2, sample.int(1e4)))  
}
```

record_rprof	<i>Profile R code and record Rprof samples.</i>
--------------	---

Description

Run R code and record Rprof samples.

Usage

```
record_rprof(expr, rprof = tempfile(), ...)
```

Arguments

expr	An R expression to profile.
rprof	Path to a file with Rprof samples. Also returned from the function.
...	Additional arguments passed on to Rprof() .

Value

Path to a file with Rprof samples.

Examples

```
if (identical(Sys.getenv("PROFFER_EXAMPLES"), "true")) {  
  # Returns a path to Rprof samples.  
  record_rprof(replicate(1e2, sample.int(1e4)))  
}
```

serve_pprof *Visualize profiling data with pprof.*

Description

Visualize profiling data with pprof.

Usage

```
serve_pprof(
  pprof,
  host = "localhost",
  port = proffer::random_port(),
  browse = interactive(),
  verbose = TRUE
)
```

Arguments

pprof	Path to pprof samples.
host	Host name. Set to "localhost" to view locally or "0.0.0.0" to view from another machine. If you view from another machine, the printed out URL will not be valid. For example, if pprof() or serve_pprof() prints "http://0.0.0.0:8080", then you need to replace 0.0.0.0 with your computer's name or IP address, e.g. "http://my_computer.com:8080".
port	Port number for hosting the local pprof server. Chosen randomly by default.
browse	Logical, whether to open a browser to view the pprof server.
verbose	Logical, whether to print console messages such as the URL of the local pprof server.

Details

Uses a local interactive server. Navigate a browser to a URL in the message. The server starts in a background process

Value

A `processx::process$new()` handle. Use this handle to take down the server with `$kill()`.

Examples

```
if (identical(Sys.getenv("PROFFER_EXAMPLES"), "true")) {
  pprof <- record_pprof(replicate(1e2, sample.int(1e4)))
  # Start a pprof virtual server in the background.
  px <- serve_pprof(pprof)
  # Terminate the server.
  px$kill()
}
```

serve_rprof	<i>Visualize Rprof() output with pprof.</i>
-------------	---

Description

Use pprof to visualize profiling data produced by Rprof() or [record_rprof\(\)](#).

Usage

```
serve_rprof(
  rprof,
  host = "localhost",
  port = proffer::random_port(),
  browse = interactive(),
  verbose = TRUE
)
```

Arguments

rprof	Path to profiling samples generated by Rprof() or record_rprof() .
host	Host name. Set to "localhost" to view locally or "0.0.0.0" to view from another machine. If you view from another machine, the printed out URL will not be valid. For example, if pprof() or serve_pprof() prints "http://0.0.0.0:8080", then you need to replace 0.0.0.0 with your computer's name or IP address, e.g. "http://my_computer.com:8080".
port	Port number for hosting the local pprof server. Chosen randomly by default.
browse	Logical, whether to open a browser to view the pprof server.
verbose	Logical, whether to print console messages such as the URL of the local pprof server.

Details

Uses a local interactive server. Navigate a browser to a URL in the message. The server starts in a background process

Value

A `processx::process$new()` handle. Use this handle to take down the server with `$kill()`.

Examples

```
if (identical(Sys.getenv("PROFFER_EXAMPLES"), "true")) {
  rprof <- record_rprof(replicate(1e2, sample.int(1e4)))
  # Start a pprof virtual server in the background.
  px <- serve_rprof(rprof)
  # Terminate the server.
  px$kill()
}
```

`test_pprof`*Test pprof()*

Description

Do a test run of `pprof()` to verify that the system dependencies like `pprof` work as expected.

Usage

```
test_pprof(  
    host = "localhost",  
    port = proffer::random_port(),  
    browse = interactive(),  
    verbose = TRUE  
)
```

Arguments

<code>host</code>	Host name. Set to "localhost" to view locally or "0.0.0.0" to view from another machine. If you view from another machine, the printed out URL will not be valid. For example, if <code>pprof()</code> or <code>serve_pprof()</code> prints "http://0.0.0.0:8080", then you need to replace 0.0.0.0 with your computer's name or IP address, e.g. "http://my_computer.com:8080".
<code>port</code>	Port number for hosting the local <code>pprof</code> server. Chosen randomly by default.
<code>browse</code>	Logical, whether to open a browser to view the <code>pprof</code> server.
<code>verbose</code>	Logical, whether to print console messages such as the URL of the local <code>pprof</code> server.

Details

See <https://github.com/r-prof/proffer#installation> for setup instructions.

See Also

[pprof\(\)](#)

Examples

```
if (identical(Sys.getenv("PROFFER_EXAMPLES"), "true")) {  
  test_pprof()  
}
```

to_pprof	<i>Convert Rprof samples to pprof format.</i>
----------	---

Description

Convert Rprof samples to pprof format.

Usage

```
to_pprof(rprof, pprof = tempfile())
```

Arguments

rprof	Path to Rprof samples.
pprof	Path to pprof samples.

Value

Path to pprof samples.

Examples

```
if (identical(Sys.getenv("PROFFER_EXAMPLES"), "true")) {  
  rprof <- record_rprof(replicate(1e2, sample.int(1e4)))  
  to_pprof(rprof)  
}
```

to_rprof	<i>Convert pprof samples to Rprof format.</i>
----------	---

Description

Convert pprof samples to Rprof format.

Usage

```
to_rprof(pprof, rprof = tempfile())
```

Arguments

pprof	Path to pprof samples.
rprof	Path to Rprof samples.

Value

Path to pprof samples.

Examples

```
if (identical(Sys.getenv("PROFFER_EXAMPLES"), "true")) {  
  pprof <- record_pprof(replicate(1e2, sample.int(1e4)))  
  to_rprof(pprof)  
}
```

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