Package 'proffer'

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Title Profile R Code and Visualize with 'Pprof'

Version 0.2.2

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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://protobuf.dev>,
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), R.utils, RProtoBuf (>=
0.4.14), utils, withr (>= 2.1.2)

Suggests testthat (>= 2.1.0)

SystemRequirements pprof (https://github.com/google/pprof)

RoxygenNote 7.3.2

NeedsCompilation no

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Contents

`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/.

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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()
}
```

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

Arguments

`expr`	R code to run and profile.
`seconds_timeout`	Maximum number of seconds of elapsed time to profile `expr`. When the timeout is reached, `proffer` stops running `expr` and returns the profiling samples taken during the `seconds_timeout` time window.
`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.
`...`	Additional arguments passed on to `Rprof()` via `record_pprof()`.

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_sitrep *Verify pprof installation*

Description

Check if `pprof` and its dependencies are installed.

Usage

```
pprof_sitrep()
```

Examples

```
pprof_sitrep()
```

---

random_port *Choose a random free TCP port.*

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 `parallelly::freePort()` with the default port range covering ephemeral ports only.

Value

Port number, positive integer of length 1.

Examples

```
random_port()
```

`record_pprof` *Profile R code and record pprof samples.*

Description

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

Usage

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

Arguments

`expr`	An R expression to profile.
`seconds_timeout`	Maximum number of seconds of elapsed time to profile `expr`. When the timeout is reached, `proffer` stops running `expr` and returns the profiling samples taken during the `seconds_timeout` time window.
`pprof`	Path to a file with pprof samples. Also returned from the function.
`...`	Additional arguments passed on to `Rprof()`.

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 *Profile R code and record Rprof samples.*

Description

Run R code and record Rprof samples.

Usage

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

Arguments

expr	An R expression to profile.
seconds_timeout	Maximum number of seconds of elapsed time to profile `expr`. When the timeout is reached, `proffer` stops running `expr` and returns the profiling samples taken during the `seconds_timeout` time window.
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 *Visualize Rprof() output with pprof.*

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

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

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 *Convert Rprof samples to pprof format.*

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` *Convert pprof samples to Rprof format.*

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)
}
```

Index