

# Package ‘cmdfun’

October 10, 2020

**Type** Package

**Title** Framework for Building Interfaces to Shell Commands

**Version** 1.0.2

**Description** Writing interfaces to command line software is cumbersome. 'cmdfun' provides a framework for building function calls to seamlessly interface with shell commands by allowing lazy evaluation of command line arguments. 'cmdfun' also provides methods for handling user-specific paths to tool installs or secrets like API keys. Its focus is to equally serve package builders who wish to wrap command line software, and to help analysts stay inside R when they might usually leave to execute non-R software.

**License** MIT + file LICENSE

**Encoding** UTF-8

**LazyData** true

**Imports** magrittr, purrr, R.utils, rlang, testthat, usethis, utils

**RoxygenNote** 7.0.2

**Suggests** cli, covr, knitr, processx, rmarkdown

**VignetteBuilder** knitr

**URL** <https://snystrom.github.io/cmdfun/>,  
<https://github.com/snystrom/cmdfun>

**BugReports** <https://github.com/snystrom/cmdfun>

**NeedsCompilation** no

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**Repository** CRAN

**Date/Publication** 2020-10-10 09:30:03 UTC

**R topics documented:**

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---

`.check_valid_command_path`

*Checks path is valid*

---

**Description**

Not meant to be called directly

**Usage**

```
.check_valid_command_path(path)
```

**Arguments**

`path` path to file or directory

**Value**

expanded system path

### Examples

```
if (.Platform$OS.type == "unix" & file.exists("~/bin")) {  
  # will return /full/path/to/home/bin, or error if path doesn't exist  
  .check_valid_command_path("~/bin")  
}
```

---

.check\_valid\_util      *Checks for valid members of subdirectory*

---

### Description

Not meant to be called directly

### Usage

```
.check_valid_util(util, utils = NULL, path = NULL)
```

### Arguments

util	name of target located in path
utils	name of supported targets in path
path	path to directory

### Value

safe path to util, or error if util does not exist

### Examples

```
if (.Platform$OS.type == "unix") {  
  # this will return /full/path/to/bin  
  # or return an error for all values of util that are not "ls" and "pwd"  
  # or error if "ls" does not exist in "/bin"  
  .check_valid_util("ls", utils = c("ls", "pwd"), "/bin")  
  
  ## Not run:  
  # This will throw error  
  .check_valid_util("badUtil", utils = c("ls", "pwd"), "/bin")  
  
  ## End(Not run)  
}
```

---

cmd_args_all	<i>Return all named arguments and arguments passed as dots from parent function call</i>
--------------	--

---

**Description**

Return all named arguments and arguments passed as dots from parent function call

**Usage**

```
cmd_args_all(keep = NULL, drop = NULL)
```

**Arguments**

keep	name of arguments to keep
drop	name of arguments to drop (NOTE: keep or drop are mutually exclusive settings)

**Value**

named list of all arguments passed to parent

**Examples**

```
theFunction <- function(arg1, ...) { cmd_args_all() }  
theArgs <- theFunction(arg1 = "test", example = "hello")
```

---

cmd_args_dots	<i>return function dots from parent function as named list</i>
---------------	--

---

**Description**

return function dots from parent function as named list

**Usage**

```
cmd_args_dots(keep = NULL, drop = NULL)
```

**Arguments**

keep	name of arguments to keep
drop	name of arguments to drop (NOTE: keep or drop are mutually exclusive settings)

**Value**

named list of kwargs from ...

**Examples**

```
theFunction <- function(...) { cmd_args_dots() }  
theDots <- theFunction(example = "hello", boolFlag = TRUE, vectorFlag = c(1,2,3))
```

---

cmd_args_named	<i>Return all named arguments from parent function call</i>
----------------	---

---

**Description**

Return all named arguments from parent function call

**Usage**

```
cmd_args_named(keep = NULL, drop = NULL)
```

**Arguments**

keep	name of arguments to keep
drop	name of arguments to drop (NOTE: keep or drop are mutually exclusive settings)

**Value**

named list of all defined function arguments from parent

**Examples**

```
theFunction <- function(arg1, ...) { cmd_args_named() }  
theNamedArgs <- theFunction(arg1 = "test", example = "hello")
```

---

cmd_error_if_missing	<i>Check that file(s) exist, error if not</i>
----------------------	---

---

**Description**

Check that file(s) exist, error if not

**Usage**

```
cmd_error_if_missing(files)
```

**Arguments**

files	list or vector of paths to check
-------	----------------------------------

**Value**

nothing or error message for each missing file

**Examples**

```
cmd_error_if_missing(tempdir())
## Not run:
# Throws error if file doesn't exist
cmd_error_if_missing(file.path(tempdir(), "notreal"))

## End(Not run)
```

---

cmd_file_combn	<i>Generates list of expected output files</i>
----------------	--

---

**Description**

See documentation of cmd\_file\_expect() for more details about how this works

**Usage**

```
cmd_file_combn(prefix, ext, outdir = ".")
```

**Arguments**

prefix	file name to be given each ext. If a character vector, must be equal length of ext or shorter
ext	file extension (no ".", ie "txt", "html")
outdir	optional directory where files should exist

**Value**

list of file paths by each ext or prefix (whichever is longer)

**Examples**

```
# Makes list for many file types of same prefix
# ie myFile.txt, myFile.html, myFile.xml
cmd_file_combn("myFile", c("txt", "html", "xml"))

# Makes list for many files of same type
# ie myFile1.txt, myFile2.txt, myFile3.txt
cmd_file_combn(c("myFile1", "myFile2", "myFile3"), "txt")
```

---

cmd_file_expect	<i>Creates list of paths by file extension &amp; checks they exist</i>
-----------------	--

---

### Description

Ext or prefix can be a vector or single character. The shorter value will be propagated across all values of the other. See Examples for details.

### Usage

```
cmd_file_expect(prefix, ext, outdir = ".")
```

### Arguments

prefix	name of file prefix for each extension.
ext	vector of file extensions
outdir	directory the files will be inside

### Details

If files are not found, throws an error

### Value

vector of valid file paths

### Examples

```
## Not run:
# Expects many file types of same prefix
# ie myFile.txt, myFile.html, myFile.xml
cmd_file_expect("myFile", c("txt", "html", "xml"))

# Expects many files of same type
# ie myFile1.txt, myFile2.txt, myFile3.txt
cmd_file_expect(c("myFile1", "myFile2", "myFile3"), "txt")

# Expects many files with each prefix and each extension
# ie myFile1.txt, myFile1.html, myFile2.txt, myFile2.html
cmd_file_expect(c("myFile1", "myFile2"), c("txt", "html"))

## End(Not run)
```

---

 cmd\_help\_flags\_similar

*Suggest alternative name by minimizing Levenshtein edit distance between valid and invalid arguments*

---

## Description

Suggest alternative name by minimizing Levenshtein edit distance between valid and invalid arguments

## Usage

```
cmd_help_flags_similar(
  command_flag_names,
  flags,
  .fun = NULL,
  distance_cutoff = 3L
)
```

## Arguments

`command_flag_names` character vector of valid names (can be output of [cmd\\_help\\_parse\\_flags](#))

`flags` a vector names correspond to values to be checked against `command_flag_names`

`.fun` optional function to apply to `command_flag_names` and `flags` before checking their values. If using a function to rename flags after `cmd_list_interp`, use that same function here. Can be useful for parsing help lines into R-friendly variable names for user-convenience. Can be function or `rlang`-style formula definition (ie `.fun = ~{foo(.x)}` is the same as `.fun = function(x){foo(x)}`). Note: if `command_flag_names` need additional parsing after [cmd\\_help\\_parse\\_flags](#), it is best to do that preprocessing before passing them to this function.

`distance_cutoff` Levenshtein edit distance beyond which to suggest ??? instead of most similar argument (default = 3). Setting this too liberally will result in nonsensical suggestions.

## Value

named vector where names are names from `flags` and their values are the suggested best match from `command_flag_names`

## Examples

```
# with a flagsList, need to pass names()
flagsList <- list("output" = "somevalue", "missp1ld" = "anotherValue")
cmd_help_flags_similar(c("output", "misspelled"), names(flagsList))
```



```
command_flags <- c("long-flag-name")
flags <- c("long_flag_nae")
cmd_help_flags_similar(command_flags, flags, .fun = ~{gsub("-", "_", .x)})

# returns NULL if no errors
cmd_help_flags_similar(c("test"), "test")
```

---

cmd\_help\_flags\_suggest

*Error & Suggest different flag name to user*

---

## Description

Error & Suggest different flag name to user

## Usage

```
cmd_help_flags_suggest(suggest_names)
```

## Arguments

`suggest_names` named character vector, names correspond to original value, values correspond to suggested replacement.

## Value

error message suggesting alternatives to user

## Examples

```
user_flags <- list("output", "inpt")
valid_flags <- c("output", "input")
suggestions <- cmd_help_flags_similar(valid_flags, user_flags)
## Not run:
# Throws error
cmd_help_flags_suggest(suggestions)

## End(Not run)
```

---

cmd\_help\_parse\_flags *Parses commandline help options to return vector of valid flag names*

---

### Description

When using cmdfun to write lazy shell wrappers, the user can easily mistype a commandline flag since there is not text completion. Some programs behave unexpectedly when flags are typed incorrectly, and for this reason return uninformative error messages.

### Usage

```
cmd_help_parse_flags(help_lines, split_newline = FALSE)
```

### Arguments

help_lines	character vector containing the output of "command -help", or similar output. Optional: pass either stdout, or stderr output from processx::run(), must set processx = TRUE.
split_newline	logical(1) if set to TRUE will split string on "\n" before parsing (useful when parsing output from processx).

### Details

cmd\_help\_parse\_flags tries to grab flags from -help documentation which can be used for error checking. It will try to parse flags following "-" or "--" while ignoring hyphenated words in help text. Although this should cover most use-cases, it may be necessary to write a custom help-text parser for nonstandard tools. Inspect this output **carefully** before proceeding. Most often, characters are leftover at the **end** of parsed names, which will require additional parsing.

### Value

character vector of flag names parsed from help text

### See Also

[cmd\\_help\\_flags\\_similar](#) [cmd\\_help\\_flags\\_suggest](#)

### Examples

```
if (.Platform$OS.type == "unix" & file.exists("/bin/tar")) {
# below are two examples parsing the --help method of GNU tar

# with processx
if (require(processx)) {
out <- processx::run("tar", "--help", error_on_status = FALSE)
fn_flags <- cmd_help_parse_flags(out$stdout, split_newline = TRUE)
}
```

```

# with system2
lines <- system2("tar", "--help", stderr = TRUE)
fn_flags <- cmd_help_parse_flags(lines)

# NOTE: some of the "tar" flags contain the extra characters: "\[", "\)", and ";"
# ie "one-top-level\[ " which should be "one-top-level"
# These can be additionally parsed using
gsub("[\\[;\\)]", "", fn_flags)
}

```

---

cmd\_install\_check      *Wrapper function for checking an install*

---

### Description

This function can be lightly wrapped by package builders to build a user-friendly install checking function.

### Usage

```
cmd_install_check(path_search, path = NULL)
```

### Arguments

path_search	function output of cmd_path_search()
path	user-override path to check (identical to path argument of cmd_path_search() output)

### Value

pretty printed message indicating whether files exists or not. Green check = Yes, red X = No.

### Examples

```

## Not run:
path_search <- cmd_path_search(default = "/bin", utils = "ls")
cmd_install_check(path_search)

## End(Not run)

```

---

cmd\_install\_is\_valid *Macro for constructing boolean check for valid path*

---

### Description

Macro for constructing boolean check for valid path

### Usage

```
cmd_install_is_valid(path_search, util = NULL)
```

### Arguments

path_search	function output of cmd_path_search() <b>NOTE:</b> When passing the function, do not pass as: fun(), but fun to avoid evaluation.
util	value to pass to util argument of path_search, allows building individual functions for each util (if passing one of each), or for simultaneously checking all utils if setting util = TRUE. Will cause error if util = TRUE but no utils are defined. <b>NOTE:</b> There is no error checking for whether util is set correctly during the build process, so ensure correct spelling, etc. to avoid cryptic failures.

### Value

a function returning TRUE or FALSE if a valid install is detected. With arguments: path (a path to install location), util an optional character(1) to

### Examples

```
if (.Platform$OS.type == "unix") {
  search <- cmd_path_search(option_name = "bin_path", default_path = "/bin/")
  valid_install <- cmd_install_is_valid(search)
  # Returns TRUE if "/bin/" exists
  valid_install()
  # Returns FALSE if "bad/path/" doesn't exist
  valid_install("bad/path/")

  # Also works with options
  search_option_only <- cmd_path_search(option_name = "bin_path")
  valid_install2 <- cmd_install_is_valid(search_option_only)
  options(bin_path = "/bin/")
  valid_install2()

  # Setting util = TRUE will check that all utils are also installed
  search_with_utils <- cmd_path_search(default_path = "/bin", utils = c("ls", "pwd"))
  valid_install_all <- cmd_install_is_valid(search_with_utils, util = TRUE)
  valid_install_all()
}
```

---

cmd_list_drop	<i>Drop entries from list of flags by name, name/value pair, or index</i>
---------------	---

---

### Description

Drop entries from list of flags by name, name/value pair, or index

### Usage

```
cmd_list_drop(flags, drop)
```

### Arguments

flags	named list output of cmd_list_interp
drop	vector of flag entries to drop. Pass a character vector to drop flags by name. Pass a named vector to drop flags by name/value pairs. Pass a numeric vector to drop by position.

### Value

flags list with values in drop removed

### Examples

```
exFlags <- list("flag1" = 2, "flag2" = "someText")
cmd_list_drop(exFlags, "flag1")
# will drop flag2 because its name and value match 'drop' vector
cmd_list_drop(exFlags, c("flag2" = "someText"))
# Will drop "flag1" by position index
cmd_list_drop(exFlags, 1)

# won't drop flag2 because its value isn't 'someText'
exFlags2 <- list("flag1" = 2, "flag2" = "otherText")
cmd_list_drop(exFlags, c("flag2" = "someText"))
```

---

cmd_list_drop_named	<i>Drop items by name from list</i>
---------------------	-------------------------------------

---

### Description

A pipe-friendly wrapper around `list[!(names(list) %in% names)]` This function is slightly faster than using `cmd_list_drop()` to drop items by name.

### Usage

```
cmd_list_drop_named(list, names)
```

**Arguments**

list	an R list
names	vector of names to drop

**Value**

list removing items defined by names

**Examples**

```
cmd_list_drop_named(list("a" = 1, "b" = 2), "a")
```

---

cmd_list_interp	<i>Convert list of function arguments to list of command flags</i>
-----------------	--

---

**Description**

Function also handles error checking to ensure args contain valid data types, and looks for common usage mistakes.

**Usage**

```
cmd_list_interp(args, flag_lookup = NULL)
```

**Arguments**

args	named list output from get*Args family of functions.
flag_lookup	optional named vector used to convert args to command flags

**Details**

The list structure is more amenable to manipulation by package developers for advanced use before evaluating them to the command flags vector with cmd\_list\_to\_flags().

**Value**

named list

**Examples**

```
theFunction <- function(...){cmd_args_all()}
theArgs <- theFunction(arg1 = "value", arg2 = TRUE)
flagList <- cmd_list_interp(theArgs)
flags <- cmd_list_to_flags(flagList)
```

---

cmd_list_keep	<i>keep entries from list of flags by name, name/value pair, or index</i>
---------------	---

---

**Description**

keep entries from list of flags by name, name/value pair, or index

**Usage**

```
cmd_list_keep(flags, keep)
```

**Arguments**

flags	named list output of cmd_list_interp
keep	vector of flag entries to keep. Pass a character vector to keep flags by name. Pass a named vector to keep flags by name/value pairs. Pass a numeric vector to keep by position.

**Value**

flags list with values not in keep removed

**Examples**

```
exFlags <- list("flag1" = 2, "flag2" = "someText")
cmd_list_keep(exFlags, "flag1")
# will keep flag2 because its name and value match 'keep' vector
cmd_list_keep(exFlags, c("flag2" = "someText"))
# Will keep "flag1" by position index
cmd_list_keep(exFlags, 1)

# won't keep flag2 because its value isn't 'someText'
exFlags2 <- list("flag1" = 2, "flag2" = "otherText")
cmd_list_keep(exFlags, c("flag2" = "someText"))
```

---

cmd_list_keep_named	<i>Keep items by name from list</i>
---------------------	-------------------------------------

---

**Description**

A pipe-friendly wrapper around list[(names(list) %in% names)].

**Usage**

```
cmd_list_keep_named(list, names)
```

**Arguments**

list	an R list
names	vector of names to keep

**Details**

This function is slightly faster than using `cmd_list_keep()` to keep items by name.

**Value**

list keeping only items defined by names

**Examples**

```
cmd_list_keep_named(list("a" = 1, "b" = 2), "a")
```

---

cmd_list_to_flags	<i>Convert flag list to vector of command flags</i>
-------------------	---

---

**Description**

Convert flag list to vector of command flags

**Usage**

```
cmd_list_to_flags(flagList, prefix = "-", sep = ",")
```

**Arguments**

flagList	output from <code>cmd_list_interp()</code> . A named list where names correspond to flags and members correspond to the value for the flag.
prefix	flag prefix, usually "-" or "-".
sep	separator to use if flag has a vector of values (default: NULL).

**Value**

character vector of parsed commandline flags followed by their values

**Examples**

```
theFunction <- function(...){cmd_args_all()}
theArgs <- theFunction(arg1 = "value", arg2 = TRUE)
flagList <- cmd_list_interp(theArgs)
flags <- cmd_list_to_flags(flagList)
```



---

cmd_path_search	<i>Macro for constructing target path validators</i>
-----------------	--

---

## Description

A common pattern in designing shell interfaces is to ask the user to give an absolute path to the target shell utility. It is common to pass this information from the user to R by using either R environment variables defined in `.Renviron`, using options (set with `option()`), and got with `getOption()`), having the user explicitly pass the path in the function call, or failing this, using a default install path.

## Usage

```
cmd_path_search(  
  environment_var = NULL,  
  option_name = NULL,  
  default_path = NULL,  
  utils = NULL  
)
```

## Arguments

<code>environment_var</code>	name of R environment variable defining target path. Can be set in <code>.Renviron</code> .
<code>option_name</code>	name of user-configurable option (called by <code>getOption</code> ) which will hold path to target
<code>default_path</code>	default install path of target. Can contain shell specials like <code>"~"</code> which will be expanded at runtime (as opposed to build time of the search function).
<code>utils</code>	optional character vector containing names of valid utils inside target path, used to populate error checking for valid install.

## Details

Another common use-case involves software packages with many tools packaged in a single directory, and the user may want to call one or many utilities within this common structure.

For example, the software "coolpackage" is installed in `"~/coolpackage"`, and has two programs: `"tool1"`, and `"tool2"` found in `"~/coolpackage/tool1"` and `~/coolpackage/tool2"`, respectively.

To design an interface to coolpackage, this function can automate checking and validation for not only the package, but for each desired utility in the package.

The hierarchy of path usage is: user-defined > option\_name > environment\_var > default\_path

## Value

function that returns a valid path to tool or optional utility.

The returned `path_search` function takes as input a path or util. where path is a user override path for the supported tool. If the user-defined path is invalid, this will always throw an error and not search the defined defaults.

util must be found within the target path, but does not have to be present in the original "utils" call. The user will be warned if this is the case. If util is set to TRUE will return all paths to utilities without checking the install. This can be used for writing user-facing install checkers.

### Examples

```
if (.Platform$OS.type == "unix") {  
  bin_checker <- cmd_path_search(default_path = "/bin", utils = c("ls", "pwd"))  
  # returns path to bin  
  bin_checker()  
  # returns path to bin/ls  
  bin_checker(util = "ls")  
}
```

---

cmd\_ui\_file\_exists      *Checks if file exists, returns pretty status message*

---

### Description

Checks if file exists, returns pretty status message

### Usage

```
cmd_ui_file_exists(file)
```

### Arguments

file                    path to file

### Value

ui\_done or ui\_oops printed to terminal.

### Examples

```
cmd_ui_file_exists("/path/to/file.txt")
```

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