

Package ‘stepcount’

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Title Estimate Step Counts from 'Accelerometry' Data

Version 0.3.2

Description Interfaces the 'stepcount' Python module <<https://github.com/OxWearables/stepcount>> to estimate step counts and other activities from 'accelerometry' data.

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Imports assertthat, curl, lubridate, magrittr, readr, reticulate

Suggests tidyr, dplyr, ggplot2, testthat (>= 3.0.0)

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Contents

conda_create_walking_env	2
install_stepcount	2
sc_load_model	3
sc_model_params	4
sc_read	5
sc_rename_data	6
use_stepcount_condaenv	7

Index	8
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`conda_create_walking_env`*Create Conda Environment for Walking*

Description

Create Conda Environment for Walking

Usage

```
conda_create_walking_env(envname = "stepcount", ...)
```

Arguments

<code>envname</code>	environment name
<code>...</code>	additional arguments to pass to <code>reticulate::conda_create()</code>

Value

Output of `reticulate::conda_create`

`install_stepcount`*Install the stepcount Python Module*

Description

Install the stepcount Python Module

Usage

```
install_stepcount(packages = "stepcount", ...)
```

```
have_stepcount()
```

```
stepcount_check()
```

```
stepcount_version()
```

Arguments

<code>packages</code>	packages to install. If stepcount is not included, it will be added. This package is known to work with stepcount==3.2.4
<code>...</code>	Additional arguments to pass to <code>reticulate::py_install()</code> , other than pip (pip = TRUE enforced)

Value

Output of [reticulate::py_install](#)

Examples

```
if (have_stepcount()) {
  stepcount_version()
}
```

sc_load_model

Load Stepcount Model

Description

Load Stepcount Model

Usage

```
sc_load_model(
  model_type = c("ssl", "rf"),
  model_path = NULL,
  check_md5 = TRUE,
  force_download = FALSE,
  as_python = TRUE
)

sc_model_filename(model_type = c("ssl", "rf"))

sc_download_model(
  model_path,
  model_type = c("ssl", "rf"),
  check_md5 = TRUE,
  ...
)
```

Arguments

model_type	type of the model: either random forest (rf) or Self-Supervised Learning model (ssl)
model_path	the file path to the model. If on disk, this can be re-used and not re-downloaded. If NULL, will download to the temporary directory
check_md5	Do a MD5 checksum on the file
force_download	force a download of the model, even if the file exists
as_python	Keep model object as a python object
...	for sc_download_model, additional arguments to pass to curl::curl_download()

Value

A model from Python. `sc_download_model` returns a model file path.

sc_model_params	<i>Run Stepcount Model on Data</i>
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Description

Run Stepcount Model on Data

Usage

```
sc_model_params(model_type, pytorch_device)
```

```
stepcount(
    file,
    sample_rate = NULL,
    model_type = c("ssl", "rf"),
    model_path = NULL,
    pytorch_device = c("cpu", "cuda:0"),
    verbose = TRUE,
    keep_data = FALSE
)
```

```
stepcount_with_model(
    file,
    model_type = c("ssl", "rf"),
    model,
    sample_rate = NULL,
    pytorch_device = c("cpu", "cuda:0"),
    verbose = TRUE,
    keep_data = FALSE
)
```

Arguments

model_type	type of the model: either random forest (rf) or Self-Supervised Learning model (ssl)
pytorch_device	device to use for prediction for PyTorch.
file	accelerometry file to process, including CSV, CWA, GT3X, and GENEActiv bin files
sample_rate	the sample rate of the data. Set to NULL for stepcount to try to guess this
model_path	the file path to the model. If on disk, this can be re-used and not re-downloaded. If NULL, will download to the temporary directory
verbose	print diagnostic messages
keep_data	should the data used in the prediction be in the output?
model	A model object loaded from <code>sc_load_model</code> , but <code>as_python</code> must be TRUE

Value

A list of the results (data.frame), summary of the results, adjusted summary of the results, and information about the data.

Examples

```
file = system.file("extdata/P30_wrist100.csv.gz", package = "stepcount")
if (stepcount_check()) {
  out = stepcount(file = file)
  st = out$step_times
}
## Not run:
file = system.file("extdata/P30_wrist100.csv.gz", package = "stepcount")
df = readr::read_csv(file)
if (stepcount_check()) {
  out = stepcount(file = df)
  st = out$step_times
}
if (requireNamespace("ggplot2", quietly = TRUE) &&
    requireNamespace("tidyr", quietly = TRUE) &&
    requireNamespace("dplyr", quietly = TRUE)) {
  dat = df[10000:12000,] %>%
    dplyr::select(-annotation) %>%
    tidyr::gather(axis, value, -time)
  st = st %>%
    dplyr::mutate(time = lubridate::as_datetime(time)) %>%
    dplyr::as_tibble()
  st = st %>%
    dplyr::filter(time >= min(dat$time) & time <= max(dat$time))
  dat %>%
    ggplot2::ggplot(ggplot2::aes(x = time, y = value, colour = axis)) +
    ggplot2::geom_line() +
    ggplot2::geom_vline(data = st, ggplot2::aes(xintercept = time))
}

## End(Not run)
```

sc_read

Read a Data Set for stepcount

Description

Read a Data Set for stepcount

Usage

```
sc_read(
  file,
```

```

    sample_rate = NULL,
    resample_hz = "uniform",
    verbose = TRUE,
    keep_pandas = FALSE
  )

```

Arguments

file	path to the file for reading
sample_rate	the sample rate of the data. Set to NULL for stepcount to try to guess this
resample_hz	Target frequency (Hz) to resample the signal. If "uniform", use the implied frequency (use this option to fix any device sampling errors). Pass NULL to disable. Defaults to "uniform".
verbose	print diagnostic messages
keep_pandas	do not convert the data to a data.frame and keep as a pandas data.frame

Value

A list of the data and information about the data

Note

The data P30_wrist100 is from <https://ora.ox.ac.uk/objects/uuid:19d3cb34-e2b3-4177-91b6-1bad0e0163e7>, where we took the first 180,000 rows, the first 30 minutes of data from that participant as an example.

Examples

```

file = system.file("extdata/P30_wrist100.csv.gz", package = "stepcount")
if (stepcount_check()) {
  out = sc_read(file)
}
## Not run:
file = system.file("extdata/P30_wrist100.csv.gz", package = "stepcount")
if (stepcount_check()) {
  out = sc_read(file, sample_rate = 100L)
}

## End(Not run)

```

sc_rename_data	<i>Rename data for Stepcount</i>
----------------	----------------------------------

Description

Rename data for Stepcount

Usage

```
sc_rename_data(data)

sc_write_csv(data, path = tempfile(fileext = ".csv"))
```

Arguments

data	a data.frame of raw accelerometry
path	path to the CSV output file

Value

A data.frame of renamed columns

use_stepcount_condaenv

Use Conda Environment for stepcount

Description

Use Conda Environment for stepcount

Usage

```
use_stepcount_condaenv(envname = "stepcount", ...)

conda_create_stepcount(envname = "stepcount", ..., python_version = "3.9")

unset_reticulate_python()

have_stepcount_condaenv()
```

Arguments

envname	environment name for the conda environment
...	additional arguments to pass to <code>reticulate::use_condaenv()</code> other than <code>condaenv</code> .
python_version	version of Python to use for environment

Value

Nothing

Index

conda_create_stepcount
 (use_stepcount_condaenv), 7
conda_create_walking_env, 2
curl::curl_download(), 3

have_stepcount (install_stepcount), 2
have_stepcount_condaenv
 (use_stepcount_condaenv), 7

install_stepcount, 2

reticulate::conda_create, 2
reticulate::conda_create(), 2
reticulate::py_install, 3
reticulate::py_install(), 2
reticulate::use_condaenv(), 7

sc_download_model (sc_load_model), 3
sc_load_model, 3
sc_model_filename (sc_load_model), 3
sc_model_params, 4
sc_read, 5
sc_rename_data, 6
sc_write_csv (sc_rename_data), 6
stepcount (sc_model_params), 4
stepcount_check (install_stepcount), 2
stepcount_version (install_stepcount), 2
stepcount_with_model (sc_model_params),
 4

unset_reticulate_python
 (use_stepcount_condaenv), 7
use_stepcount_condaenv, 7