

Package ‘tashu’

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Type Package

Title Analysis and Prediction of Bicycle Rental Amount

Version 0.1.1

Maintainer Jiwon Min <miw5281@gmail.com>

Description Provides functions for analyzing citizens' bicycle usage pattern and predicting rental amount on specific conditions.
Functions on this package interacts with data on 'tashudata' package, a 'drat' repository. 'tashudata' package contains rental/return history on public bicycle system('Tashu'), weather for 3 years and bicycle station information.
To install this data package, see the instructions at <https://github.com/zeee1/Tashu_Rpackage>.
top10_stations(), top10_paths() function visualizes image showing the most used top 10 stations and paths.
daily_bike_rental() and monthly_bike_rental() shows daily, monthly amount of bicycle rental.
create_train_dataset(), create_test_dataset() is data processing function for prediction.
Bicycle rental history from 2013 to 2014 is used to create training dataset and that on 2015 is for test dataset.
Users can make random-forest prediction model by using create_train_model() and predict amount of bicycle rental in 2015 by using predict_bike_rental().

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Encoding UTF-8

LazyData true

Imports ggplot2, lubridate, dplyr, randomForest, plyr, reshape2,
RColorBrewer, drat

Suggests knitr, rmarkdown, tashudata

Additional_repositories <https://zeee1.github.io/drat>

VignetteBuilder knitr

RoxygenNote 7.1.1

Depends R (>= 3.5.0)

NeedsCompilation no

Author Jiwon Min [aut, cre]

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Contents

create_test_dataset	2
create_train_dataset	3
create_train_model	3
daily_bicycle_rental	4
extract_features	4
monthly_bicycle_rental	5
predict_bicycle_rental	5
top10_paths	6
top10_stations	6

Index	7
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create_test_dataset	<i>Create training dataset on specific station for prediction</i>
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Description

A function to create training dataset on 'station_number' bicycle station by preprocessing bicycle rental history and weather data from 2013 to 2014.

Usage

```
create_test_dataset(station_number)
```

Arguments

station_number number that means the number of each station.(1 ~ 144)

Value

a dataset containing feature and rental count data on 'station_number' station, 2013 ~ 2014

Examples

```
## Not run: test_dataset <- create_test_dataset(1)
```

create_train_dataset	Create training dataset on specific station for prediction
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Description

A function to create training dataset on 'station_number' bicycle station by preprocessing bicycle rental history and weather data from 2013 to 2014.

Usage

```
create_train_dataset(station_number)
```

Arguments

station_number number that means the number of each station.(1 ~ 144)

Value

a dataset containing feature and rental count data on 'station_number' station, 2013 ~ 2014

Examples

```
## Not run: train_dataset <- create_train_dataset(1)
```

create_train_model	Create random-forest training model for bicycle rental prediction.
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Description

Create random-forest training model for bicycle rental prediction.

Usage

```
create_train_model(train_dataset)
```

Arguments

train_dataset Training dataset created by create_train_dataset()

Value

random forest training model

Examples

```
## Not run: train_dataset <- create_train_dataset(3)
rf_model <- create_train_model(train_dataset)
## End(Not run)
```

daily_bicycle_rental	<i>Visualize amount of bicycle rental at each day of week.</i>
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Description

A function analyzing bicycle rental pattern on each day of week and visualizing analyzed result.

Usage

```
daily_bicycle_rental()
```

Examples

```
## Not run: daily_bicycle_rental()
```

extract_features	<i>Extract feature columns from train/test dataset</i>
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Description

Extract feature columns from train/test dataset

Usage

```
extract_features(data)
```

Arguments

data	data with feature columns and others
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Value

data containing only feature columns

`monthly_bicycle_rental`

Visualize the change of bicycle rental amount by temperature and each month.

Description

A function drawing a plot that shows change of temperature and bicycle rental ratio in each month.

Usage

```
monthly_bicycle_rental()
```

Examples

```
## Not run: monthly_bicycle_rental()
```

`predict_bicycle_rental`

Predict hourly Demand of bicycle in 2015.

Description

predict hourly amount of bicycle rental in 2015 using random forest algorithm. Create prediction model using 'train_dataset' and forecast demand of bicycle rental according to the condition of 'test_dataset'

Usage

```
predict_bicycle_rental(rf_model, test_dataset)
```

Arguments

<code>rf_model</code>	random forest prediction model create by create_train_model()
<code>test_dataset</code>	testing dataset

Value

test_dataset with predictive result.

Examples

```
## Not run: train_dataset <- create_train_dataset(3)
test_dataset <- create_test_dataset(3)
rf_model <- create_train_model(train_dataset)
test_dataset <- predict_bicycle_rental(rf_model, test_dataset)
## End(Not run)
```

`top10_paths`*Visualize Top 10 Pathes that were most used from 2013 to 2015.*

Description

Visualize Top 10 Pathes that were most used from 2013 to 2015.

Usage

```
top10_paths()
```

Examples

```
## Not run: top10_paths()
```

`top10_stations`*Visualize top 10 stations that were most used from 2013 to 2015.*

Description

Draw a plot that visualized most used top 10 stations on barchart.

Usage

```
top10_stations()
```

Value

Data frame that contains top 10 most used stations from 2013 to 2015

Examples

```
## Not run: top10_stations()
```

Index

`create_test_dataset`, [2](#)
`create_train_dataset`, [3](#)
`create_train_model`, [3](#)

`daily_bicycle_rental`, [4](#)

`extract_features`, [4](#)

`monthly_bicycle_rental`, [5](#)

`predict_bicycle_rental`, [5](#)

`top10_paths`, [6](#)
`top10_stations`, [6](#)