Package 'greenfeedr'

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Type Package

Title Process and Report 'GreenFeed' Data

Version 1.1.0

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Description
Provides tools for downloading, processing, and reporting daily and finalized 'GreenFeed' data.

License GPL (>= 3)

Encoding UTF-8

RoxygenNote 7.3.2

Imports dplyr, ggplot2, httr, lubridate, purrr, readr, readxl,
rmarkdown, stats, stringr, tidyr

Depends R (>= 2.10)

Suggests knitr, testthat (>= 3.0.0)

Config/testthat/edition 3

BugReports https://github.com/GMBog/greenfeedr/issues

URL https://gmbog.github.io/greenfeedr/,
https://github.com/GMBog/greenfeedr

VignetteBuilder knitr

NeedsCompilation no

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Repository CRAN

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compare_gfdata   *Compare Preliminary and Finalized 'GreenFeed' Data*

Description

Compare preliminary and finalized 'GreenFeed' data.

Arguments

prelimrep	a data frame with preliminary 'GreenFeed' data
finalrep	a data frame with finalized 'GreenFeed' data
start_date	a character string representing the start date of the study (format: "mm/dd/yyyy")
end_date	a character string representing the end date of the study (format: "mm/dd/yyyy")

Value

Data frame including records removed from preliminary and final reports

Examples

```
#Datasets with preliminary and finalized GreenFeed data
prelimrep <- system.file("extdata", "StudyName_GFdata.csv", package = "greenfeedr")
finalrep <- system.file("extdata", "StudyName_FinalReport.xlsx", package = "greenfeedr")

data <- compare_gfdata(
          prelimrep,
          finalrep,
          start_date = "2024-05-13",
          end_date = "2024-05-20")
```

get_gfdata   *Download Preliminary 'GreenFeed' Data via 'API'*

Description

Downloads preliminary 'GreenFeed' data from the 'C-Lock Inc.' server via an 'API'. Retrieves data based on specified parameters (login, date range, and units), and provides a CSV file with the 'GreenFeed' preliminary data.

Usage

```
get_gfdata(
  user,
  pass,
  exp = NA,
  unit,
  start_date,
  end_date = Sys.Date(),
  save_dir = tempdir()
)
```

Arguments

user	a character string representing the user name to logging into 'GreenFeed' system
pass	a character string representing password to logging into 'GreenFeed' system
exp	a character string representing study name or other study identifier. It is used as file name to save the data
unit	numeric or character vector, or a list representing one or more 'GreenFeed' unit numbers
start_date	a character string representing the start date of the study (format: "mm/dd/yyyy")
end_date	a character string representing the end date of the study (format: "mm/dd/yyyy")
save_dir	a character string representing the directory to save the output file

Value

A CSV file with preliminary 'GreenFeed' data in the specified directory

Examples

```
# Please replace "your_username" and "your_password" with your actual 'GreenFeed' credentials.
# Example with units as a vector

get_gfdata(
   user = "your_username",
   pass = "your_password",
   exp = "StudyName",
```

```
  unit = c(304, 305),
  start_date = "2024-01-01",
  end_date = Sys.Date(),
  save_dir = tempdir()
  )
```

---

pellin   *Process 'GreenFeed' Pellet Intakes*

Description

Processes the "feedtimes" file from 'GreenFeed' system, including visits and food drops across a specific period, and it is used to calculate pellet intakes per animal from all units. Aggregates data to provide insights into the feeding behavior and pellet consumption of the animals during a study.

Arguments

file_path	a character string or list representing files(s) with "feedtimes" from 'C-Lock Inc.'
unit	numeric or character vector or list representing one or more 'GreenFeed' unit numbers. The order should match with "feedtimes" files
gcup	a numeric value representing the grams of pellets per cup.
start_date	a character string representing the start date of the study (format: "mm/dd/yyyy")
end_date	a character string representing the end date of the study (format: "mm/dd/yyyy")
save_dir	a character string representing the directory to save the output file
rfid_file	a character string representing the file with individual IDs. The order should be Visual ID (col1) and RFID (col2)

Value

An Excel file with pellet intakes for all animals and days within the specified period is saved to save_dir. The file is named "Pellet_Intakes_YYYY-MM-DD_YYYY-MM-DD.csv".

Examples

```
# You should provide the 'feedtimes' file provided by C-Lock.
# it could be a list of files if you have data from multiple units to combine
path <- list(system.file("extdata", "feedtimes.csv", package = "greenfeedr"))

# You must include the grams of pellets per cup based on the result obtained from the 10-drops test

# If the user include an rfid file, the structure should be in col1 AnimalName or Visual ID, and
# col2 the RFID or TAG_ID. The file could be save in different formats (.xlsx, .csv, or .txt).
RFIDs <- system.file("extdata", "RFID_file.csv", package = "greenfeedr")

pellin(
```

```
    file_path = path,
    unit = 1,
    gcup = 34,
    start_date = "2024-05-13",
    end_date = "2024-05-25",
    save_dir = tempdir(),
    rfid_file = RFIDs
)
```

---

process_gfdata   *Process Preliminary and Finalized 'GreenFeed' Data*

Description

Processes and calculates daily and weekly averages of 'GreenFeed' data. Handles data filtering, aggregation, and summarization to facilitate further analysis.

Arguments

data	a data frame with preliminary or finalized 'GreenFeed' data
start_date	a character string representing the start date of the study (format: "mm/dd/yyyy")
end_date	a character string representing the end date of the study (format: "mm/dd/yyyy")
param1	an integer representing the number of records per day to be consider for analysis
param2	an integer representing the number of days with records per week to be consider for analysis
min_time	an integer representing the minimum number of minutes for a records to be consider for analysis (default: 2 minutes)
cutoff	an integer specifying the range for identifying outliers (default: 3 SD)

Value

A list of two data frames:

daily_data	data frame with daily processed 'GreenFeed' data
weekly_data	data frame with weekly processed 'GreenFeed' data

Examples

```
file <- system.file("extdata", "StudyName_GFdata.csv", package = "greenfeedr")
datafile <- readr::read_csv(file)

gf_data <- process_gfdata(
  data = datafile,
  start_date = "2024-05-13",
  end_date = "2024-05-25",
  param1 = 2,
```

```
  param2 = 3,
  min_time = 2
)
head(gf_data)
```

---

report_gfdata   *Download and Report 'GreenFeed' Data*

Description

Generates a PDF report of preliminary and finalized 'GreenFeed' data. The report includes: number of animals using 'GreenFeed' and plots with distribution of records and gas production. If the preliminary option is used, the data is retrieved from the 'C-Lock Inc.' server through an 'API', otherwise the data processed by 'C-Lock Inc.' must be provided to generate the report.

Arguments

input_type	a character string representing type of data (options: "prelim" or "daily, and "final")
exp	a character string representing study name or other study identifier. It is used as file name to save the data
unit	numeric or character vector, or a list representing one or more 'GreenFeed' unit numbers
start_date	a character string representing the start date of the study (format: "mm/dd/yyyy")
end_date	a character string representing the end date of the study (format: "mm/dd/yyyy")
save_dir	a character string representing the directory to save the output file
plot_opt	a character string representing the gas(es) to plot (options: "All", "CH4", "CO2", "O2", "H2")
rfid_file	a character string representing the file with individual IDs. The order should be Visual ID (col1) and RFID (col2)
user	a character string representing the user name to logging into 'GreenFeed' system. If input_type is "final", this parameter is ignored
pass	a character string representing password to logging into 'GreenFeed' system. If input_type is "final", this parameter is ignored
file_path	A list of file paths containing the final report(s) from the 'GreenFeed' system. If input_type is "prelim", this parameter is ignored

Value

A CSV file with preliminary 'GreenFeed' data and a PDF report with a description of the preliminary or finalized data

Examples

```
# Please replace "your_username" and "your_password" with your actual 'GreenFeed' credentials.
# The data range must be fewer than 180 days
# Example without rfid_file (by default NA)

report_gfdata(
  user = "your_username",
  pass = "your_password",
  input_type = "prelim",
  exp = "StudyName",
  unit = 1,
  start_date = "2023-01-01",
  end_date = Sys.Date(),
  save_dir = tempdir(),
  plot_opt = "All"
)
```

---

viseat   *Process 'GreenFeed' Visits*

Description

Processes 'GreenFeed' visits and food drops for a requested period. Generates a list of animals not visiting the 'GreenFeed' to manage them, and a description of animals visiting the 'GreenFeed'.

Arguments

file_path	a character string or list representing files(s) with feedtimes from 'C-Lock Inc.'.
unit	numeric or character vector or list representing one or more GreenFeed unit numbers.
start_date	a character string representing the start date of the study (format: "mm/dd/yyyy")
end_date	a character string representing the end date of the study (format: "mm/dd/yyyy")
rfid_file	a character string representing the file with individual RFIDs. The order should be Visual ID (col1) and RFID (col2)

Value

A list of two data frames:

visits_per_unit

> Data frame with daily processed 'GreenFeed' data, including columns for VisualID, Date, Time, number of drops, and visits.

visits_per_animal

> Data frame with weekly processed 'GreenFeed' data, including columns for VisualID, total drops, total visits, mean drops, and mean visits.

Examples

```
# You should provide the feedtimes files.
# it could be a list of files if you have data from multiple units to combine
path <- list(system.file("extdata", "feedtimes.csv", package = "greenfeedr"))

# If the user include an rfid file, the structure should be in col1 AnimalName or VisualID, and
# col2 the RFID or TAG_ID. The file could be save in different formats (.xlsx, .csv, or .txt).
RFIDs <- system.file("extdata", "RFID_file.csv", package = "greenfeedr")

data <- viseat(
  file_path = path,
  unit = 1,
  start_date = "2024-05-13",
  end_date = "2024-05-25",
  rfid_file = RFIDs
)
```

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