Package 'fasttrackr'

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Type Package

Title Fast Track integration in R

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Description Facilitation of integration with Fast Track formant data generated using Praat, including alternate analysis selection, outlier detection, normalization, plotting, etc.

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Encoding UTF-8

LazyData true

RoxygenNote 7.1.1

Depends R (>= 2.10)

Imports phonTools,
tuneR,
signal

R topics documented:

`aggregated_data` *Example Fast Track aggregated data*

Description

An example of aggregated data as provided by Fast Track (in an 'aggregated_data.csv' file). The data is productions of 12 vowels by 7 adult males from the Hillenbrand et al. (1995) data. The formant columns are so that column FXY represents the frequency for the Xth formant, for the Yth time slice.

Usage

```
aggregated_data
```

Format

An object of class `data.frame` with 72 rows and 22 columns.

Columns

file the recording file name.

f0 average f0 in Hertz.

duration vowel duration in milliseconds.

label The label used for plotting the vowel.

group A group number, used for plotting

color The color Praat will use for plotting.

number The file number.

f11 The average frequency for the first formant, for the first time slice.

f21 The average frequency for the second formant, for the first time slice.

... And so on.

Source

https://github.com/santiagobarreda/FastTrackR

References

Hillenbrand, J.M., Getty, L.A., Clark, M.J., and Wheeler, K. (1995). "Acoustic characteristics of American English vowels," Journal of the Acoustical Society of America, 97, 3099-3111.

`coefficients` *Example of Fat Track regressions coefficients*

Description

An example of the analysis regression coefficients provided by Fast Track (in an 'coefficients.csv' file). The data is productions of 12 vowels by 7 adult males from the Hillenbrand et al. (1995) data. The coefficients columns are so that column cXY represents the coefficient for the Xth formant, for the Yth time slice.

Usage

```
coefficients
```

Format

An object of class `data.frame` with 72 rows and 19 columns.

Details

Data representing productions of 12 vowels by x adult males from the Hillenbrand et al. (1995) data.

Columns

file the recording file name.

c11 The 0th order coefficient (intercept) for the for the first formant.

c21 A series of columns, each representing the Yth order coefficients for formant X.

... And so on.

Source

https://github.com/santiagobarreda/FastTrackR

References

Hillenbrand, J.M., Getty, L.A., Clark, M.J., and Wheeler, K. (1995). "Acoustic characteristics of American English vowels," Journal of the Acoustical Society of America, 97, 3099-3111.

`ft.arrows` *Plot arrows*

Description

Add arrows to the end of contours made by the ft.contour function. Colors are taken from the 'color' column in the data.

Usage

```
ft.arrows(
  aggregated_data,
  xformant = 1,
  yformant = 2,
  revaxes = FALSE,
  logaxes = FALSE,
  lwd = 2,
  length = 0.1,
  add = TRUE,
  ...
)
```

Arguments

`aggregated_data`	A dataframe containing the data from an 'aggregated_data' file produced by Fast Track.
`xformant`	an integer indicating which formant number should be plotted on the x axis.
`yformant`	an integer indicating which formant number should be plotted on the y axis.
`revaxes`	if TRUE, axis ranges are inverted so that they go high > low.
`logaxes`	if TRUE, axes are logarithmic.
`lwd`	an integer determining arrow line width.
`length`	the length of the arrow lines.
`add`	if FALSE, a new plot if created.
`...`	Additional arguments are passed to the internal call of 'arrows'.

Examples

```
data(aggregated_data)
ft.lines (aggregated_data, xformant=2,yformant=1,revaxes=TRUE)
ft.arrows (aggregated_data, xformant=2,yformant=1,revaxes=TRUE)
```

`ft.lines` *Plot formant contours*

Description

Draws lines representing formant contours using the information represented in aggregated data files. Colors are taken from the 'color' column in the data.

Usage

```
ft.lines(
  aggregated_data,
  xformant = 1,
  yformant = 2,
  revaxes = FALSE,
  logaxes = FALSE,
  lwd = 2,
  starttime = 0,
  endtime = 0,
  add = FALSE,
  ...
)
```

Arguments

`aggregated_data`	A dataframe containing the data from an 'aggregated_data' file produced by Fast Track.
`xformant`	an integer indicating which formant number should be plotted on the x axis.
`yformant`	an integer indicating which formant number should be plotted on the y axis.
`revaxes`	if TRUE, axis ranges are inverted so that they go high > low.
`logaxes`	if TRUE, axes are logarithmic.
`lwd`	an integer determining contour line width.
`starttime`	an integer indicating which time point the contour should start at.
`endtime`	an integer indicating which time point the contour should end at.
`add`	if FALSE, a new plot if created.
`...`	Additional arguments are passed to the internal call of 'lines'.

Examples

```
data(aggregated_data)
ft.lines (aggregated_data)
ft.lines (aggregated_data, xformant=2,yformant=1,revaxes=TRUE)
```

ft.plot *Plot an aggregated file*

Description

Set up a plot aggregated files. This function does not draw anything but is used to set up the plot for other functions.

Usage

```
ft.plot(
  aggregated_data,
  xformant = 1,
  yformant = 2,
  revaxes = FALSE,
  logaxes = FALSE,
  xlab,
  ylab,
  add = FALSE,
  ...
)
```

Arguments

aggregated_data	A dataframe containing the data from an 'aggregated_data' file produced by Fast Track.
xformant	an integer indicating which formant number should be plotted on the x axis.
yformant	an integer indicating which formant number should be plotted on the y axis.
revaxes	if TRUE, axis ranges are inverted so that they go high > low.
logaxes	if TRUE, axes are logarithmic.
xlab	an optional user-specified x-axis label.
ylab	an optional user-specified y-axis label.
add	if FALSE, a new plot if created.
...	Additional arguments are passed to the internal call of 'plot'.

ft.points *Plot points*

Description

Plot labels at specific points along formant trajectories. Colors and labels are taken from the 'color' column in the data.

Usage

```
ft.points(
  aggregated_data,
  xformant = 1,
  yformant = 2,
  revaxes = FALSE,
  logaxes = FALSE,
  cex = 2,
  time = 1,
  add = TRUE,
  ...
)
```

Arguments

aggregated_data	A dataframe containing the data from an 'aggregated_data' file produced by Fast Track.
xformant	an integer indicating which formant number should be plotted on the x axis.
yformant	an integer indicating which formant number should be plotted on the y axis.
revaxes	if TRUE, axis ranges are inverted so that they go high > low.
logaxes	if TRUE, axes are logarithmic.
cex	an integer determining point size.
time	an integer indicating which time point the point should be placed at.
add	if FALSE, a new plot if created.
...	Additional arguments are passed to the internal call of 'text'.

Examples

```
data(aggregated_data)
ft.lines (aggregated_data, xformant=2,yformant=1,revaxes=TRUE)
ft.arrows (aggregated_data, xformant=2,yformant=1,revaxes=TRUE)
ft.points (aggregated_data, xformant=2,yformant=1,revaxes=TRUE)
```

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getwinners *Get winning analyses*

Description

This function will read winning analyses into R based on the content of the 'winners.csv' file. The required formant and csv data can be pre-loaded with the readformants() and readcsvs() functions provided in this package. Reading the formant data can be a bit slow so loading it once and passing it to the function will speed things up quite a bit if this function will be called repeatedly.

Usage

```
getwinners(path, winners, formants, csvs, asone = TRUE)
```

Arguments

path	the path to the working directory for the Fast Track project. If no path is provided this is the working directory.
winners	an optional dataframe representing the data in the 'winners.csv' file.
formants	an optional list of lists representing all of the possible formant analyses.
csvs	and optional list of dataframes representing all the current formant data.
asone	if TRUE, the formant data is stuck together into one dataframe and filenames are indicated in a new column. If FALSE, a list of dataframes is returned and each list element is named after the file.

Value

A dataframe or list of dataframes, as per the asone parameter.

Examples

```
## Not run:
csvs = readcsvs ()

## End(Not run)
```

---

normalize *Normalize aggregated data*

Description

Normalize formant frequencies using the log mean method outlined in Barreda and Nearey (2018). This approach is robust to unbalanced and missing data and is appropriate to use with formant contours. If you do not provide a vector of talkers, the data is assumed to be produced by a single talker.

Usage

```
normalize(aggregated_data, talker = NA)
```

Arguments

aggregated_data	A dataframe representing data aggregated by Fast Track.
talker	an optional vector indicating which talker produced each row in the data.

Value

Another dataframe with normalized formant frequencies.

References

Barreda, S., & Nearey, T. M. (2018). A regression approach to vowel normalization for missing and unbalanced data. The Journal of the Acoustical Society of America, 144(1), 500-520.

Examples

```
data (aggregated_data)
normalize (aggregated_data)
```

`readcsvs` *Load Fast Track csv files*

Description

Load Fast Track csv files

Usage

```
readcsvs(path, asone = TRUE)
```

Arguments

`path`	the path to the working directory for the Fast Track project. If no path is provided this is the working directory.
`asone`	if TRUE, the csv files are all stuck together into one dataframe and filenames are indicated in a new column. If FALSE, a list of dataframes is returned and each list element is named after the file.

Value

A dataframe or list of dataframes, as per the asone parameter.

Examples

```
## Not run:
csvs = readcsvs ()

## End(Not run)
```

`readformants` *Load Fast Track formant objects*

Description

Load Fast Track formant objects

Usage

```
readformants(path)
```

Arguments

`path`	the path to the working directory for the Fast Track project. If no path is provided this is the working directory.

Value

A list of lists of dataframes. The 'external' list is as long as number of files that were analyzed. For each 'external' list element there are N 'internal' list elements, for N analysis steps. For example, 'formant[[32]][[3]]' contains information regarding the 3rd analysis option for the 32nd file.

Examples

```
## Not run:
csvs = readformants ()

## End(Not run)
```

`readtextgrid` *Load textgrid information into R*

Description

Create a list of dataframes from a textgrid. Each list element is a dataframe representing information from a different interval tier. Each dataframe contains the interval label, start time, end time, and duration (all in milliseconds).

Usage

```
readtextgrid(path)
```

Arguments

`path`	the path to the Praat textgrid file you want to read.

Value

A list of dataframes, one containing the data from each interval tier in the textgrid. Each dataframe is named after the tier.

Examples

```
## Not run:
path = "../example data/textgrids/NCF011_01-02-long.TextGrid"
readtextgrid (path)

## End(Not run)
```

writecsvs *Write Fast Track csv files*

Description

Write Fast Track csv files

Usage

```
writecsvs(csvs, path)
```

Arguments

csvs	csv data read in using the readcsvs() function, either as a dataframe or a list of dataframes.
path	the path to the working directory for the Fast Track project. If no path is provided this is the working directory.

Examples

```
## Not run:
csvs = readcsvs ()

## End(Not run)
```

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