

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

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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 is 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 is 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	<i>Plot an aggregated file</i>
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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 is created.
...	Additional arguments are passed to the internal call of 'plot'.

ft.points	<i>Plot points</i>
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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

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

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	<i>Load Fast Track csv files</i>
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Description

If no path is provided the working directory is assumed to be the Fast Track directory. This is recommended as it means that is means all reading/writing can be done without ever providing a path.

Usage

```
readcsvs(path)
```

Arguments

`path` the path to the working directory for the Fast Track project.

Value

A list of dataframes, one containing the data from each csv file. Each dataframe is named after the data filename.

Examples

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

## End(Not run)
```

readformants	<i>Load Fast Track formant objects</i>
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Description

If no path is provided the working directory is assumed to be the Fast Track directory. This is recommended as it means that all reading/writing can be done without ever providing a path.

Usage

```
readformants(path)
```

Arguments

path the path to the working directory for the Fast Track project.

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	<i>Load textgrid information into R</i>
--------------	---

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 = "/textgrids/your-textgrid-file.TextGrid"  
readtextgrid (path)  
  
## End(Not run)
```

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