Package 'RECG'

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Type Package

Title Allows reading and plotting an ECG file

Version 1.0

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Description This is a package for ECG reading and plotting.

License GPL-3

Depends signal, waveslim

Archs i386, x86_64

R topics documented:

RECG-package *This is a package for ECG reading and plotting ~~ package title ~~*

Description

This package allows reading an plotting ECG signals from a physionet ".dat" file. Only format 16 is readable. Once the signal is readed, it can be plotted progressively using the plot function. ~~ A concise (1-5 lines) description of the package ~~

Details

Package:	RECG
Type:	Package
Version:	1.1
Date:	2013-06-04
License:	GPL-3

~~ An overview of how to use the package, including the most important ~~ ~~ functions ~~

Author(s)

Raúl Alonso Álvarez

Maintainer: Raúl Alonso Álvarez <153raul@gmail.com> ~~ The author and/or maintainer of the package ~~

References

~~ Literature or other references for background information ~~ ~~ Optionally other standard keywords, one per line, from file KEYWORDS in ~~ ~~ the R documentation directory ~~

BeatDetector *BeatDetector*

Description

Detectes the QRS positions in an ECG signal

Usage

```
BeatDetector(ECGData, algorithm, channel = 1, ...)
```

Arguments

ECGData	ECG data model
algorithm	Select an algorithm, numeric value (from 1 to 3) is not mandatory
channel	In which channel the detection is applied
...	

Author(s)

Raúl Alonso Álvarez

References

J. Pan and W. J. Tompkins 1985, "A real-time QRS detection algorithm", *Biomedical Engineering, IEEE Transactions*, vol **BME-32**

P. S. Hamilton and W. J. Tompkins 1986, "Quantitative investigation of QRS detection rules using the MIT/BIH arrhythmia database", *Biomedical Engineering, IEEE Transactions*, vol **BME-33**

`CreateECGData` *CreateECGData*

Description

Creates ECG data model

Usage

```
CreateECGData(Verbose = FALSE, ...)
```

Arguments

`Verbose`	Enables or disables verbose mode
`...`	

Author(s)

Raúl Alonso Álvarez

`Delineator` *Delineator*

Description

Applies a delineation based on a wavelet algorithm

Usage

```
Delineator(ECGData, algorithm, channel = 1, ...)
```

Arguments

`ECGData`	ECG data model
`algorithm`	The algorithm number
`channel`	In which channel the detection is applied
`...`	

Author(s)

Raúl Alonso Álvarez

References

J. P. Martinez, R. Almeida, S. Olmos, A. P. Rocha and P. Laguna 2004, "A Wavelet-Based ECG Delineator: Evaluation on Standard Databases", *Biomedical Engineering, IEEE Transactions*

Export.ascii *Export.ascii*

Description

Writes the QRS positions in an ascii file

Usage

```
Export.ascii(ECGData, fileName, path = "./", ...)
```

Arguments

ECGData	ECG data model
fileName	Name of the file to be written
path	Path where to put the file
...	

Author(s)

Raúl Alonso Álvarez

PlotDelineation *PlotDelineation*

Description

Plots the signal containing the delineation positons annotated. It takes as parameters, which signal to plot, whether to show the QRS fiducial marks, whether to show the QRS delineation positions and the number of samples to show in each iteration. According to the parameters it receives, plot the signal with the corresponding annotations.

Usage

```
PlotDelineation(ECGData, signalToPlot, showNqrs = TRUE, showQRSDelineation= TRUE, showNPreNpos
```

Arguments

ECGData	ECG data model
signalToPlot	the signal to be plotted
showNqrs	whether to show qrs fiducial marks
showQRSDelineation	whether to show QRS delineation
showNPreNpost	whether to show n.pre and n.post positions
showNLastNFirst	whether to show n.first and n.last.positions
pointsOverTheSignal	If it is true, show the height of the points over the signal to be plotted
samplesToShow	Number of samples that are shown in each iteration
...	

Author(s)

Raúl Alonso Álvarez

PlotECG *PlotECG*

Description

Plots an array recursively. The array contain the ECG signal

Usage

```
PlotECG( ECGData, channel = 1, showAnnot = FALSE , samplesToShow = 5000, ...)
```

Arguments

ECGData	ECG data model
channel	Which channel to plot
showAnnot	Whether to show annotations, boolean value
samplesToShow	Number of samples that are shown in each iteration
...	

Author(s)

Raúl Alonso Álvarez

ReadECG.WFDB *ReadECG.WFDB*

Description

Read an ECG from a Physionet file

Usage

```
ReadECG.WFDB(ECGData, headerFile, format, path = "./", ADCGain = 200, ...)
```

Arguments

ECGData	ECG data model
headerFile	Header file name
format	One of physionet file formats
path	Path where the .header and .dat files are located. It must be the same for both
ADCGain	ADCGain
...	

Author(s)

Raúl Alonso Álvarez

Rms *Rms*

Description

Applies the root mean square to an array

Usage

```
Rms(array, ...)
```

Arguments

array	Array containing the data
...	

Author(s)

Raúl Alonso Álvarez

`WaveletDelineator` *WaveletDelineator*

Description

Applies a delineation based on a wavelet algorithm

Usage

```
WaveletDelineator(ECGData, channel = 1, ...)
```

Arguments

`ECGData`	ECG data model
`channel`	In which channel the detection is applied
`...`	

Author(s)

Raúl Alonso Álvarez

References

J. P. Martinez, R. Almeida, S. Olmos, A. P. Rocha and P. Laguna 2004, "A Wavelet-Based ECG Delineator: Evaluation on Standard Databases", *Biomedical Engineering, IEEE Transactions*

`WaveletDetector` *WaveletDetector*

Description

Applies a wavelet based algorithm

Usage

```
WaveletDetector(ECGData, channel = 1, ...)
```

Arguments

`ECGData`	ECG data model
`channel`	In which channel the detection is applied
`...`	

Author(s)

Raúl Alonso Álvarez

References

J. P. Martinez, R. Almeida, S. Olmos, A. P. Rocha and P. Laguna 2004, "A Wavelet-Based ECG Delineator: Evaluation on Standard Databases", *Biomedical Engineering, IEEE Transactions*

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