

Package ‘IgorR’

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Type Package

Title Read binary files saved by Igor Pro (including Neuromatic data)

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Description This package provides function to read data from the Igor Pro data analysis program by Wavemetrics. The data formats supported are Igor packed experiment format (pxp) and Igor binary wave (ibw). See: <http://www.wavemetrics.com/> for details. It also includes some functions to load special ppx files produced by the Neuromatic/Nclamp packages for recording and analysing neuronal data. See <http://www.neuromatic.thinkrandom.com/> for details.

Imports bitops, tools

Suggests testthat

License GPL (>= 2)

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IgorR-package	<i>Read binary files saved by Igor Pro (including Neuromatic data)</i>
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Description

This package provides function to read data from the Igor Pro data analysis program by Wavemetrics. The data formats supported are Igor packed experiment format (pxp) and Igor binary wave (ibw). See: <http://www.wavemetrics.com/> for details.

Details

It also includes some functions to load special ppx files produced by the Neuromatic/Nclamp packages for recording and analysing neuronal #data. See <http://www.neuromatic.thinkrandom.com/> for details.

Key functions in the package include [read.ibw](#), [read.ppx](#).

IgorR-private	<i>Private functions in IgorR Package</i>
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Description

Private functions in IgorR Package

Read the a short record header from the current location in a PXP file

Note that the recordType will be one of the constants from Igor's enum PackedFileRecordType

Usage

```
.ReadPackedHeader(con, endian)
```

Arguments

con	an R connection to the file we are reading
endian	either little or big

Value

a list containing information about the current record

Author(s)

jefferis

read.ibw	<i>Read binary files in the Igor Binary Wave format (IBW)</i>
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Description

Read binary files in the Igor Binary Wave format (IBW)

Usage

```
read.ibw(wavefile, Verbose = FALSE, ReturnTimeSeries = FALSE,
         MakeWave = FALSE, HeaderOnly = FALSE)
```

Arguments

wavefile	Either a character vector containing the path to a file or an R connection
Verbose	Whether to print status information while reading the file
ReturnTimeSeries	Return as an R time series (package ts)
MakeWave	Assign wave to a list in the global user environment
HeaderOnly	Only return the header of the Igor Wave

Value

returns a vector containing the wave data OR returns the name of a new R vector containing the data which has been made in the user environment

Author(s)

jefferis

Examples

```
# return a list containing the wave
wavedata=read.ibw(system.file("igor", "version5.ibw", package="IgorR"))
sum(wavedata)

# make a list containing the wave's data in the users's environment
wavename=read.ibw(system.file("igor", "version5.ibw", package="IgorR"), MakeWave=TRUE)
sum(get(wavename))
```

read.pxp *Reads an Igor Pro Packed Experiment (.pxp) file*

Description

Note that pxp files are only partially documented so some contents cannot be parsed (e.g. image data). This function currently reads data records (Igor waves and variables), history, procedures, recreation macros and plain text notebooks. Formatted notebooks cannot be read.

Usage

```
read.pxp(pxpfile, regex, ReturnTimeSeries = FALSE, Verbose = FALSE,
        StructureOnly = FALSE, ExtractText = FALSE, IgorPlatform = NULL, ...)
```

Arguments

pxpfile	Character vector naming a PXP file or an R connection
regex	only read records (e.g. waves) in the pxp file whose names match a regex
ReturnTimeSeries	Igor waves are returned as a ts object with sensible x scaling (FALSE by default)
Verbose	whether to print information to console during loading (numeric values are also allowed 0=none, 1=basic, 2=all)
StructureOnly	TODO Only the structure of the pxp file for inspection
ExtractText	Whether to extract procedures, recreation macros, history and plain text notebooks (FALSE by default)
IgorPlatform	OS on which Igor file was saved (windows or macintosh)
...	Optional parameters passed to read.ibw

Details

IgorPlatform will determine in which encoding text is read (WINDOWS-1252 for windows and macintosh for macintosh). Unique abbreviations are acceptable. Defaults to "windows" on windows, "macintosh" otherwise. Note that Igor Pro 5.5 added a PlatformRecord to the pxp file format which is used to determine the file's platform of origin when available. Since this is informatino straight from the horse's mouth it will override the IgorPlatform argument.

Value

A list containing all the individual waves or variables in the pxp file

Author(s)

jefferis

Examples

```
r=read.pxp(system.file("igor", "testexpt.pxp", package="IgorR"))
```

`ReadAllNclampLogTables`*Read all Nclamp log tables from a directory into a list*

Description

Read all Nclamp log tables from a directory into a list

Usage

```
ReadAllNclampLogTables(logfiledir, pattern = "_log[0-9]+[.]pxp$", ...)
```

Arguments

<code>logfiledir</code>	Path to directory containing log files (pxp files)
<code>pattern</code>	Optional regular expression - see list.files
<code>...</code>	additional parameters for <code>ReadNclampLogTable</code>

Value

named list containing one dataframe for each parsed log file

Author(s)

jefferis

Examples

```
## Not run:  
ReadAllNclampLogTables("/GD/projects/PhysiologyData/logs")  
str(logfiles)  
  
## End(Not run)
```

`ReadNclampLogTable`*Read the log table produced by Nclamp acquisition software for Igor*

Description

log tables are special Igor .pxp files that contain only variables. Each entry corresponds to a single run of an Nclamp protocol, storing information like protocol name, run time etc.

Usage

```
ReadNclampLogTable(f, Verbose = FALSE)
```

Arguments

f Path to the log file
 Verbose Whether to print status information while reading the file

Value

A dataframe containing a row for each acquisition protocol run

Author(s)

jefferis

SummariseSweepFile *Extract summary information from an Nclamp/Igor Sweep File*

Description

e.g. for import into Physiology database

Usage

```
SummariseSweepFile(f, Verbose = F)
```

Arguments

f path to an Nclamp/Igor pxx format sweep file
 Verbose print details while parsing underlying pxx file

Value

a list of about 25 fields summarising the sweep file

Author(s)

jefferis

Examples

```
l=SummariseSweepFile(system.file("igor", "WedJul407c2_001.pxx", package="IgorR"))
cat("There are", l$NumWaves, "waves in the file each of total duration", l$StimWaveLength,
    "ms and sample duration", l$StimSampleInterval, "ms \n")
```

SweepFilesToDataFrame *Summarise multiple sweep files into a single dataframe*

Description

Note that this is still a little fragile if the lists produced by SummariseSweepFile do not have consistent field names

Usage

```
SweepFilesToDataFrame(ff)
```

Arguments

ff paths to a set of sweep files

Value

dataframe with rows for each sweep file

Author(s)

jefferis

See Also

SummariseSweepFile

tsp.igorwave *Return tsp attribute of igor wave (start, end, frequency)*

Description

Note that $end = (npts-1) * deltat$

Usage

```
tsp.igorwave(wave)
```

Arguments

wave Igor wave loaded by read.ibw or read.pxp

Value

numeric vector with elements start, end, frequency

Author(s)

jefferis

See Also

tsp

UpdateSweepDataFrame *Update the csv file summarising the sweeps in an Nclamp data folder*

Description

Update the csv file summarising the sweeps in an Nclamp data folder

Usage

```
UpdateSweepDataFrame(folder, outfile = NULL, action = c("update", "force"),  
  DryRun = FALSE)
```

Arguments

folder	Path to the folder
outfile	Path to outfile (default: /path/to/datafolder/datafolder.csv)
action	TODO update newer (default) or force update (not implemented)
DryRun	Report which files would be processed, but do nothing

Value

TRUE if something happened, FALSE otherwise

Author(s)

jefferis

WaveToTimeSeries	<i>Convert an Igor wave (or list of waves) loaded by read.ibw into an R time series</i>
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Description

Where there are multiple waves, they are assumed to be of compatible lengths so that they can be joined together by cbind.

Usage

```
WaveToTimeSeries(WaveData, ReturnOriginalDataOnError = TRUE)
```

Arguments

WaveData, a wave or list of waves

ReturnOriginalDataOnError

If we can't make a time series, return return original data (default TRUE)

Value

a time series or multi time series (ts, mts)

Author(s)

jefferis

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