Package 'IgorR'

January 20, 2025

Type Package

Title Read Binary Files Saved by 'Igor Pro' (Including 'Neuromatic'
Data)

Version 0.9.0

Description 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:
<https://www.wavemetrics.com/> for details. Also includes functions to load
special 'pxp' files produced by the 'Igor Pro' 'Neuromatic' and 'Nclamp'
packages for recording and analysing neuronal data. See
<https://github.com/SilverLabUCL/NeuroMatic> for details.

Imports bitops, tools, timechange

Suggests spelling, testthat

License GPL (>= 2)

LazyLoad yes

RoxygenNote 7.3.2

Language en-GB

Encoding UTF-8

URL <https://github.com/jefferis/IgorR>,
<https://jefferis.github.io/IgorR/>

BugReports <https://github.com/jefferis/IgorR/issues>

NeedsCompilation no

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Repository CRAN

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Contents

IgorR-package   *Read binary files saved by Igor Pro (including Neuromatic data)*

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: <https://www.wavemetrics.com/> for details.

Details

It also includes some functions to load special pxp files produced by the Neuromatic/Nclamp packages for recording and analysing neuronal #data. See https://github.com/SilverLabUCL/NeuroMatic for details.

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

Author(s)

Maintainer: Gregory Jefferis <jefferis@gmail.com> ([ORCID](#))

Other contributors:

- Thomas Braun [contributor]

See Also

Useful links:

- <https://github.com/jefferis/IgorR>

- <https://jefferis.github.io/IgorR/>

- Report bugs at <https://github.com/jefferis/IgorR/issues>

IgorR-private *Private functions in IgorR Package*

Description

.ReadPackedHeader reads the short record header from the current location in a PXP file

Usage

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

Arguments

con   an R connection to the file we are reading

endian   either little or big

Details

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

Value

a list containing information about the current record

Author(s)

jefferis

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read.ibw *Read binary files in the Igor Binary Wave format (IBW)*

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`	if `TRUE`, print status information while reading the file.
`ReturnTimeSeries`	
	if `TRUE`, return as an R time series (package [ts](#)).
`MakeWave`	if `TRUE`, assign wave to a list in the global user environment.
`HeaderOnly`	if `TRUE`, only return the header of the Igor Wave.

Value

A vector containing the wave data or, if `MakeWave == TRUE`, returns the name of a new R vector containing the data which has been made in the user environment

Author(s)

jefferis

See Also

Other igor-io: [WaveToTimeSeries()](#), [read.pxp()](#)

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`	if TRUE, only read records (e.g. waves) in the PXP file whose names match a regex.
`ReturnTimeSeries`	
	if TRUE, Igor waves are returned as a `link{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) if TRUE, 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 information 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

See Also

Other igor-io: WaveToTimeSeries(), read.ibw()

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

logfiledir	path to directory containing log files (pxp files).
pattern	optional regular expression – see list.files.
...	additional parameters for ReadNclampLogTable.

Value

A named list containing one dataframe for each parsed log file.

Author(s)

jefferis

Examples

```
## Not run:
logfiles <- 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 = FALSE)
```

Arguments

f   path to an Nclamp/Igor PXP format sweep file.

Verbose   if TRUE, print details while parsing underlying PXP file.

Value

A list of about 25 fields summarising the sweep file.

Author(s)

jefferis

Examples

```
l <- SummariseSweepFile(system.file("igor", "WedJul407c2_001.pxp", 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

A dataframe with rows for each sweep file.

Author(s)

jefferis

See Also

SummariseSweepFile

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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](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	update newer (default) or force update (not yet implemented).
DryRun	if TRUE, report which files would be processed, but do nothing.

Value

TRUE if something happened, FALSE otherwise.

Author(s)

jefferis

WaveToTimeSeries	*Convert an Igor wave (wave list) loaded by read.ibw into an R time series*

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

See Also

Other igor-io: [read.ibw](), [read.pxp]()

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