

Package ‘RImageJROI’

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Title Read 'ImageJ' Region of Interest (ROI) Files

Description Provides functions to read 'ImageJ' (<http://imagej.nih.gov/ij/>) Region of Interest (ROI) files, to plot the ROIs and to convert them to 'spatstat' (<http://spatstat.org/>) spatial patterns.

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URL <https://github.com/davidcsterratt/RImageJROI>

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Imports spatstat

Suggests png, testthat

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R topics documented:

ij2spatstat	2
plot.ijroi	3
plot.ijzip	5
print.ijroi	6
read.ijroi	7
read.ijzip	8
RImageJROI	9

Index	10
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ij2spatstat	<i>Convert 'ijroi' and 'ijzip' objects to spatstat spatial patterns</i>
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Description

Converts [ijroi](#) and [ijzip](#) objects to a list of [spatstat](#) spatial patterns.

Usage

```
ij2spatstat(X, window = NULL, pattern.type = NULL, unitname = NULL,
            scale = 1, return.type = FALSE, convert.only = NULL)
```

Arguments

X	ijroi or ijzip object to be converted.
window	the window for returned spatial patterns. Can be an owin object defining a common window for all returned patterns, a character string 'range' leading to a common window based range of all returned patterns, or NULL (default) leading to separate windows for each pattern.
pattern.type	a character string specifying the desired pattern type to be returned (" ppp ", " psp " or " owin "). Works only if X is an 'ijroi' object. Ignored otherwise. Defaults to an appropriate pattern type depending on the ROI type (see 'Details').
unitname	Name of the unit of length for the resulting window(s) (see owin).
scale	A numeric value defining the scale of photograph in pixels / unitname. Defaults to 1.
return.type	should the type of ROI object(s) be returned in addition to spatstat spatial patterns? Defaults to FALSE.
convert.only	a character vector specifying the strType of ROI objects to be converted (see plot.ijroi for possible pattern types). Pattern types not mentioned will not be converted. Works only if X is an 'ijzip' object. Ignored otherwise.

Details

The function converts [ijroi](#) and [ijzip](#) objects to [spatstat](#) spatial patterns for further calculations with the objects. By default, areal types ("rect", "oval", "ELLIPSE", "polygon") are converted to [owin](#) objects. Line types ("line" (including "ARROW"), "freeline", "polyline", "angle", "freehand" (excluding "ELLIPSE")) are converted to [psp](#) objects and "point" types to [ppp](#) objects.

Value

Returns a list of [spatstat](#) patterns of appropriate type (see 'Details'). If `return.type = TRUE` returns a list with two levels specifying the spatstat pattern and the ROI type.

Author(s)

Mikko Vihtakari

See Also

[read.ijroi](#) [read.ijzip](#)

Examples

```
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "ijzip.zip")
x <- read.ijzip(file)
ij2spatstat(x)
```

plot.ijroi	<i>Plot ijroi object</i>
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Description

Plots ImageJ ROI objects using the ['base' graphics](#) package.

Usage

```
## S3 method for class 'ijroi'
plot(x, add = FALSE, xlab = "", ylab = "", main = "",
     asp = 1, ...)
```

Arguments

<code>x</code>	The <code>ijroi</code> object.
<code>add</code>	Whether to add to an existing plot.
<code>xlab</code>	a title for the x axis: title .
<code>ylab</code>	a title for the y axis: title .
<code>main</code>	an overall title for the plot: title .
<code>asp</code>	numeric defining the aspect ratio y/x: see plot.window . Defaults to 1.
<code>...</code>	Additional parameters.

Details

ImageJ ROI objects created with following tools are plotted using following graphics commands:

- Rectangle tool ("rect") [rect](#). Plotted based on coordinates.
- Oval selections ("oval") [polygon](#). Plotted based on equation.
- Freehand selections ("freehand") [lines](#). Plotted based on coordinates.
- Elliptical selections ("freehand", "ELLIPSE") [lines](#). Plotted based on equation.
- Point Tool and Multi-Point Tool ("point") [points](#). Plotted based on coordinates.
- Straight Line ("line") [lines](#). Plotted based on coordinates.
- Arrow tool ("line", "ARROW") [arrows](#). Plotted based on coordinates. Stroke width passed to [lwd](#) argument.

- Segmented Line ("polyline") [lines](#). Plotted based on coordinates.
- Freehand Line ("freeline") [lines](#). Plotted based on coordinates.

All graphics allow the additional parameters from appropriate functions. Aspect ratio (asp) is 1 by default leading to correct representation of ImageJ objects. If correct representation is not important, set `asp = NA` to use the R base-graphics default setting.

Author(s)

David Sterratt, Mikko Vihtakari

See Also

[read.ijroi](#), [read.ijzip](#), [plot.ijzip](#)

Examples

```
# type 0 'polygon' ROIs are plotted using lines()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "polygon.roi")
x <- read.ijroi(file)
plot(x, col = "red")

# type 1 'rect' ROIs are plotted using rect()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "rect.roi")
x <- read.ijroi(file)
plot(x, border = "red")

# type 2 'oval' ROIs are plotted using polygon()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "oval.roi")
x <- read.ijroi(file)
plot(x, border = "red")

# type 3 'line' ROIs (among others listed in 'details') are plotted using lines()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "line.roi")
x <- read.ijroi(file)
plot(x, col = "red")

# type 3 arrows are a subtype of 'line'. Plotted using arrows(). The stroke width is
# carried over. To change width, use lwd argument
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "arrow.roi")
x <- read.ijroi(file)
plot(x, col = "red")

# type 4 'freeline' ROIs are plotted using lines()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "freehand_line.roi")
x <- read.ijroi(file)
plot(x, col = "red")

# type 5 'polyline' ROIs are plotted using lines()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "segmented_line.roi")
x <- read.ijroi(file)
plot(x, col = "red")
```

```

# type 7 'freehand' selection ROIs are plotted using lines()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "freehand_selection.roi")
x <- read.ijroi(file)
plot(x, col = "red")

# type 7 Objects created using 'Elliptical selections' tool are also saved as
# 'freehand', but with subtype 'ELLIPSE'. The coordinates for this type are flawed
# and plotting is done using equation for an ellipse
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "elliptical.roi")
x <- read.ijroi(file)
plot(x, border = "red")
lines(x$coords[,1], x$coords[,2]) ## plotted based on coordinates.

# type 10 'point' ROIs are plotted using points()
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "multi_point.roi")
x <- read.ijroi(file)
plot(x, col = "red")

# If following is shown as a (round) circle, asp = 1
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "circle.roi")
x <- read.ijroi(file)
plot(x, border = "red")

# text is stored as type 'rect' with subtype 'TEXT'. Currently
# only the outlining rectangle is returned
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "text.roi")
x <- read.ijroi(file)
plot(x, border = "red")

```

plot.ijzip

Plot ijzip object

Description

Plots .zip files containing ImageJ ROI objects using the **'base' graphics** package.

Usage

```

## S3 method for class 'ijzip'
plot(x, add = FALSE, xlab = "", ylab = "", main = "",
     asp = 1, ...)

```

Arguments

x	The ijzip object.
add	Whether to add to an existing plot.
xlab	a title for the x axis: see title .
ylab	a title for the y axis: see title .

main an overall title for the plot: see [title](#).
asp numeric defining the aspect ratio y/x: see [plot.window](#). Defaults to 1.
... Arguments to be passed to methods, such as graphical parameters (see [par](#)).

Details

The function loops [plot.ijroi](#) plotting function over all elements in `x`. See [plot.ijroi](#) for further details.

Author(s)

Mikko Vihtakari, David Sterratt

See Also

[read.ijzip](#), [plot.ijroi](#)

Examples

```
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "ijzip.zip")
x <- read.ijzip(file)
plot(x)
```

print.ijroi *Print ijroi objects*

Description

Print ijroi objects

Usage

```
## S3 method for class 'ijroi'
print(x, all = FALSE, ...)
```

Arguments

x ijroi object to be printed.
all logical indicating whether to print all information from ijroi object as opposed to a subset of relevant information. Defaults to FALSE.
... further arguments passed to [print](#).

Author(s)

Mikko Vihtakari, David Sterratt

See Also

[read.ijroi](#)

read.ijroi	<i>Read an ImageJ ROI file</i>
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Description

Read an ImageJ ROI file. This returns a structure containing the ImageJ data.

Usage

```
read.ijroi(file, verbose = FALSE)
```

Arguments

file	Name of ImageJ ROI file to read
verbose	Whether to report information

Value

A structure of class `ijroi` containing the ROI information

Author(s)

David Sterratt

See Also

[plot.ijroi](#) for plotting single ROI objects.

[read.ijzip](#) for reading several ROI objects from .zip files.

Examples

```
library(png)
path <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi")
im <- as.raster(readPNG(file.path(path, "imagej-logo.png")))
plot(NA, NA, xlim=c(0, ncol(im)), ylim=c(nrow(im), 0), asp=1)
rasterImage(im, 0, nrow(im), ncol(im), 0, interpolate=FALSE)
r <- read.ijroi(file.path(path, "rect.roi"))
plot(r, TRUE)
r <- read.ijroi(file.path(path, "polygon.roi"))
plot(r, TRUE)
r <- read.ijroi(file.path(path, "oval.roi"))
plot(r, TRUE)
```

read.ijzip	<i>Read ImageJ zip file containing several ROI files</i>
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Description

A wrapper function, which reads a zip file containing ImageJ ROI files using [read.ijroi](#) function.

Usage

```
read.ijzip(file, names = TRUE, list.files = FALSE, verbose = FALSE)
```

Arguments

file	zip file containing a collection of ImageJ ROI files
names	Logical, indicating whether the ROI file names should be used as names for the elements in the list (see Return). If FALSE a sequence of names specifying the type of ROI is automatically generated.
list.files	logical, indicating whether a data.frame of ROI files in file should be returned instead of a list of results. Defaults to FALSE. If TRUE equals to <code>unzip(file, list = TRUE)</code> .
verbose	Whether to report information (see read.ijroi).

Value

An object of class `ijzip` containing a list of the coordinates and types of ImageJ ROIs. Each element is named after option specified in `names`.

Author(s)

Mikko Vihtakari

See Also

[read.ijroi](#), [plot.ijzip](#).

Examples

```
file <- file.path(system.file(package = "RImageJROI"), "extdata", "ijroi", "ijzip.zip")
x <- read.ijzip(file)
plot(x)
```

RImageJROI

Read ImageJ Region of Interest (ROI) files

Description

Provides functions to read ImageJ (<http://imagej.nih.gov/ij/>) Region of Interest (ROI) files, to plot the ROIs and to convert them as spatstat (<http://spatstat.org/>) spatial patterns.

Details

ImageJ ROI objects can be read to R using `read.ijroi` and `read.ijzip` functions. The objects can be plotted using generic `plot` command and converted to `spatstat` spatial patterns by using `ij2spatstat` function.

Index

'base' graphics, [3](#), [5](#)

arrows, [3](#)

ij2spatstat, [2](#), [9](#)

ijroi, [2](#)

ijzip, [2](#)

lines, [3](#), [4](#)

lwd, [3](#)

owin, [2](#)

par, [6](#)

plot, [9](#)

plot.ijroi, [2](#), [3](#), [6](#), [7](#)

plot.ijzip, [4](#), [5](#), [8](#)

plot.window, [3](#), [6](#)

points, [3](#)

polygon, [3](#)

ppp, [2](#)

print, [6](#)

print.ijroi, [6](#)

psp, [2](#)

range, [2](#)

read.ijroi, [3](#), [4](#), [6](#), [7](#), [8](#), [9](#)

read.ijzip, [3](#), [4](#), [6](#), [7](#), [8](#), [9](#)

rect, [3](#)

RImageJROI, [9](#)

RImageJROI-package (RImageJROI), [9](#)

spatstat, [2](#), [9](#)

title, [3](#), [5](#), [6](#)

window, [2](#)