Package 'tipom'

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Type Package

Title Automated measure-based classification for flint tools

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Description TIPOM is based on a methodology that was developed in the 1960s by Bernardino Bagolini. The basic idea is to use the three simple dimensions of length, width and thickness of each lithic artefact to classify them in discrete groups and infer their function.

License GPL (>= 3)

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tipom-package *Automated measure-based classification of prehistoric flint tools*

Description

TIPOM is based on a methodology that was developed in the 1960s by Bernardino Bagolini. The basic idea is to use the three simple measures of length, width and thickness of each flint artefact to classify them in discrete groups, and assess their function based on such classification.

Details

Package:	tipom
Type:	Package
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Author(s)

Who wrote it Stefano Costa <steko@iosa.it> with Luca Bianconi <lc.bianconi@googlemail.com>
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References

B.Bagolini, "Ricerche sui manufatti litici preistorici non ritoccati", Annali Università di Ferrara, n. s., sez XV, I, 10 (1968), pag. 195 sgg

S. Costa, L. Bianconi and E. Starnini, "" in F. Cantone (ed.), ARCHEOFOSS. Open Source, Free Software e Open Format nei processi di ricerca archeologica. Atti del VI Workshop (Napoli, 9-10 giugno 2011), Napoli:Naus 2012, pp. 211-218.

AC15 *Typometry dataset AC15*

Description

This data set gives the lengths, widths and thicknesses of some stone tools.

Usage

```
AC15
```

Format

A data frame containing 28 observations of 3 variables.

Source

Provided by Dr. Elisabetta Starnini.

`D7CAN2` *Typometry dataset D7CAN2*

Description

This data set gives the lengths, widths and thicknesses of some stone tools.

Usage

```
D7CAN2
```

Format

A data frame containing 281 observations of 3 variables.

Source

Provided by Dr. Elisabetta Starnini.

`IA` *Indice di Allungamento*

Description

This basic function returns a ratio between length and width of an artefact, to be used for defining the elongation.

It is expected that the values are provided in millimeters (mm): if your original data use other units, please convert them to millimeters beforehand.

Usage

```
IA(length, width)
```

Arguments

`length`

`width`

Value

The function returns the Elongation Index (Indice di Allungamento), an absolute ratio between length and width.

Author(s)

Stefano Costa <steko@iosa.it>

Examples

```
## The function is currently defined as
function(length, width) {
ia <- length / width
ia
  }
```

IC *Indice di Carenatura*

Description

This basic function returns a ratio between either length or width (choosing the smaller one) and thickness of an artefact, to be used for defining how carinated it is.

It is expected that the values are provided in millimeters (mm): if your original data use other units, please convert them to millimeters beforehand.

Usage

```
IC(length, width, thickness)
```

Arguments

`length`

`width`

`thickness`

Value

The function returns the Carination Index (Indice di Carenatura), an absolute ratio between either length or width (the smaller) and thickness of the lithic tool.

Author(s)

Stefano Costa <steko@iosa.it>

Examples

```
## The function is currently defined as
function(length, width, thickness) {
lw <- max(length, width)
ic <- lw / thickness
ic
  }
```

`MS` *Modulo di Scheggiatura*

Description

This basic function returns a sum of the length and the width of an artefact, to be used for defining the overall size.

It is expected that the values are provided in millimeters (mm): if your original data use other units, please convert them to millimeters beforehand.

Usage

```
MS(length, width)
```

Arguments

`length`

`width`

Value

This function returns the Modulo di Scheggiatura, a single number expressing the overall size of the flint tool by summing its length and width.

Author(s)

Stefano Costa <steko@iosa.it>

Examples

```
## The function is currently defined as
function(length, width) {
ms <- length + width
ms
  }
```

tipom.car *Scatterplot of carination index lithic artefacts.*

Description

The scatterplot shows thickness on the X axis and the largest dimension between length and width on the Y axis, representing the carination index.

The option `ic` draws a set of lines superimposed to the scatterplot, respectively representing discrete classes of carination. It is turned off by default.

Usage

```
tipom.car(lengths, widths, thicknesses, ic = FALSE, bubble = FALSE, ...)
```

Arguments

`lengths`	vector containing the length of each artefact
`widths`	vector containing the width of each artefact
`thicknesses`	vector containing the thickness of each artefact
`ic`	if TRUE, carination classes are drawn as lines
`bubble`	if TRUE, use circles proportional to the number of observations, rather than special symbols
`...`	options passed to `plot`

Value

Returns a plot object.

Author(s)

Stefano Costa <steko@iosa.it>

tipom.heat *Heatmap of width and length of lithic artefacts.*

Description

The heatmap shows thickness on the X axis and the largest dimension between length and width on the Y axis, representing the carination index.

The heatmap is an alternate representation for `tipom.car` when the number of artefacts is higher than a certain treshold, that the user can arbitrarily choose.

Usage

```
tipom.heat(lengths, widths, thicknesses, ...)
```

Arguments

`lengths`	vector containing the length of each artefact
`widths`	vector containing the width of each artefact
`thicknesses`	vector containing the thickness of each artefact
`...`	options passed to `plot`

Value

Returns a plot object.

Author(s)

Stefano Costa <steko@iosa.it>

`tipom.import` *Import a data frame as a custom object with extra metadata (attributes) such as the dataset name, the unit of measurement.*

Description

Objects created by `tipom.import` can be passed directly to the other functions provided by TIPOM, without need to specify the single vectors containing data. So, for example, the function `tipom.lw` will pick automatically the Length and Width columns of the data frame, and the resulting plot will have an indication of the unit of measurement.

Usage

```
tipom.import(imported.data, name, units, description=NULL)
```

Arguments

`imported.data`	data frame containing the observations
`name`	the human-readable name of the data
`units`	the unit of measurement used in the data (e.g. cm or mm)
`description`	a longer description of the data

Value

Returns a data frame with a few extra attributes that make it easier to pass data from one function to another.

Author(s)

Stefano Costa <steko@iosa.it>

`tipom.lw` *Scatterplot of width and length of lithic artefacts.*

Description

The scatterplot shows width on the X axis and length on the Y axis, as if the artefact was drawn on the screen in a standard orientation. Dimensions are passed as length and width.

The options `ia` and `ms` draw two sets of lines superimposed to the scatterplot, respectively representing discrete classes of elongation and of overall size. They are both turned off by default.

Usage

```
tipom.lw(lengths, widths, ia = FALSE, ms = FALSE, ...)
```

Arguments

`lengths`	vector containing the length of each artefact
`widths`	vector containing the width of each artefact
`ia`	if TRUE, elongation classes are drawn as lines
`ms`	if TRUE, size classes are drawn as lines
`...`	options passed to `plot`

Value

Return a plot object.

Author(s)

Stefano Costa <steko@iosa.it>

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