

Package ‘mob’

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Title Monotonic Optimal Binning

Version 0.1.0

Description It is a collection of R functions that would generate the monotonic binning and perform the WoE (Weight of Evidence) transformation used in consumer credit scorecard developments.

License GPL (>= 2)

URL <https://github.com/statcompute/mob>

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Depends R (>= 3.6.0)

Imports stats, parallel, gbm, Rborist, Hmisc

Encoding UTF-8

LazyData true

RoxygenNote 7.0.2

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arb_bin	<i>Monotonic binning based on decision tree</i>
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Description

The function `arb_bin` implements monotonic binning based on decision tree

Usage

```
arb_bin(data, y, x)
```

Arguments

<code>data</code>	A input dataframe
<code>y</code>	The name of Y with 0/1 binary values
<code>x</code>	The name of X with numeric values

Value

A list of binning outcomes, including a list of cut points and a summary dataframe

Examples

```
arb_bin(df, bad, majordrg)
```

bad_bin	<i>Monotonic binning based on bad only</i>
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Description

The function `bad_bin` implements monotonic binning only based on bads, e.g. `Y = 1`

Usage

```
bad_bin(data, y, x)
```

Arguments

<code>data</code>	A input dataframe
<code>y</code>	The name of Y with 0/1 binary values
<code>x</code>	The name of X with numeric values

Value

A list of binning outcomes, including a list of cut points and a summary dataframe

Examples

```
bad_bin(df, bad, majordrg)
```

batch_bin	<i>Apply the monotonic binning to all numeric variables in the dataframe</i>
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Description

The function batch_bin apply the monotonic binning to all numeric variables in the dataframe

Usage

```
batch_bin(data, method = 3)
```

Arguments

data	A input dataframe with the binary Y at the last column
method	An integer representing the binning algorithm, currently supporting:

Value

A list of binning outcomes, including a summary dataframe and a summary dataframe and a dataframes for each binned variable

Examples

```
batch_bin(df, method = 3)
```

batch_woe	<i>Apply the WoE transformation to all numeric variables in the dataframe</i>
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Description

The function batch_woe apply the WoE transformation to all numeric variables in the dataframe based on a list of spec files

Usage

```
batch_woe(data, slst)
```

Arguments

data	A input dataframe with the binary Y at the last column
slst	A list of spec files from the function batch_bin()

Value

A list of WoE transformation outcomes, including a PSI summary and a data frame with a row index and all transformed variables

Examples

```
batch_woe(df, binout$BinLst)
```

cal_woe	<i>Perform WoE transformation of a numeric variable based on the output from a binning function</i>
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Description

The function cal_woe performs WoE transformation of a numeric variable based on the output from a binning function, e.g. qtl_bin() or iso_bin()

Usage

```
cal_woe(data, xname, spec)
```

Arguments

data	A input dataframe
xname	The name string of X with numeric values to which the WoE is applied
spec	The output table from the binning function, e.g. qtl_bin() or iso_bin()

Value

A list of WoE transformation outputs, including a dataframe with the transformed variable and a PSI summary

Examples

```
cal_woe(df, "ltv", ltv_bin$df)
```

gbm_bin	<i>Monotonic binning based on generalized boosted regression model (GBM)</i>
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Description

The function gbm_bin implements monotonic binning based on generalized boosted regression model (GBM)

Usage

```
gbm_bin(data, y, x)
```

Arguments

data	A input dataframe
y	The name of Y with 0/1 binary values
x	The name of X with numeric values

Value

A list of binning outcomes, including a list of cut points and a summary dataframe

Examples

```
gbm_bin(df, bad, majordrg)
```

iso_bin	<i>Monotonic binning based on isotonic regression</i>
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Description

The function `iso_bin` implements monotonic binning based on isotonic regression

Usage

```
iso_bin(data, y, x)
```

Arguments

<code>data</code>	A input dataframe
<code>y</code>	The name of Y with 0/1 binary values
<code>x</code>	The name of X with numeric values

Value

A list of binning outcomes, including a list of cut points and a summary dataframe

Examples

```
iso_bin(df, bad, majordrg)
```

manual_bin	<i>Binning based on cut points</i>
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Description

The function `manual_bin` implements binning based on a list of cut points.

Usage

```
manual_bin(df, yname, xname, cuts)
```

Arguments

<code>df</code>	A input dataframe
<code>ymame</code>	The name string of Y with 0/1 binary values
<code>xname</code>	The name string of X with numeric values
<code>cuts</code>	A list of numeric values as cut points

Value

A summary dataframe

Examples

```
manual_bin(df, "bad", "majordrg", c(1, 2, 4))
```

qtl_bin

Monotonic binning by quantile

Description

The function qtl_bin implements quantile-based monotonic binning.

Usage

```
qtl_bin(data, y, x)
```

Arguments

data	A input dataframe
y	The name of Y with 0/1 binary values
x	The name of X with numeric values

Value

A list of binning outcomes, including a list of cut points and a summary dataframe

Examples

```
qtl_bin(df, bad, majordrg)
```

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