

Package ‘SplitWise’

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Type Package

Title Hybrid Stepwise Regression with Single-Split Dummy Encoding

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Description Implements a hybrid regression approach that allows numeric variables to be transformed into either single-split (0/1) dummy variables or retained as continuous predictors. This transformation is followed by stepwise selection to identify the most significant variables. Additionally, the package offers an 'iterative' mode designed to detect partial synergies among variables, enhancing model performance.

License GPL (>= 3)

Encoding UTF-8

Depends R (>= 3.5.0)

Imports rpart,
stats

LazyData true

RoxygenNote 7.3.2

Suggests testthat (>= 3.0.0)

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splitwise

*SplitWise Regression***Description**

Transforms each numeric variable into either a single-split dummy or keeps it linear, then runs `stats::step()` to do stepwise selection. The user can choose a simpler univariate transformation or an iterative approach.

Usage

```
splitwise(
  formula,
  data,
  transformation_mode = c("univariate", "iterative"),
  direction = c("backward", "forward", "both"),
  minsplit = 5,
  trace = 1,
  steps = 1000,
  k = 2,
  ...
)

## S3 method for class 'splitwise_lm'
print(x, ...)

## S3 method for class 'splitwise_lm'
summary(object, ...)
```

Arguments

<code>formula</code>	A formula specifying the response and (initial) predictors, e.g. <code>mpg ~ ..</code>
<code>data</code>	A data frame containing the variables used in formula.
<code>transformation_mode</code>	Either "univariate" or "iterative".
<code>direction</code>	Stepwise direction: "backward", "forward", or "both".
<code>minsplit</code>	Control for the rpart trees (min # obs in node).
<code>trace</code>	If positive, <code>step()</code> prints info at each step.
<code>steps</code>	Maximum number of steps for <code>step()</code> .
<code>k</code>	Penalty multiple for the number of degrees of freedom (e.g. 2 for AIC, log(n) for BIC).
<code>...</code>	Additional arguments passed to <code>summary.lm</code> .
<code>x</code>	A "splitwise_lm" object returned by <code>splitwise</code> .
<code>object</code>	A "splitwise_lm" object returned by <code>splitwise</code> .

Value

An S3 object of class `c("splitwise_lm", "lm")`, storing:

`splitwise_info` List containing transformation decisions, final data, and call.

Functions

- `print(splitwise_lm)`: Prints a summary of the `splitwise_lm` object.
- `summary(splitwise_lm)`: Provides a detailed summary of the `splitwise_lm` object.

Examples

```
# Load the mtcars dataset
data(mtcars)

# Univariate transformations
model_uni <- splitwise(
  mpg ~ .,
  data = mtcars,
  transformation_mode = "univariate",
  direction = "backward",
  trace = 0
)
summary(model_uni)
print(model_uni)

# Iterative approach
model_iter <- splitwise(
  mpg ~ .,
  data = mtcars,
  transformation_mode = "iterative",
  direction = "forward",
  trace = 0
)
summary(model_iter)
print(model_iter)
```

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