

Package ‘dendroextras’

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Title Extra Functions to Cut, Label and Colour Dendrogram Clusters

Type Package

Description Provides extra functions to manipulate dendrograms that build on the base functions provided by the 'stats' package. The main functionality it is designed to add is the ability to colour all the edges in an object of class 'dendrogram' according to cluster membership i.e. each subtree is coloured, not just the terminal leaves. In addition it provides some utility functions to cut 'dendrogram' and 'hclust' objects and to set/get labels.

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dendroextras-package *Extra functions to cut, label and colour dendrogram clusters*

Description

Provides extra functions to manipulate dendrograms that build on the base functions provided by the 'stats' package. The main functionality it is designed to add is the ability to colour all the edges in an object of class 'dendrogram' according to cluster membership i.e. each subtree is coloured, not just the terminal leaves. In addition it provides some utility functions to cut 'dendrogram' and 'hclust' objects and to set/get labels.

Cutting clusters

dendroextras provides the [slice](#) function as an alternative to the base [cut](#) function. In contrast to cut, slice returns group membership *in dendrogram order* i.e. the first element in the group vector that is returned will be the leftmost member of the leftmost cluster (cluster #1).

Colouring clusters

dendroextras provides [colour_clusters](#) to colour all of the edges forming clusters cut by height or number of groups. You can also set and retrieve the leaf colours (i.e. the terminal nodes) using [set_leaf_colours](#) and [leaf_colours](#).

Labels

dendroextras provides [labels](#) and [labels<-](#) methods to get and set the labels of cluster members.

Author(s)

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See Also

[dendrogram](#), [hclust](#) in [stats](#) package.

colour_clusters	<i>Colour sub-clusters of a tree (dendrogram/hclust) object</i>
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Description

The distinctive feature of this function is to colour both the terminal leaves of a cluster and the edges leading to those leaves. The edgePar attribute of nodes will be augmented by a new list item col. The groups will be defined by a call to [slice](#) using the k or h parameters.

Usage

```
colour_clusters(d, k = NULL, h = NULL, col = rainbow, groupLabels = NULL)
```

```
color_clusters(d, k = NULL, h = NULL, col = rainbow, groupLabels = NULL)
```

Arguments

d	A dendrogram or hclust tree object
k	number of groups (passed to slice)
h	height at which to cut tree (passed to slice)
col	Function or vector of colours
groupLabels	If TRUE add numeric group label - see Details for options

Details

If groupLabels=TRUE then numeric group labels will added to each cluster. If a vector is supplied then these entries will be used as the group labels. If a function is supplied then it will be passed a numeric vector of groups (e.g. 1:5) and must return the formatted group labels.

Value

a tree object of class dendrogram.

Author(s)

jefferis

See Also

[slice](#), [cutree](#), [dendrogram](#)

Examples

```
d5=colour_clusters(hclust(dist(USArrests), "ave"),5)
plot(d5)
d5g=colour_clusters(hclust(dist(USArrests), "ave"),5,groupLabels=TRUE)
plot(d5g)
d5gr=colour_clusters(hclust(dist(USArrests), "ave"),5,groupLabels=as.roman)
plot(d5gr)
```

labels.hclust	<i>Find labels of hclust object (in dendrogram order)</i>
---------------	---

Description

NB will return labels in dendrogram order, not in the order of the original labels retained in object\$labels usually corresponding to the row or column names of the [dist](#) object provided to [hclust](#).

Usage

```
## S3 method for class 'hclust'
labels(object, ...)
```

Arguments

object	hclust object from which to extract labels
...	Additional arguments (ignored)

Value

character vector of labels in dendrogram order

Author(s)

jefferis

See Also

[labels](#), [hclust](#)

Examples

```
hc <- hclust(dist(USArrests), "ave")
dend <- as.dendrogram(hc)
stopifnot(all.equal(labels(hc), labels(dend)))
```

labels<-	<i>Set the labels of an object</i>
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Description

Set the labels of an object

Set the labels of a dendrogram

Usage

```
labels(x,...) <- value
```

```
labels(x,...) <- value
```

Arguments

x	Object on which to set labels
...	Additional parameters passed to specific methods
value	New labels

Value

object of class dendrogram

Author(s)

jefferis

See Also

[dendrogram](#), [labels](#)

Examples

```
hc <- hclust(dist(USArrests), "ave")
dend <- as.dendrogram(hc)
labels(dend)<-abbreviate(labels(dend),minlength=2)
```

leaf_colours	<i>Return the leaf colours of a dendrogram</i>
--------------	--

Description

Return the leaf colours of a dendrogram

Usage

```
leaf_colours(d, col_to_return = c("edge", "node", "label"))
```

Arguments

d the dendrogram

col_to_return Character scalar - kind of colour attribute to return

Details

The returned colours will be in dendrogram order.

Value

named character vector of colours, NA_character_ where missing

Author(s)

jefferis

See Also

[slice](#), [colour_clusters](#)

Examples

```
d5=colour_clusters(hclust(dist(USArrests), "ave"),5)
leaf_colours(d5)
```

set_leaf_colours	<i>Set the leaf colours of a dendrogram</i>
------------------	---

Description

Set the leaf colours of a dendrogram

Usage

```
set_leaf_colours(d, col, col_to_set = c("edge", "node", "label"))
set_leaf_colors(d, col, col_to_set = c("edge", "node", "label"))
```

Arguments

d	the dendrogram
col	Single colour or named character vector of colours. When NA no colour will be set.
col_to_set	Character scalar - kind of colour attribute to set

Author(s)

jefferis

See Also

[slice](#), [colour_clusters](#)

Examples

```
d5=colour_clusters(hclust(dist(USArrests), "ave"),5)
dred=set_leaf_colours(d5,'red','edge')
stopifnot(isTRUE(all(leaf_colours(dred)=='red')))
d52=set_leaf_colours(d5,leaf_colours(d5),'edge')
stopifnot(all.equal(d5,d52))
```

slice	<i>Cut a tree-like object into groups numbered in tree order</i>
-------	--

Description

In comparison with cutree, the groups are numbered from left to right as per the tree when plotted in its standard horizontal form. Note also that the return value will have the leaves sorted in dendrogram order.

Usage

```
slice(x, k = NULL, h = NULL, ...)
```

Arguments

x	tree like object
k	an integer scalar with the desired number of groups
h	numeric scalar with height where the tree should be cut
...	Additional parameters passed to methods

Value

a named vector with group memberships

Author(s)

jefferis

See Also

[cutree](#), [cut.dendrogram](#), [rect.hclust](#)

Examples

```
hc <- hclust(dist(USArrests), "ave")
# return groups, leaves ordered by dendrogram
slice(hc,k=5)
# return groups, leaves ordered as originally passed to hclust
slice(hc,k=5)[order(hc$order)]
```


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