Aa Labels

Version 1.4.1, by Giorgio Bianchini

Description: Draws labels on nodes, tips or branches.

Module type: Plotting

Module ID: `ac496677-2650-4d92-8646-0812918bab03`

This module is used to draw labels showing the value of an attribute. The labels can be anchored based on the position of nodes and branches.

Parameters

Attribute

Control type: Attribute selector

Default value: Name

This parameter specifies the attribute used to determine the text of the labels. By default the `Name` of each node is drawn.

Attribute type

Control type: Attribute type

Default value: String

Possible values:

- String
- Number

This parameter specifies the type of the attribute used to determine the text of the labels. By default this is `String`. If the type chosen here does not correspond to the actual type of the attribute (e.g. `Number` is chosen for the `Name` attribute, or `String` is chosen for the `Length` attribute), no label is drawn. If the attribute has values with different types for different nodes, the label is only shown on nodes whose attribute type corresponds to the one chosen here.

Attribute format

Control type: Attribute formatter

This parameter determines how the value of the selected attribute is used to determine the text of the label. By default, if the Attribute type is `String` the text of the label corresponds to the value of the attribute, while if the Attribute type is `Number` the text of the label corresponds to the number rounded to 2 significant digits.

Show on

Control type: Drop-down list

Default value: Leaves

Possible values:

- Leaves
- Internal nodes
- All nodes

This parameter determines on which nodes the label is shown. If the value is `Leaves`, the label is only shown for terminal nodes (nodes with no child nodes). If the value is `Internal nodes` the label is shown only for internal nodes (nodes which have at least one child). If the value is `All nodes`, labels are shown for both leaves and internal nodes.

Exclude cartoon nodes

Control type: Check box

Default value: Checked

This parameter determines whether labels are shown for nodes which have been "cartooned" or collapsed. If the check box is checked, labels are not shown for nodes that have been "cartooned".

Anchor

Control type: Drop-down list

Default value: Node

Possible values:

- Node
- Mid-branch
- Centre of leaves
- Origin

This parameter determines the anchor for the labels. If the value is `Node`, the mid-left of each label is anchored to the corresponding node. If the value is `Mid-branch`, the mid-centre of the label is aligned with the midpoint of the branch connecting the node to its parent. If the value is `Centre of leaves` or `Origin`, the alignment depends on the current Coordinates module:

Coordinates module	Centre of leaves	Origin
Rectangular	The smallest rectangle containing all the leaves that descend from the current node is computed. The anchor corresponds to the centre of this rectangle.	A point corresponding to the projection of the node on a line perpedicular to the direction in which the tree expands and passing through the root node. Usually (i.e. if the tree is horizontal), this means a point with the same horizontal coordinate as the root node and the same vertical coordinate as the current node.
Radial	The smallest rectangle containing all the leaves that descend from the current node is computed. The anchor corresponds to the centre of this rectangle.	The root node.
Circular	The centre of leaves is computed using polar coordinates: the minimum and maximum distance of the leaves that descend from the current node are computed, as well as the minimum and maximum angle. The anchor has a distance corresponding to the average of the minimum and maximum distance, and an angle corresponding to the average of the maximum and minimum angle.	The root node.

Position

Control type: Point

Default value: (5, 0)

This parameter determines how shifted from the anchor point the label is. The `X` coordinate corresponds to the line determined by the Orientation with respect to the Reference; the `Y` coordinate corresponds to the line perpendicular to this.

Alignment

Control type: Drop-down list

Default value: Default

Possible values:

- Default
- Outwards
- Center
- Inwards

Orientation

Control type: Slider

Default value: 0°

Range: [0°, 360°]

This parameter determines the orientation of the label with respect to the Reference, in degrees. If this is `0°`, the label is parallel to the reference (e.g. the branch), if it is `90°` it is perpendicular to the branch and so on.

Reference

Control type: Drop-down list

Default value: Branch

Possible values:

- Horizontal
- Branch

This parameter (along with the Orientation) determines the reference for the direction along which the text of the label flows. If this is `Horizontal`, the labels are all drawn in the same direction, regardless of the orientation of the branch to which they refer. If it is `Branch`, each label is drawn along the direction of the branch connecting the node to its parent.

Font

Control type: Font

Default value: Helvetica 10pt

This parameter determines the font (font family and size) used to draw the labels.

Auto colour by node

Control type: Check box

Default value: Unchecked

If this check box is checked, the colour of each label is determined algorithmically in a pseudo-random way designed to achieve an aestethically pleasing distribution of colours, while being reproducible if the same tree is rendered multiple times.

Opacity

Control type: Slider

Default value: 100 %

Range: [0 %, 100 %]

This parameter determines the opacity of the colour used if the Auto colour by node option is enabled.

Text colour

Control type: Colour (by node)

Default value: ■ #000000 (opacity: 100%)

Default attribute: `Color`

This parameter determines the colour used to draw each label (if the Auto colour by node option is disabled). The colour can be determined based on the value of an attribute of the nodes in the tree. For nodes that do not possess the specified attribute (or that have the attribute with an invalid value), a default value is used. The default attribute used to determine the colour is `Color`.

Auto background by node

Control type: Check box

Default value: Unchecked

If this check box is checked, the background of each label is determined algorithmically in a pseudo-random way designed to achieve an aesthetically pleasing distribution of colours, while being reproducible if the same tree is rendered multiple times.

Background opacity

Control type: Slider

Default value: 100 %

Range: [0 %, 100 %]

This parameter determines the opacity of the colour used if the Auto background by node option is enabled.

Background colour

Control type: Colour (by node)

Default value: #000000 (opacity: 0%)

Default attribute: `BackgroundColour`

This parameter determines the colour used to draw the background of the label (if the Auto background by node option is disabled). The colour can be determined based on the value of an attribute of the nodes in the tree. For nodes that do not possess the specified attribute (or that have the attribute with an invalid value), a default value is used. The default attribute used to determine the colour is `BackgroundColour`.

Margin

Control type: Point

Default value: (5, 2)

This parameter determines the margin between the label and the background (if the Fixed size option is disabled).

Fixed size

Control type: Check box

Default value: Unchecked

Width

Control type: Number spin box (by node)

Default value: 50

Range: [0, +∞)

Default attribute: `LabelWidth`

This parameter determines the width of the label background (if the Fixed size option is disabled).

Height

Control type: Number spin box (by node)

Default value: 14

Range: [0, +∞)

Default attribute: `LabelHeight`

This parameter determines the height of the label background (if the Fixed size option is disabled).

Border thickness

Control type: Number spin box (by node)

Default value: 0

Range: [0, +∞)

Default attribute: `BorderThickness`

This parameter determines the thickness of the border around the label.

Auto border by node

Control type: Check box

Default value: Checked

If this check box is checked, the colour for the border of each label is determined

algorithmically in a pseudo-random way designed to achieve an aesthetically pleasing distribution of colours, while being reproducible if the same tree is rendered multiple times.

Border opacity

Control type: Slider

Default value: 100 %

Range: [0 %, 100 %]

This parameter determines the opacity of the colour used if the Auto border by node option is enabled.

Border colour

Control type: Colour (by node)

Default value: ■ #000000 (opacity: 100%)

Default attribute: `BorderColour`

This parameter determines the colour used to draw the border of the label (if the Auto border by node option is disabled). The colour can be determined based on the value of an attribute of the nodes in the tree. For nodes that do not possess the specified attribute (or that have the attribute with an invalid value), a default value is used. The default attribute used to determine the colour is `BorderColour`.

Border style

Control type: Line dash

Default value: ——————

- *Units on*: 0
- *Units off*: 0
- *Phase*: 0

The line dash to use when drawing the borders.

Line join

Control type: Drop-down list

Default value: Round

Possible values:

- Miter
- Round
- Bevel

The line join to use at the corners of the border.

Further information

This module can be used to draw labels on the tree with a high degree of customisability. For example, labels can be used to show taxon names on the tips of the tree, branch lengths on the branches and support values at internal nodes. The labels can be anchored in multiple ways to obtain different effects.

A limitation is that all the labels drawn by an instance of this module must use the same font, anchor and shift from the anchor point; thus, if different nodes require different values for these properties, a different module needs to be added for each of them.