

Package ‘overshiny’

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Type Package

Title Interactive Overlays on 'shiny' Plots

Version 0.1.0

Description Provides rectangular elements that can be dragged and resized over plots in 'shiny' apps. This may be useful in applications where users need to mark regions on the plot for further input or processing.

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<https://nicholasdavies.github.io/overshiny/>

BugReports <https://github.com/nicholasdavies/overshiny/issues>

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Author Nick Davies [aut, cre, cph]

Maintainer Nick Davies <nicholas.davies@lshtm.ac.uk>

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overlayBounds	<i>Align overlays with a ggplot2 or base plot</i>
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Description

Sets the pixel and coordinate bounds of the overlay area based on a `ggplot2::ggplot()` object or base R plot. This ensures that overlays are positioned correctly in both visual and coordinate space.

Usage

```
overlayBounds(ov, plot, xlim = c(NA, NA), ylim = c(NA, NA), row = 1L, col = 1L)
```

Arguments

<code>ov</code>	A <code>shiny::reactiveValues()</code> object returned by <code>overlayServer()</code> .
<code>plot</code>	A <code>ggplot2::ggplot()</code> object used for overlay alignment, or the character string "base" if you are using base R plotting.
<code>xlim, ylim</code>	Vectors defining the coordinate limits for overlays. Use NA to inherit axis limits from the plot panel.
<code>row, col</code>	Row and column of the facet panel (if applicable). This only works with ggplot2 plots; base R plots with multiple panels are not supported.

Details

Call this function within `shiny::renderPlot()`, before returning the ggplot object (if using ggplot2) or NULL (if using base R plotting).

Value

The ggplot object (for ggplot2) or NULL (for base R plotting), to be returned from the `shiny::renderPlot()` block.

See Also

`overlayServer()`, for a complete example.

Examples

```
server <- function(input, output) {
  ov <- overlayServer("my_plot", 1, 1)
  output$my_plot <- shiny::renderPlot({
    plot(1:100, sin(1:100 * 0.1), type = "l")
    overlayBounds(ov, "base", xlim = c(1, 100))
  })
  # further server code here . . .
}
```

overlayPlotOutput *Create a plot output element with overlays*

Description

Render a `shiny::renderPlot()` within an application page, with support for overlays.

Usage

```
overlayPlotOutput(outputId, width, height)
```

Arguments

`outputId` The output slot where the plot will be rendered using `shiny::renderPlot()`, with a call to `overlayBounds()`.

`width, height` Image width and height. Must be a valid CSS unit, like "100%", "400px", or "auto", or a number, interpreted as pixels.

Value

A plot output element that can be added to a UI definition.

See Also

[overlayServer\(\)](#), for a complete example.

Examples

```
ui <- shiny::fluidPage(  
  useOverlay(),  
  overlayPlotOutput("my_plot", 640, 480)  
  # further UI elements here . . .  
)
```

overlayServer *Add interactive overlays to a Shiny plot*

Description

This function sets up server-side infrastructure to support draggable and resizable overlays on a plot. This may be useful in applications where users need to define regions on the plot for further input or processing. Currently, the overlays are only designed to move along the x axis of the plot.

Usage

```

overlayServer(
  outputId,
  nrect,
  width = NULL,
  snap = "none",
  colours = overlayColours,
  opacity = 0.25,
  icon = shiny::icon("gear"),
  stagger = 0.045,
  style = list(),
  debug = FALSE
)

```

Arguments

outputId	The ID of the plot output (as used in <code>overlayPlotOutput()</code>).
nrect	Number of overlay rectangles to support.
width	Optional default overlay width in plot coordinates. If NULL (default), set to 10% of the plot width.
snap	Function to "snap" overlay coordinates to a grid, or "none" (default) for no snapping. See details for how to specify the snap function.
colours	A function to assign custom colours to the overlays. Should be a function that takes a single integer (the number of overlays) and returns colours in hexadecimal notation (e.g. "#FF0000"). Do not provide opacity here as a fourth channel; use the <code>opacity</code> argument instead.
opacity	Numeric value (0 to 1) indicating overlay transparency.
icon	A Shiny icon to show the dropdown menu.
stagger	Vertical offset between stacked overlays, as a proportion of height.
style	Named list of character vectors with additional CSS styling attributes for the overlays. If an element is named "background-color" then this will override the colours and opacity arguments. Vectors are recycled to length <code>nrect</code> .
debug	If TRUE, prints changes to input values to the console for debugging purposes.

Details

Call this function once from your server code to initialise a set of overlay rectangles for a specific plot. It creates reactive handlers for move, resize, and dropdown menu actions, and allows adding new overlays by dragging an `overlayToken()` onto the plot. The function returns a `shiny::reactiveValues()` object which you should keep for further use; in the examples and documentation, this object is typically called `ov`.

This function also defines a dynamic output UI slot with ID `paste0(outputId, "_menu")`, which can be rendered using `shiny::renderUI()`. When a user clicks the overlay's dropdown icon, this menu becomes visible and can be populated with inputs for editing overlay-specific settings, e.g. labels or numeric parameters tied to that overlay.

If you provide a coordinate snapping function (snap argument), it should have the signature `function(ov, i)` where `ov` is the `shiny::reactiveValues()` object defining the overlays and their settings, and `i` is the set of indices for the rectangles to be updated. When the position of any of the overlays is changed, the snapping function will be applied. In this function, you should make sure that all `ov$cx0[i]` and `ov$cx1[i]` are within the coordinate bounds defined by the plot, i.e. constrained by `ov$bound_cx` and `ov$bound_cw`, when the function returns. This means, for example, if you are "rounding down" `ov$cx0[i]` to some nearest multiple of a number, you should make sure it doesn't become less than `ov$bound_cx`. Finally, the snapping function will get triggered when the x axis range of the plot changes, so it may be a good idea to provide one if the user might place an overlay onto the plot, but then change the x axis range of the plot such that the overlay is no longer visible. You can detect this by verifying whether the overlay rectangles are "out of bounds" at the top of your snapping function. See example below.

Value

A `shiny::reactiveValues()` object with the following named fields:

n Number of overlays (read-only).

active Logical vector of length `n`; indicates which overlays are active.

show Logical vector; controls whether overlays are visible.

editing Index of the overlay currently being edited via the dropdown menu, if any; NA otherwise (read-only).

last Index of the most recently added overlay (read-only).

snap Coordinate snapping function.

px, pw Numeric vector; overlay x-position and width in pixels (see note).

py, ph Numeric vector; overlay y-position and height in pixels (read-only).

cx0, cx1 Numeric vector; overlay x-bounds in plot coordinates (see note).

label Character vector of labels shown at the top of each overlay.

outputId The output ID of the plot display area (read-only).

bound_cx, bound_cw x-position and width of the bounding area in plot coordinates (read-only).

bound_px, bound_pw x-position and width of the bounding area in pixels (read-only).

bound_py, bound_ph y-position and height of the bounding area in pixels (read-only).

stagger Amount of vertical staggering, as proportion of height.

style Named list of character vectors; additional styling for rectangular overlays.

update_cx(i) Function to update `cx0/cx1` from `px/pw` for overlays `i` (see note).

update_px(i) Function to update `px/pw` from `cx0/cx1` for overlays `i` (see note).

Note: Fields marked "read-only" above should not be changed. Other fields can be changed in your reactive code and this will modify the overlays and their properties. The fields `px` and `pw` which specify the pixel coordinates of each overlay can be modified, but any modifications should be placed in a `shiny::isolate()` call, with a call to `ov$update_cx(i)` at the end to update `cx0` and `cx1` and apply snapping. Similarly, the fields `cx0` and `cx1` which specify the plot coordinates of each overlay can be modified, but modifications should be placed in a `shiny::isolate()` call with a call to `ov$update_px(i)` at the end to update `px` and `pw` and apply snapping. The `i` parameter to these functions can be left out to apply changes to all overlays, or you can pass in the indices of just the overlay(s) to be updated.

See Also

[overlayPlotOutput\(\)](#), [overlayBounds\(\)](#)

Examples

```
# Example of a valid snapping function: snap to nearest round number and
# make sure the overlay is at least 2 units wide.
mysnap <- function(ov, i) {
  # remove any "out of bounds" overlays
  oob <- seq_len(ov$n) %in% i &
    (ov$cx0 < ov$bound_cx | ov$cx1 > ov$bound_cx + ov$bound_cw)
  ov$active[oob] <- FALSE

  # adjust position and width
  widths <- pmax(2, round(ov$cx1[i] - ov$cx0[i]))
  ov$cx0[i] <- pmax(round(ov$bound_cx),
    pmin(round(ov$bound_cx + ov$bound_cw) - widths, round(ov$cx0[i])))
  ov$cx1[i] <- pmin(round(ov$bound_cx + ov$bound_cw), ov$cx0[i] + widths)
}

ui <- shiny::fluidPage(
  useOverlay(),
  overlayPlotOutput("my_plot", 640, 480),
  overlayToken("add", "Raise")
  # further UI elements here . . .
)

server <- function(input, output) {
  ov <- overlayServer("my_plot", 4, 1, snap = mysnap)

  output$my_plot_menu <- renderUI({
    i <- req(ov$editing)
    textInput("label_input", "Overlay label", value = ov$label[i])
  })

  observeEvent(input$label_input, {
    i <- req(ov$editing)
    ov$label[i] <- input$label_input
  })

  output$my_plot <- shiny::renderPlot({
    df <- data.frame(x = seq(0, 2 * pi, length.out = 200))
    df$y <- sin(df$x) + 0.1 * sum(ov$active * (df$x > ov$cx0 & df$x < ov$cx1))
    plot(df, type = "l")
    overlayBounds(ov, "base")
  })
  # further server code here . . .
}

if (interactive()) {
  shiny::shinyApp(ui, server)
}
```

overlayToken	<i>Create an overlay token input control</i>
--------------	--

Description

Create a token that can be dragged onto an (overlay plot)`overlayPlotOutput()` to create a new overlay.

Usage

```
overlayToken(inputId, name, label = name)
```

Arguments

<code>inputId</code>	The input slot used for the token.
<code>name</code>	Text (or HTML) to be displayed on the token itself.
<code>label</code>	Text label that will appear on the overlay.

Details

Note that the DOM ID of the token will be converted to "overshiny_token_<inputId>". This transformed ID is important for internal interaction logic (e.g. for use with JavaScript drag/drop handlers). When referencing the token programmatically (e.g. in CSS selectors or custom JavaScript), use the full prefixed ID (see examples).

Value

An overlay token input control that can be added to a UI definition.

See Also

[overlayServer\(\)](#), for a complete example.

Examples

```
ui <- shiny::fluidPage(  
  useOverlay(),  
  overlayToken("add", "Add new overlay", "Overlay"),  
  # The token's HTML id will be "overshiny_token_add"  
  shiny::tags$style(shiny::HTML("#overshiny_token_add { cursor: grab; }"))  
)
```

`overshiny`*Interactive overlays on Shiny plots*

Description

`overshiny` provides draggable and resizable rectangular elements that overlay plots in Shiny apps. This may be useful in applications where users need to define regions on the plot for further input or processing. Currently, the overlays are only designed to move along the x axis of the plot.

Details

The package exports a setup helper (`useOverlay()`), UI components (`overlayToken()`, `overlayPlotOutput()`), a server-side controller (`overlayServer()`), and a function for aligning overlays to a `ggplot2` or base plot (`overlayBounds()`).

Author(s)

Maintainer: Nick Davies <nicholas.davies@lshtm.ac.uk> [copyright holder]

See Also

Useful links:

- <https://github.com/nicholasdavies/overshiny>
- <https://nicholasdavies.github.io/overshiny/>
- Report bugs at <https://github.com/nicholasdavies/overshiny/issues>

`useOverlay`*Set up a Shiny app to use overshiny*

Description

Put `useOverlay()` in your Shiny app's UI to use `overshiny`'s interactive plot overlays.

Usage

```
useOverlay()
```

Details

This can go anywhere in your UI and it can be inserted multiple times with no ill effect. This also calls `shinyjs::useShinyjs()`, as `overshiny` depends on `shinyjs`.

Value

Returns HTML that gets inserted into the `<head>` of your app.

See Also

[overlayServer\(\)](#), for a complete example.

Examples

```
ui <- shiny::fluidPage(  
  useOverlay()  
  # further UI elements here . . .  
)  
  
server <- function(input, output) {  
  # server code here . . .  
}  
  
if (interactive()) {  
  shiny::shinyApp(ui, server)  
}
```

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