

Package ‘dtsmartr’

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Title Interactive Virtualized Data Explorer Grid Widget

Version 0.2.0

Description Provides an interactive, virtualized data explorer widget for 'R'.
Built on 'React' (via 'reactR') and 'htmlwidgets', it offers column-type detection, multi-value checkbox filtering, sorting, column visibility toggling, virtual scrolling for large datasets, and a full-viewport modal. Includes 'dtsmartr_launch()' with an interactive, zero-code file upload wizard using 'datamods'. Widgets can be embedded in 'R Markdown' / 'Quarto' documents, 'Shiny' applications, or exported as standalone HTML files via 'save_dtsmartr()'.

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URL <https://github.com/wagh-nikhil/dtsmartr>

BugReports <https://github.com/wagh-nikhil/dtsmartr/issues>

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Imports datamods, htmltools, htmlwidgets, jsonlite, reactR, shiny, tools, utils

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Contents

| | |
|---------------------------|---|
| dtsmartr | 2 |
| dtsmartr-shiny | 3 |
| dtsmartr_launch | 4 |

| | |
|------------------|---|
| dtsmartr_options | 5 |
| dtsmart_lite | 6 |
| save_dtsmartr | 6 |

| | |
|--------------|----------|
| Index | 9 |
|--------------|----------|

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|----------|---|
| dtsmartr | <i>dtsmartr - Interactive virtualized data explorer grid widget</i> |
|----------|---|

Description

Renders a high-performance, virtualized data grid powered by React to explore datasets, filter dynamically, and generate reproducible queries.

Usage

```
dtsmartr(
  data,
  width = NULL,
  height = NULL,
  elementId = NULL,
  datasetName = NULL,
  options = dtsmartr_options(),
  skip_routing = FALSE
)
```

Arguments

| | |
|---------------------------|--|
| <code>data</code> | A <code>data.frame</code> to explore. |
| <code>width</code> | Widget width. Defaults to "100%". |
| <code>height</code> | Widget height. Defaults to "100vh" (full screen/viewport). |
| <code>elementId</code> | CSS ID for the widget container. |
| <code>datasetName</code> | Custom string name representing the dataset in generated reproducible code. If omitted, automatically extracts the R variable name. |
| <code>options</code> | Named list of UI options generated by <code>dtsmartr_options()</code> . |
| <code>skip_routing</code> | Logical. Internal flag used by <code>save_dtsmartr()</code> to bypass the automatic re-routing to <code>dtsmartr_launch()</code> for large datasets. End users should not set this parameter. Defaults to FALSE. |

Value

An object of class `htmlwidget` (and sub-class `dtsmartr`) representing the interactive virtualized grid. In interactive R sessions, this will display the explorer in the RStudio/Positron Viewer pane or system browser.

Examples

```
if (interactive()) {  
  dtsmartr(mtcars, options = dtsmartr_options(hidden_columns = "cyl"))  
}
```

dtsmartr-shiny

Shiny bindings for dtsmartr

Description

Output and render functions for using dtsmartr within Shiny applications and interactive Rmd documents.

Usage

```
dtsmartrOutput(outputId, width = "100%", height = "400px")  
  
renderDtsmartr(expr, env = parent.frame(), quoted = FALSE)
```

Arguments

| | |
|---------------|--|
| outputId | output variable to read from |
| width, height | Must be a valid CSS unit (like '100%', '400px', 'auto') or a number, which will be coerced to a string and have 'px' appended. |
| expr | An expression that generates a dtsmartr |
| env | The environment in which to evaluate expr. |
| quoted | Is expr a quoted expression (with quote())? This is useful if you want to save an expression in a variable. |

Value

dtsmartrOutput returns a Shiny output element of class shiny.tag.list that can be placed in a Shiny user interface. renderDtsmartr returns a Shiny render function of class shiny.render.function that can be assigned to an output slot.

| | |
|-----------------|--|
| dtsmartr_launch | <i>Launch the dtsmartr Data Explorer in your default Web Browser</i> |
|-----------------|--|

Description

Launches a temporary, lightweight Shiny server in the background and opens the interactive grid in your default external web browser. This bypasses local browser origin security policies (CORS) that block file:// resources.

Usage

```
dtsmartr_launch(data = NULL, port = NULL, options = dtsmartr_options())
```

Arguments

| | |
|---------|---|
| data | A data.frame to explore, or NULL (default) to launch the Zero-Code Data Ingestion Wizard. |
| port | Optional port number. If NULL (default), a free port is chosen automatically. |
| options | Named list of UI options generated by <code>dtsmartr_options()</code> . |

Details

Zero-Code Ingestion Wizard (Wizard Mode):

When `data = NULL` (default), the Shiny server boots into Wizard Mode. An interactive interface (powered by the `datamods` package) allows users to upload local files (CSV, Excel, SAS, RDS). It also features direct "View" and "Update" panels to verify and customize columns or variable classes before loading.

Once a file is successfully uploaded and confirmed, the wizard parses the dataset and feeds it directly into the React-powered virtualized grid explorer.

Value

No return value, called for the side effect of starting a local background Shiny application and opening it in the default web browser.

Examples

```
if (interactive()) {  
  # 1. Launch wizard mode to upload local files  
  dtsmartr_launch()  
  
  # 2. Launch directly with a dataset  
  dtsmartr_launch(mtcars)  
}
```

dtsmartr_options *Generate Configuration Options for dtsmartr*

Description

Helper function to specify UI customization, initial grid visibility states, and rendering options for the dtsmartr interactive grid widget.

Usage

```
dtsmartr_options(
  advanced_filter = TRUE,
  show_labels = TRUE,
  column_picker = TRUE,
  allow_export = TRUE,
  theme = "auto",
  na_string = "NA",
  hidden_columns = NULL,
  header_summary = TRUE
)
```

Arguments

| | |
|-----------------|---|
| advanced_filter | Logical. If TRUE (default), renders the multi-condition Advanced Query Builder panel. |
| show_labels | Logical. If TRUE (default), displays R column attributes (like 'label') in table headers. |
| column_picker | Logical. If TRUE (default), displays the top-right column show/hide visibility dropdown. |
| allow_export | Logical. If TRUE (default), displays clipboard copy buttons and the R & SQL "Query Code" generator modal. |
| theme | Character. Specifies the UI color theme: "auto" (default, inherits from browser settings), "light", or "dark". |
| na_string | Character. Custom string placeholder displayed in cells with missing values (NA or null). Defaults to "NA". |
| hidden_columns | Character vector. Vector of column names to hide by default on initial widget rendering. |
| header_summary | Logical. If TRUE (default), renders the Kaggle-style summary zone (histograms, bar charts, completeness bar) in column headers. |

Value

A named list of validated configuration settings.

Examples

```
dtsmartr_options(advanced_filter = FALSE, hidden_columns = c("STUDYID", "USUBJID"))
dtsmartr_options(header_summary = FALSE)
```

| | |
|--------------|--|
| dtsmart_lite | <i>Lightweight Interactive Data Viewer</i> |
|--------------|--|

Description

Forces a compact, clean grid view of a dataset by disabling heavy analytics features like advanced filtering, code exports, and header summary statistics.

Usage

```
dtsmart_lite(data, title = NULL, ...)
dtsmartr_lite(data, title = NULL, ...)
```

Arguments

| | |
|-------|--|
| data | A data.frame to explore. |
| title | Custom string title/name representing the dataset. |
| ... | Additional arguments passed to <code>dtsmartr()</code> . |

Value

An object of class `htmlwidget` (and sub-class `dtsmartr`) representing the interactive compact grid.

Examples

```
if (interactive()) {
  dtsmart_lite(mtcars, title = "Mtcars Compact")
}
```

| | |
|---------------|---|
| save_dtsmartr | <i>Save a dtsmartr widget to an HTML file</i> |
|---------------|---|

Description

Exports any data.frame as a fully interactive, standalone HTML file powered by the `dtsmartr` widget. The resulting file can be opened in any modern web browser without an active R session or internet connection, making it ideal for offline use and sharing with collaborators.

Usage

```

save_dtsmartr(
  data,
  file,
  selfcontained = TRUE,
  title = "dtsmartr",
  open = FALSE,
  background = "white",
  libdir = NULL,
  width = NULL,
  height = NULL,
  elementId = NULL,
  options = dtsmartr_options(),
  verbose = TRUE
)

```

Arguments

| | |
|---------------|---|
| data | A data.frame (or object coercible to one) to explore. |
| file | Character string. Path to the output HTML file. The .html extension is appended automatically if omitted. |
| selfcontained | Logical. When TRUE (default), all JavaScript, CSS, and data are embedded directly inside the HTML file, producing a single portable file. When FALSE, a companion <file>_files/ directory is created next to the HTML file containing the JS/CSS assets - both must be kept together when sharing. Use FALSE for large datasets where a single file would be impractically large. |
| title | Character string. Browser tab / window title for the saved HTML page. Defaults to "dtsmartr". |
| open | Logical. When TRUE and the session is interactive, the saved HTML file is opened automatically in the default web browser immediately after saving. Defaults to FALSE. |
| background | Character string. CSS colour for the page background. Defaults to "white". |
| libdir | Character string or NULL. When selfcontained = FALSE, the path to write the dependency libraries. Passed directly to <code>htmlwidgets::saveWidget()</code> . Defaults to NULL (creates <file>_files/ next to the output file). |
| width | Numeric or NULL. Widget width in pixels. NULL (default) uses the full page width. |
| height | Numeric or NULL. Widget height in pixels. NULL (default) fills the viewport (maximised mode). |
| elementId | Character string or NULL. CSS id for the widget's root <div>. Defaults to NULL (auto-generated). |
| options | Named list of UI options generated by <code>dtsmartr_options()</code> . |
| verbose | Logical. When TRUE, prints a confirmation message with the resolved absolute path of the saved file. Defaults to TRUE. |

Details**Selfcontained vs. non-selfcontained:**

| selfcontained | Output | Best for |
|----------------|------------------------|----------------------------|
| TRUE (default) | Single .html file | Email / sharing |
| FALSE | .html + _files/ folder | Local use / large datasets |

File size:

Self-contained files embed the React runtime and widget code (~120 KB gzipped) along with the data. For very large datasets (> 100 k rows) or when generating many files, prefer `selfcontained = FALSE`.

Browser compatibility:

The generated HTML works in all modern browsers (Chrome, Firefox, Edge, Safari 14+). No internet connection is required.

Value

The absolute path to the saved HTML file, invisibly.

See Also

[dtsmartr\(\)](#) for creating the widget object interactively, [htmlwidgets::saveWidget\(\)](#) for the underlying save mechanism.

Examples

```
# == Basic usage =====
# Save mtcars as a self-contained HTML (single portable file)
tmp_file <- tempfile(fileext = ".html")
save_dtsmartr(mtcars, tmp_file)

# Open in the browser right after saving
tmp_file_open <- tempfile(fileext = ".html")
save_dtsmartr(mtcars, tmp_file_open, open = TRUE)

# == Custom options =====

tmp_file_opts <- tempfile(fileext = ".html")
save_dtsmartr(
  mtcars,
  tmp_file_opts,
  options = dtsmartr_options(hidden_columns = "cyl", advanced_filter = FALSE)
)
```

Index

`dtsmart_lite`, 6
`dtsmartr`, 2
`dtsmartr()`, 6, 8
`dtsmartr-shiny`, 3
`dtsmartr_launch`, 4
`dtsmartr_launch()`, 2
`dtsmartr_lite(dtsmart_lite)`, 6
`dtsmartr_options`, 5
`dtsmartr_options()`, 2, 4, 7
`dtsmartrOutput(dtsmartr-shiny)`, 3

`htmlwidgets::saveWidget()`, 7, 8

`renderDtsmartr(dtsmartr-shiny)`, 3

`save_dtsmartr`, 6
`save_dtsmartr()`, 2