Package 'ggfortify'

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Description Unified plotting tools for statistics commonly used, such as GLM, time series, PCA families, clustering and survival analysis. The package offers a single plotting interface for these analysis results and plots in a unified style using 'ggplot2'.

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Depends methods, ggplot2 (>= 2.0.0)

Imports dplyr (>= 0.3), tidyr, gridExtra, grid, scales, stats, stringr, tibble, utils

Suggests testthat, cluster, changepoint, fGarch, forecast, ggrepel, glmnet, grDevices, KFAS, knitr, lintr, mapdata, markdown, MASS, MSwM, nlme, raster, ROCR, sp, strucchange, survival, timeSeries, tseries, vars, xts, zoo, lfda

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`+,ggmultiplot,ANY-method` *Generic add operator for* `ggmultiplot`

Description

Generic add operator for `ggmultiplot`

Usage

```
## S4 method for signature 'ggmultiplot,ANY'
e1 + e2
```

Arguments

`e1`	first argument
`e2`	second argument

Value

`ggmultiplot`

`apply_facets` *Apply facets to to* `ggplot2::ggplot`

Description

Apply facets to to `ggplot2::ggplot`

Usage

```
apply_facets(
  p,
  formula,
  facets = TRUE,
  nrow = NULL,
  ncol = 1,
  scales = "free_y",
  ...
)
```

Arguments

p	ggplot2::ggplot instance
formula	stats::formula instance
facets	Logical value to specify use facets
nrow	Number of facet/subplot rows
ncol	Number of facet/subplot columns
scales	Scale value passed to ggplot2
...	other arguments passed to methods

Value

ggplot

---

apply_grid *Apply grid to to* ggplot2::ggplot

Description

Apply grid to to ggplot2::ggplot

Usage

```
apply_grid(p, formula, scales = "free_y", ...)
```

Arguments

p	ggplot2::ggplot instance
formula	stats::formula instance
scales	Scale value passed to ggplot2
...	other arguments passed to methods

`as_tibble.basis` *Convert a spline basis to a tibble*

Description

Convert a spline basis to a tibble

Usage

```
## S3 method for class 'basis'
as_tibble(x, ...)
```

Arguments

`x`	object of class "basis"
`...`	Ignored.

Details

This function is needed because the default method for converting a matrix object with an additional class attribute to a tibble causes issues because each column of the resulting tibble has the attributes, including the matrix class, copied from the source. Having matrices as columns in a tibble causes dplyr to throw errors, so a special method is needed to avoid copying the class attribute.

Value

A tibble constructed from the underlying matrix of the basis object. Each column will possess all the attributes from the source object, except that the "class" attribute will be renamed to "basis.class" to avoid interfering with dplyr operations.

Examples

```
## Not run:
library(splines)
library(tibble)
x <- seq(0, 1, by=0.001)
spl <- bs(x, df=6)
as_tibble(spl)

## End(Not run)
```

`autoplot.aareg` *Autoplot* `survival::aareg`

Description

Autoplot `survival::aareg`

Usage

```
## S3 method for class 'aareg'
autoplot(
  object,
  maxtime = NULL,
  surv.connect = TRUE,
  facets = TRUE,
  ncol = NULL,
  xlab = "",
  ylab = "",
  ...
)
```

Arguments

`object`	`survival::aareg` instance
`maxtime`	truncate the input to the model at time "maxtime"
`surv.connect`	logical frag indicates whether connects survival curve to the origin
`facets`	Logical value to specify use facets
`ncol`	Number of facet/subplot columns
`xlab`	character vector or expression for x axis label
`ylab`	character vector or expression for y axis label
`...`	other arguments passed to `autoplot.survfit`

Value

ggplot

Examples

```
## Not run:
if (requireNamespace("survival", quietly = TRUE)) {
  autoplot(aareg(Surv(time, status) ~ age + sex + ph.ecog, data = lung, nmin = 1))
}

## End(Not run)
```

`autoplot.acf` *Autoplot* `stats::acf`. *Note to pass 'plot = FALSE' to original function to suppress standard plot output*

Description

Autoplot `stats::acf`. Note to pass 'plot = FALSE' to original function to suppress standard plot output

Usage

```
## S3 method for class 'acf'
autoplot(
  object,
  colour = "#000000",
  linetype = "solid",
  conf.int = TRUE,
  conf.int.colour = "#0000FF",
  conf.int.linetype = "dashed",
  conf.int.fill = NULL,
  conf.int.alpha = 0.3,
  conf.int.value = 0.95,
  conf.int.type = "white",
  xlim = c(NA, NA),
  ylim = c(NA, NA),
  log = "",
  main = NULL,
  xlab = NULL,
  ylab = "ACF",
  asp = NULL,
  ...
)
```

Arguments

`object`	`stats::acf` instance
`colour`	Line colour
`linetype`	Line type
`conf.int`	Logical flag indicating whether to plot confidence intervals
`conf.int.colour`	line colour for confidence intervals
`conf.int.linetype`	line type for confidence intervals
`conf.int.fill`	fill colour for confidence intervals
`conf.int.alpha`	alpha for confidence intervals

conf.int.value	Coverage probability for confidence interval
conf.int.type	Type of confidence interval, 'white' for white noise or 'ma' MA(k-1) model
xlim	limits for x axis
ylim	limits for y axis
log	which variables to log transform ("x", "y", or "xy")
main	character vector or expression for plot title
xlab	character vector or expression for x axis label
ylab	character vector or expression for y axis label
asp	the y/x aspect ratio
...	other arguments passed to methods

Value

ggplot

Examples

```
## Not run:
autoplot(stats::acf(AirPassengers, plot = FALSE))
autoplot(stats::pacf(AirPassengers, plot = FALSE))
autoplot(stats::ccf(AirPassengers, AirPassengers, plot = FALSE))

## End(Not run)
```

---

autoplot.basis *Autoplot spline basis instances*

Description

Autoplot spline basis instances

Usage

```
## S3 method for class 'basis'
autoplot(object, data, n = 256, ...)
```

Arguments

object	spline basis object
data	x-values at which to evaluate the splines. Optional. By default, an evenly spaced sequence of 256 values covering the range of the splines will be used.
n	If data is not provided, instead use an evenly-spaced sequence of x-values of this length (plus one, since both endpoints are included). If data is provided, this argument is ignored.
...	Ignored.

Value

ggplot

Examples

```
## Not run:
library(splines)
x <- seq(0, 1, by=0.001)
spl <- bs(x, df=6)
autoplot(spl)
autoplot(spl, n=5)

## End(Not run)
```

---

autoplot.breakpoints *Autoplot* strucchange::breakpoints

Description

Autoplot strucchange::breakpoints

Usage

```
## S3 method for class 'breakpoints'
autoplot(
  object,
  data = NULL,
  cpt.colour = "#FF0000",
  cpt.linetype = "dashed",
  ...
)
```

Arguments

object	strucchange::breakpoints or strucchange::breakpointsfull instance.
data	Original time series. Mandatory for plotting strucchange::breakpoints instance.
cpt.colour	Line colour for changepoints
cpt.linetype	Line type for changepoints
...	other arguments passed to autoplot.ts

Value

ggplot

Examples

```
## Not run:
library(strucchange)
bp.nile <- breakpoints(Nile ~ 1)
autoplot(bp.nile)
autoplot(bp.nile, is.date = TRUE)
autoplot(breakpoints(bp.nile, breaks = 2), data = Nile)

## End(Not run)
```

`autoplot.cpt` *Autoplot* `changepoint::cpt`

Description

Autoplot `changepoint::cpt`

Usage

```
## S3 method for class 'cpt'
autoplot(
  object,
  is.date = NULL,
  cpt.colour = "#FF0000",
  cpt.linetype = "dashed",
  ...
)
```

Arguments

`object`	`changepoint::cpt` instance
`is.date`	Logical frag indicates whether the `stats::ts` is date or not. If not provided, regard the input as date when the frequency is 4 or 12.
`cpt.colour`	Line colour for changepoints
`cpt.linetype`	Line type for changepoints
`...`	other arguments passed `autoplot.ts`

Value

ggplot

Examples

```
## Not run:
library(changepoint)
autoplot(cpt.mean(AirPassengers))
autoplot(cpt.meanvar(AirPassengers))

## End(Not run)
```

`autoplot.cv.glmnet` *Autoplot* `glmnet::cv.glmnet`

Description

Autoplot `glmnet::cv.glmnet`

Usage

```
## S3 method for class 'cv.glmnet'
autoplot(
  object,
  sign.lambda = 1,
  label.n = 12,
  label = TRUE,
  label.label = "nz",
  label.colour = NULL,
  label.alpha = NULL,
  label.size = NULL,
  label.angle = NULL,
  label.family = NULL,
  label.fontface = NULL,
  label.lineheight = NULL,
  label.hjust = NULL,
  label.vjust = NULL,
  label.repel = FALSE,
  xlim = c(NA, NA),
  ylim = c(NA, NA),
  log = "",
  main = NULL,
  xlab = NULL,
  ylab = NULL,
  asp = NULL,
  ...
)
```

Arguments

object	glmnet::cv.glmnet instance
sign.lambda	Either plot against log(lambda) (default) or its negative if sign.lambda=-1.
label.n	Number of Df labels
label	Logical value whether to display labels
label.label	Column name used for label text
label.colour	Colour for text labels
label.alpha	Alpha for text labels
label.size	Size for text labels
label.angle	Angle for text labels
label.family	Font family for text labels
label.fontface	Fontface for text labels
label.lineheight	Lineheight for text labels
label.hjust	Horizontal adjustment for text labels
label.vjust	Vertical adjustment for text labels
label.repel	Logical flag indicating whether to use ggrepel, enabling this may take some time for plotting
xlim	limits for x axis
ylim	limits for y axis
log	which variables to log transform ("x", "y", or "xy")
main	character vector or expression for plot title
xlab	character vector or expression for x axis label
ylab	character vector or expression for y axis label
asp	the y/x aspect ratio
...	other arguments passed to methods

Value

ggplot

Examples

```
if (requireNamespace("survival", quietly = TRUE)) {
  autoplot(glmnet::cv.glmnet(data.matrix(Orange[-3]), data.matrix(Orange[3])))
}
```

`autoplot.density` *Autoplot* `stats::density`

Description

Autoplot `stats::density`

Usage

```
## S3 method for class 'density'
autoplot(
  object,
  p = NULL,
  colour = "#000000",
  linetype = NULL,
  fill = NULL,
  alpha = NULL,
  xlim = c(NA, NA),
  ylim = c(NA, NA),
  log = "",
  main = NULL,
  xlab = NULL,
  ylab = NULL,
  asp = NULL,
  ...
)
```

Arguments

`object`	`stats::density` instance
`p`	`ggplot2::ggplot` instance to plot
`colour`	Line colour
`linetype`	Line type
`fill`	Fill colour
`alpha`	Alpha
`xlim`	limits for x axis
`ylim`	limits for y axis
`log`	which variables to log transform ("x", "y", or "xy")
`main`	character vector or expression for plot title
`xlab`	character vector or expression for x axis label
`ylab`	character vector or expression for y axis label
`asp`	the y/x aspect ratio
`...`	other arguments passed to PDC/CDF func

Value

ggplot

Examples

```
autoplot(stats::density(stats::rnorm(1:50)))
autoplot(stats::density(stats::rnorm(1:50)), fill = 'blue')
```

---

autoplot.forecast *Autoplot* forecast::forecast

Description

Autoplot forecast::forecast

Usage

```
## S3 method for class 'forecast'
autoplot(
  object,
  is.date = NULL,
  ts.connect = TRUE,
  predict.geom = "line",
  predict.colour = "#0000FF",
  predict.size = NULL,
  predict.linetype = NULL,
  predict.alpha = NULL,
  predict.fill = NULL,
  predict.shape = NULL,
  conf.int = TRUE,
  conf.int.colour = "#0000FF",
  conf.int.linetype = "none",
  conf.int.fill = "#000000",
  conf.int.alpha = 0.3,
  ...
)
```

Arguments

object	forecast::forecast instance
is.date	Logical frag indicates whether the stats::ts is date or not. If not provided, regard the input as date when the frequency is 4 or 12
ts.connect	Logical frag indicates whether connects original time-series and predicted values
predict.geom	geometric string for predicted time-series
predict.colour	line colour for predicted time-series

predict.size	point size for predicted time-series
predict.linetype	line type for predicted time-series
predict.alpha	alpha for predicted time-series
predict.fill	fill colour for predicted time-series
predict.shape	point shape for predicted time-series
conf.int	Logical flag indicating whether to plot confidence intervals
conf.int.colour	line colour for confidence intervals
conf.int.linetype	line type for confidence intervals
conf.int.fill	fill colour for confidence intervals
conf.int.alpha	alpha for confidence intervals
...	other arguments passed to autoplot.ts

Value

ggplot

Examples

```
## Not run:
d.arima <- forecast::auto.arima(AirPassengers)
autoplot(forecast::forecast(d.arima, h = 10))
autoplot(forecast::forecast(d.arima, level = c(85), h = 10))
autoplot(forecast::forecast(d.arima, h = 5), conf.int = FALSE, is.date = FALSE)
autoplot(forecast::forecast(stats::HoltWinters(UKgas), h = 10))
autoplot(forecast::forecast(forecast::ets(UKgas), h = 5))

## End(Not run)
```

---

autoplot.ggmultiplot *Autoplot* ggmultiplot *instances. It returns the passed instance as it is.*

Description

Autoplot ggmultiplot instances. It returns the passed instance as it is.

Usage

```
## S3 method for class 'ggmultiplot'
autoplot(object, ...)
```

Arguments

object	ggmultiplot instance
...	Not used.

Value

ggmultiplot

---

autoplot.ggplot *Autoplot* ggplot *instances. It returns the passed instance as it is.*

Description

Autoplot ggplot instances. It returns the passed instance as it is.

Usage

```
## S3 method for class 'ggplot'
autoplot(object, ...)
```

Arguments

object	ggplot instance
...	Not used.

Value

ggplot

---

autoplot.glmnet *Autoplot* glmnet::glmnet

Description

Autoplot glmnet::glmnet

Usage

```
## S3 method for class 'glmnet'
autoplot(
  object,
  xvar = c("norm", "lambda", "dev"),
  label.n = 7,
  label = TRUE,
  label.label = "Df",
  label.colour = NULL,
  label.alpha = NULL,
  label.size = NULL,
  label.angle = NULL,
  label.family = NULL,
  label.fontface = NULL,
  label.lineheight = NULL,
  label.hjust = NULL,
  label.vjust = NULL,
  xlim = c(NA, NA),
  ylim = c(NA, NA),
  log = "",
  main = NULL,
  xlab = NULL,
  ylab = "Coefficients",
  asp = NULL,
  ...
)
```

Arguments

object	glmnet::glmnet instance
xvar	values to be dranw on the X axis. Either "norm" (L1-norm), "lambda" (log-lambda sequence) or "dev" (percent deviance)
label.n	Number of Df labels
label	Logical value whether to display labels
label.label	Column name used for label text
label.colour	Colour for text labels
label.alpha	Alpha for text labels
label.size	Size for text labels
label.angle	Angle for text labels
label.family	Font family for text labels
label.fontface	Fontface for text labels
label.lineheight	Lineheight for text labels
label.hjust	Horizontal adjustment for text labels
label.vjust	Vertical adjustment for text labels

xlim	limits for x axis
ylim	limits for y axis
log	which variables to log transform ("x", "y", or "xy")
main	character vector or expression for plot title
xlab	character vector or expression for x axis label
ylab	character vector or expression for y axis label
asp	the y/x aspect ratio
...	other arguments passed to methods

Value

ggplot

Examples

```
## Not run:
autoplot(glmnet::glmnet(data.matrix(Orange[-3]), data.matrix(Orange[3])))

## End(Not run)
```

---

autoplot.kmeans *Autoplot cluster instances*

Description

Autoplot cluster instances

Usage

```
## S3 method for class 'kmeans'
autoplot(object, data = NULL, colour = "cluster", ...)
```

Arguments

object	Clustered instance
data	Original data used for clustering. Mandatory for stats::kmeans.
colour	line colour for points
...	other arguments passed to autoplot::prcomp

Value

ggplot

Examples

```
## Not run:
autoplot(stats::kmeans(iris[-5], 3), data = iris)
autoplot(cluster::clara(iris[-5], 3), label = TRUE)
autoplot(cluster::fanny(iris[-5], 3))
autoplot(cluster::fanny(iris[-5], 3), frame = TRUE)
autoplot(cluster::pam(iris[-5], 3), data = iris, colour = 'Species')
autoplot(cluster::pam(iris[-5], 3), data = iris, frame = TRUE, frame.type = 't')

## End(Not run)
```

---

autoplot.list *Autoplot list*

Description

Autoplot list

Usage

```
## S3 method for class 'list'
autoplot(object, data = NULL, nrow = NULL, ncol = NULL, scales = "free_y", ...)
```

Arguments

object	list instance
data	original dataset, if needed
nrow	Number of facet/subplot rows
ncol	Number of facet/subplot columns
scales	Scale value passed to ggplot2
...	other arguments passed to methods

Value

ggplot

autoplot.lm *Autoplot* stats::lm *and* stats::glm

Description

Autoplot stats::lm and stats::glm

Usage

```
## S3 method for class 'lm'
autoplot(
  object,
  which = c(1:3, 5),
  data = NULL,
  colour = "#444444",
  size = NULL,
  linetype = NULL,
  alpha = NULL,
  fill = NULL,
  shape = NULL,
  label = TRUE,
  label.label = ".label",
  label.colour = "#000000",
  label.alpha = NULL,
  label.size = NULL,
  label.angle = NULL,
  label.family = NULL,
  label.fontface = NULL,
  label.lineheight = NULL,
  label.hjust = NULL,
  label.vjust = NULL,
  label.repel = FALSE,
  label.n = 3,
  smooth.colour = "#0000FF",
  smooth.linetype = "solid",
  ad.colour = "#888888",
  ad.linetype = "dashed",
  ad.size = 0.2,
  nrow = NULL,
  ncol = NULL,
  ...
)
```

Arguments

object	stats::lm instance
which	If a subset of the plots is required, specify a subset of the numbers 1:6.

data	original dataset, if needed
colour	line colour
size	point size
linetype	line type
alpha	alpha
fill	fill colour
shape	point shape
label	Logical value whether to display labels
label.label	Column name used for label text
label.colour	Colour for text labels
label.alpha	Alpha for text labels
label.size	Size for text labels
label.angle	Angle for text labels
label.family	Font family for text labels
label.fontface	Fontface for text labels
label.lineheight	Lineheight for text labels
label.hjust	Horizontal adjustment for text labels
label.vjust	Vertical adjustment for text labels
label.repel	Logical flag indicating whether to use ggrepel, enabling this may take some time for plotting
label.n	Number of points to be laeled in each plot, starting with the most extreme
smooth.colour	Line colour for smoother lines
smooth.linetype	Line type for smoother lines
ad.colour	Line colour for additional lines
ad.linetype	Line type for additional lines
ad.size	Fill colour for additional lines
nrow	Number of facet/subplot rows
ncol	Number of facet/subplot columns
...	other arguments passed to methods

Value

ggplot

Examples

```
## Not run:
autoplot(lm(Petal.Width ~ Petal.Length, data = iris))
autoplot(glm(Petal.Width ~ Petal.Length, data = iris), which = 1:6)
autoplot(lm(Petal.Width~Petal.Length, data = iris), data = iris, colour = 'Species')

## End(Not run)
```

`autoplot.map` *Autoplot* `maps::map`

Description

Autoplot `maps::map`

Usage

```
## S3 method for class 'map'
autoplot(
  object,
  p = NULL,
  geom = "path",
  group = "group",
  colour = "black",
  size = NULL,
  linetype = NULL,
  alpha = NULL,
  fill = NULL,
  shape = NULL,
  xlim = c(NA, NA),
  ylim = c(NA, NA),
  log = "",
  main = NULL,
  xlab = "",
  ylab = "",
  asp = NULL,
  ...
)
```

Arguments

`object`	`maps::map` instance
`p`	`ggplot2::ggplot` instance
`geom`	geometric string for map. 'path', 'point' or 'polygon'
`group`	key for grouping geoms
`colour`	line colour
`size`	point size
`linetype`	line type
`alpha`	alpha
`fill`	fill colour
`shape`	point shape
`xlim`	limits for x axis

ylim	limits for y axis
log	which variables to log transform ("x", "y", or "xy")
main	character vector or expression for plot title
xlab	character vector or expression for x axis label
ylab	character vector or expression for y axis label
asp	the y/x aspect ratio
...	other arguments passed to methods

Value

ggplot

`autoplot.matrix` *Plot* `base::matrix`

Description

Plot `base::matrix`

Usage

```
## S3 method for class 'matrix'
autoplot(
  object,
  original = NULL,
  geom = "tile",
  colour = NULL,
  size = NULL,
  alpha = NULL,
  fill = "#0000FF",
  shape = NULL,
  label = FALSE,
  label.label = "rownames",
  label.colour = colour,
  label.alpha = NULL,
  label.size = NULL,
  label.angle = NULL,
  label.family = NULL,
  label.fontface = NULL,
  label.lineheight = NULL,
  label.hjust = NULL,
  label.vjust = NULL,
  label.repel = FALSE,
  scale = NULL,
  xlim = c(NA, NA),
```

```
  ylim = c(NA, NA),
  log = "",
  main = NULL,
  xlab = NULL,
  ylab = NULL,
  asp = NULL,
  ...
)
```

Arguments

object	base::matrix instance
original	Combined to data by column if provided. Intended to be used for stat functions which returns not containing original data.
geom	Geometric string for plotting. 'tile' or 'point'.
colour	colour for points ('point' only)
size	point size
alpha	alpha
fill	fill colour. Ignored if scale keyword is passed. ('tile' Only)
shape	point shape
label	Logical value whether to display labels
label.label	Column name used for label text
label.colour	Colour for text labels
label.alpha	Alpha for text labels
label.size	Size for text labels
label.angle	Angle for text labels
label.family	Font family for text labels
label.fontface	Fontface for text labels
label.lineheight	Lineheight for text labels
label.hjust	Horizontal adjustment for text labels
label.vjust	Vertical adjustment for text labels
label.repel	Logical flag indicating whether to use ggrepel, enabling this may take some time for plotting
scale	(Deprecated) ggplot2::scale instance to plot. ('tile' Only)
xlim	limits for x axis
ylim	limits for y axis
log	which variables to log transform ("x", "y", or "xy")
main	character vector or expression for plot title
xlab	character vector or expression for x axis label
ylab	character vector or expression for y axis label
asp	the y/x aspect ratio
...	other arguments passed to methods

Value

ggplot

Examples

```
autoplot(matrix(rnorm(20), nc = 5))
autoplot(matrix(rnorm(20), nc = 5), fill = 'red')
autoplot(matrix(rnorm(20), nc = 2), geom = 'point')
```

---

autoplot.MSM.lm *Autoplot* MSwM::MSM.lm

Description

Autoplot MSwM::MSM.lm

Usage

```
## S3 method for class 'MSM.lm'
autoplot(object, prob.colour = "#FF0000", prob.linetype = "dashed", ...)
```

Arguments

object	MSwM::MSM.lm instance
prob.colour	Line colour for probabilities
prob.linetype	Line type for probabilities
...	other arguments passed to autoplot.ts

Value

ggplot

Examples

```
## Not run:
library(MSwM)
d <- data.frame(Data = c(rnorm(50, mean = -10), rnorm(50, mean = 10)),
                exog = cos(seq(-pi/2, pi/2, length.out = 100)))
d.mswm <- MSwM::msmFit(lm(Data ~.-1, data = d), k=2, sw=rep(TRUE, 2),
                       control = list(parallelization = FALSE))
autoplot(d.mswm)

## End(Not run)
```

`autoplot.pca_common` *Autoplot PCA-likes*

Description

Autoplot PCA-likes

Usage

```
## S3 method for class 'pca_common'
autoplot(
  object,
  data = NULL,
  scale = 1,
  x = 1,
  y = 2,
  variance_percentage = TRUE,
  ...
)
```

Arguments

`object`	PCA-like instance
`data`	Joined to fitting result if provided.
`scale`	scaling parameter, disabled by 0
`x`	principal component number used in x axis
`y`	principal component number used in y axis
`variance_percentage`	show the variance explained by the principal component?
`...`	other arguments passed to [ggbiplot()]

Examples

```
autoplot(stats::prcomp(iris[-5]))
autoplot(stats::prcomp(iris[-5]), data = iris)
autoplot(stats::prcomp(iris[-5]), data = iris, colour = 'Species')
autoplot(stats::prcomp(iris[-5]), label = TRUE, loadings = TRUE, loadings.label = TRUE)
autoplot(stats::prcomp(iris[-5]), loadings = TRUE, loadings.label = TRUE,
         loadings.cutoff = 0.7)
autoplot(stats::prcomp(iris[-5]), frame = TRUE)
autoplot(stats::prcomp(iris[-5]), data = iris, frame = TRUE,
         frame.colour = 'Species')
autoplot(stats::prcomp(iris[-5]), data = iris, frame = TRUE,
         frame.type = 't', frame.colour = 'Species')

autoplot(stats::princomp(iris[-5]))
```

```
autoplot(stats::princomp(iris[-5]), data = iris)
autoplot(stats::princomp(iris[-5]), data = iris, colour = 'Species')
autoplot(stats::princomp(iris[-5]), label = TRUE, loadings = TRUE, loadings.label = TRUE)

#Plot PC 2 and 3
autoplot(stats::princomp(iris[-5]), x = 2, y = 3)

#Don't show the variance explained
autoplot(stats::princomp(iris[-5]), variance_percentage = FALSE)

d.factanal <- stats::factanal(state.x77, factors = 3, scores = 'regression')
autoplot(d.factanal)
autoplot(d.factanal, data = state.x77, colour = 'Income')
autoplot(d.factanal, label = TRUE, loadings = TRUE, loadings.label = TRUE)
```

`autoplot.performance` *Autoplot* `ROCR::performance`

Description

Autoplot `ROCR::performance`

Usage

```
## S3 method for class 'performance'
autoplot(object, p = NULL, bins = 5, ...)
```

Arguments

`object`	`ROCR::performance` instance
`p`	`ggplot2::ggplot` instances
`bins`	If `object` represents a measure whose value is just a scalar (e.g. `performance(predObj, 'auc')`), a histogram will be plotted of this scalar's values for different runs. `bins` is the number of bins for this histogram.
`...`	other arguments passed to methods

Value

ggplot

`autoplot.RasterCommon` *Autoplot* `raster::raster`

Description

Only plot the first layer of the given raster

Usage

```
## S3 method for class 'RasterCommon'
autoplot(
  object,
  raster.layer = NULL,
  p = NULL,
  alpha = NULL,
  xlim = c(NA, NA),
  ylim = c(NA, NA),
  log = "",
  main = NULL,
  xlab = "",
  ylab = "",
  asp = NULL,
  ...
)
```

Arguments

`object`	`raster::raster` instance
`raster.layer`	name of the layer to plot
`p`	`ggplot2::ggplot` instance
`alpha`	alpha
`xlim`	limits for x axis
`ylim`	limits for y axis
`log`	which variables to log transform ("x", "y", or "xy")
`main`	character vector or expression for plot title
`xlab`	character vector or expression for x axis label
`ylab`	character vector or expression for y axis label
`asp`	the y/x aspect ratio
`...`	other arguments passed to methods

Value

ggplot

`autoplot.silhouette` *Autoplot silhouette instances*

Description

Autoplot silhouette instances

Usage

```
## S3 method for class 'silhouette'
autoplot(
  object,
  colour = "red",
  linetype = "dashed",
  size = 0.5,
  bar.width = 1,
  ...
)
```

Arguments

`object`	Silhouette instance
`colour`	reference line color
`linetype`	reference line type
`size`	reference line size
`bar.width`	bar width
`...`	other arguments passed to methods

Value

ggplot

Examples

```
## Not run:
model = cluster::pam(iris[-5], 3L)
sil = cluster::silhouette(model)
autoplot(sil)

autoplot(cluster::silhouette(cluster::clara(iris[-5], 3)))
autoplot(cluster::silhouette(cluster::fanny(iris[-5], 3)))

model = stats::kmeans(iris[-5], 3)
sil = cluster::silhouette(model$cluster, stats::dist(iris[-5]))
autoplot(sil)

## End(Not run)
```

`autoplot.SpatialCommon` *Autoplot* `maps::map`

Description

Autoplot `maps::map`

Usage

```
## S3 method for class 'SpatialCommon'
autoplot(
  object,
  p = NULL,
  group = NULL,
  colour = "black",
  size = NULL,
  linetype = NULL,
  alpha = NULL,
  fill = NULL,
  shape = NULL,
  xlim = c(NA, NA),
  ylim = c(NA, NA),
  log = "",
  main = NULL,
  xlab = "",
  ylab = "",
  asp = NULL,
  ...
)
```

Arguments

`object`	`maps::map` instance
`p`	`ggplot2::ggplot` instance
`group`	key for grouping geoms
`colour`	line colour
`size`	point size
`linetype`	line type
`alpha`	alpha
`fill`	fill colour
`shape`	point shape
`xlim`	limits for x axis
`ylim`	limits for y axis

log	which variables to log transform ("x", "y", or "xy")
main	character vector or expression for plot title
xlab	character vector or expression for x axis label
ylab	character vector or expression for y axis label
asp	the y/x aspect ratio
...	other arguments passed to methods

Value

ggplot

`autoplot.spec` *Autoplot* `stats::spec`

Description

Autoplot `stats::spec`

Usage

```
## S3 method for class 'spec'
autoplot(
  object,
  xlim = c(NA, NA),
  ylim = c(NA, NA),
  log = "y",
  main = NULL,
  xlab = NULL,
  ylab = NULL,
  asp = NULL,
  ...
)
```

Arguments

object	`stats::spec` instance
xlim	limits for x axis
ylim	limits for y axis
log	which variables to log transform ("x", "y", or "xy")
main	character vector or expression for plot title
xlab	character vector or expression for x axis label
ylab	character vector or expression for y axis label
asp	the y/x aspect ratio
...	other arguments passed to methods

Value

ggplot

Examples

```
## Not run:
autoplot(stats::spec.ar(AirPassengers))
autoplot(stats::spec.pgram(AirPassengers))

## End(Not run)
```

`autoplot.stepfun` *Plot* `stats::stepfun`

Description

Plot `stats::stepfun`

Usage

```
## S3 method for class 'stepfun'
autoplot(
  object,
  colour = NULL,
  size = NULL,
  linetype = NULL,
  alpha = NULL,
  shape = 1,
  xlim = c(NA, NA),
  ylim = c(NA, NA),
  log = "",
  main = NULL,
  xlab = NULL,
  ylab = NULL,
  asp = NULL,
  ...
)
```

Arguments

`object`	`stats::stepfun` instance
`colour`	colour
`size`	point size
`linetype`	line type
`alpha`	alpha
`shape`	point shape

xlim	limits for x axis
ylim	limits for y axis
log	which variables to log transform ("x", "y", or "xy")
main	character vector or expression for plot title
xlab	character vector or expression for x axis label
ylab	character vector or expression for y axis label
asp	the y/x aspect ratio
...	other arguments passed to methods

Value

ggplot

Examples

```
autoplot(stepfun(c(1, 2, 3), c(4, 5, 6, 7)))
autoplot(stepfun(c(1), c(4, 5)), shape = NULL)
autoplot(stepfun(c(1, 3, 4, 8), c(4, 5, 2, 3, 5)), linetype = 'dashed')
autoplot(stepfun(c(1, 2, 3, 4, 5, 6, 7, 8, 10), c(4, 5, 6, 7, 8, 9, 10, 11, 12, 9)), colour = 'red')
```

---

autoplot.survfit *Autoplot* survival::survfit

Description

Autoplot survival::survfit

Usage

```
## S3 method for class 'survfit'
autoplot(
  object,
  fun = NULL,
  surv.geom = "step",
  surv.colour = NULL,
  surv.size = NULL,
  surv.linetype = NULL,
  surv.alpha = NULL,
  surv.fill = NULL,
  surv.shape = NULL,
  surv.connect = FALSE,
  conf.int = TRUE,
  conf.int.colour = "#0000FF",
  conf.int.linetype = "none",
  conf.int.fill = "#000000",
  conf.int.alpha = 0.3,
```

```
  censor = TRUE,
  censor.colour = NULL,
  censor.size = 3,
  censor.alpha = NULL,
  censor.shape = "+",
  facets = FALSE,
  nrow = NULL,
  ncol = 1,
  grid = FALSE,
  strip_swap = FALSE,
  scales = "free_y",
  xlim = c(NA, NA),
  ylim = c(NA, NA),
  log = "",
  main = NULL,
  xlab = NULL,
  ylab = NULL,
  asp = NULL,
  ...
)
```

Arguments

object	survival::survfit instance
fun	an arbitrary function defining a transformation of the survival curve
surv.geom	geometric string for survival curve. 'step', 'line' or 'point'
surv.colour	Line colour for the survival curve. A plot-data column name maps colour and creates a legend; a single colour value sets a fixed colour; and a vector supplies a manual palette for the automatically mapped grouping variable.
surv.size	point size for survival curve
surv.linetype	line type for survival curve
surv.alpha	alpha for survival curve
surv.fill	fill colour survival curve
surv.shape	point shape survival curve
surv.connect	logical frag indicates whether connects survival curve to the origin
conf.int	Logical flag indicating whether to plot confidence intervals
conf.int.colour	line colour for confidence intervals
conf.int.linetype	line type for confidence intervals
conf.int.fill	fill colour for confidence intervals
conf.int.alpha	alpha for confidence intervals
censor	Logical flag indicating whether to plot censors
censor.colour	colour for censors

censor.size	size for censors
censor.alpha	alpha for censors
censor.shape	shape for censors
facets	Logical value to specify use facets
nrow	Number of facet/subplot rows
ncol	Number of facet/subplot columns
grid	Logical flag indicating whether to draw grid
strip_swap	swap facet or grid strips
scales	Scale value passed to ggplot2
xlim	limits for x axis
ylim	limits for y axis
log	which variables to log transform ("x", "y", or "xy")
main	character vector or expression for plot title
xlab	character vector or expression for x axis label
ylab	character vector or expression for y axis label
asp	the y/x aspect ratio
...	other arguments passed to methods

Value

ggplot

Examples

```
## Not run:
if (requireNamespace("survival", quietly = TRUE)) {
  autoplot(survfit(Surv(time, status) ~ sex, data = lung))
  autoplot(survfit(Surv(time, status) ~ sex, data = lung), facets = TRUE)
  autoplot(survfit(Surv(time, status) ~ 1, data = lung))
  autoplot(survfit(Surv(time, status) ~ sex, data=lung), conf.int = FALSE, censor = FALSE)
  autoplot(survfit(Surv(time, status) ~ sex, data=lung), surv.colour = 'red')
  autoplot(survfit(Surv(time, status) ~ sex, data=lung),
           surv.colour = c('red', 'blue'))
  autoplot(survfit(coxph(Surv(time, status) ~ sex, data = lung)))
}

## End(Not run)
```

`autoplot.ts` *Autoplot time-series-like*

Description

Autoplot time-series-like

Usage

```
## S3 method for class 'ts'
autoplot(
  object,
  columns = NULL,
  group = NULL,
  is.date = NULL,
  index.name = "Index",
  p = NULL,
  ts.scale = FALSE,
  stacked = FALSE,
  facets = TRUE,
  nrow = NULL,
  ncol = 1,
  scales = "free_y",
  ts.geom = "line",
  ts.colour = NULL,
  ts.size = NULL,
  ts.linetype = NULL,
  ts.alpha = NULL,
  ts.fill = NULL,
  ts.shape = NULL,
  geom = ts.geom,
  colour = ts.colour,
  size = ts.size,
  linetype = ts.linetype,
  alpha = ts.alpha,
  fill = ts.fill,
  shape = ts.shape,
  xlim = c(NA, NA),
  ylim = c(NA, NA),
  log = "",
  main = NULL,
  xlab = "",
  ylab = "",
  asp = NULL,
  ...
)
```

Arguments

object	time-series-like instance
columns	Character vector specifies target column name(s)
group	Character vector specifies grouping
is.date	Logical frag indicates whether the stats::ts is date or not If not provided, regard the input as date when the frequency is 4 or 12
index.name	Specify column name for time series index when passing data.frame via data.
p	ggplot2::ggplot instance
ts.scale	Logical flag indicating whether to perform scaling each timeseries
stacked	Logical flag indicating whether to stack multivariate timeseries
facets	Logical value to specify use facets
nrow	Number of facet/subplot rows
ncol	Number of facet/subplot columns
scales	Scale value passed to ggplot2
ts.geom	geometric string for time-series. 'line', 'bar', 'ribbon', or 'point'
ts.colour	line colour for time-series
ts.size	point size for time-series
ts.linetype	line type for time-series
ts.alpha	alpha for time-series
ts.fill	fill colour for time-series
ts.shape	point shape for time-series
geom	same as ts.geom
colour	same as ts.colour
size	same as ts.size
linetype	same as ts.linetype
alpha	same as ts.alpha
fill	same as ts.fill
shape	same as ts.shape
xlim	limits for x axis
ylim	limits for y axis
log	which variables to log transform ("x", "y", or "xy")
main	character vector or expression for plot title
xlab	character vector or expression for x axis label
ylab	character vector or expression for y axis label
asp	the y/x aspect ratio
...	other arguments passed to methods

Value

ggplot

Examples

```
## Not run:
data(Canada, package = 'vars')
autoplot(AirPassengers)
autoplot(UKgas, ts.geom = 'bar')
autoplot(Canada)
autoplot(Canada, facets = FALSE)

library(zoo)
autoplot(xts::as.xts(AirPassengers))
autoplot(timeSeries::as.timeSeries(AirPassengers))
its <- tseries::irts(cumsum(rexp(10, rate = 0.1)), matrix(rnorm(20), ncol=2))
autoplot(its)

autoplot(stats::stl(UKgas, s.window = 'periodic'))
autoplot(stats::decompose(UKgas))

## End(Not run)
```

---

autoplot.tsmodel *Autoplot time series models (like AR, ARIMA)*

Description

Autoplot time series models (like AR, ARIMA)

Usage

```
## S3 method for class 'tsmodel'
autoplot(
  object,
  data = NULL,
  predict = NULL,
  is.date = NULL,
  ts.connect = TRUE,
  fitted.geom = "line",
  fitted.colour = "#FF0000",
  fitted.size = NULL,
  fitted.linetype = NULL,
  fitted.alpha = NULL,
  fitted.fill = NULL,
  fitted.shape = NULL,
  predict.geom = "line",
  predict.colour = "#0000FF",
```

```
  predict.size = NULL,
  predict.linetype = NULL,
  predict.alpha = NULL,
  predict.fill = NULL,
  predict.shape = NULL,
  conf.int = TRUE,
  conf.int.colour = "#0000FF",
  conf.int.linetype = "none",
  conf.int.fill = "#000000",
  conf.int.alpha = 0.3,
  ...
)
```

Arguments

`object`	Time series model instance
`data`	original dataset, needed for `stats::ar`, `stats::Arima`
`predict`	Predicted `stats::ts` If not provided, try to retrieve from current environment using variable name.
`is.date`	Logical frag indicates whether the `stats::ts` is date or not. If not provided, regard the input as date when the frequency is 4 or 12
`ts.connect`	Logical frag indicates whether connects original time-series and predicted values
`fitted.geom`	geometric string for fitted time-series
`fitted.colour`	line colour for fitted time-series
`fitted.size`	point size for fitted time-series
`fitted.linetype`	line type for fitted time-series
`fitted.alpha`	alpha for fitted time-series
`fitted.fill`	fill colour for fitted time-series
`fitted.shape`	point shape for fitted time-series
`predict.geom`	geometric string for predicted time-series
`predict.colour`	line colour for predicted time-series
`predict.size`	point size for predicted time-series
`predict.linetype`	line type for predicted time-series
`predict.alpha`	alpha for predicted time-series
`predict.fill`	fill colour for predicted time-series
`predict.shape`	point shape for predicted time-series
`conf.int`	Logical flag indicating whether to plot confidence intervals
`conf.int.colour`	line colour for confidence intervals

conf.int.linetype	line type for confidence intervals
conf.int.fill	fill colour for confidence intervals
conf.int.alpha	alpha for confidence intervals
...	Keywords passed to autoplot.ts

Value

ggplot

Examples

```
## Not run:
d.ar <- stats::ar(AirPassengers)
autoplot(d.ar)
autoplot(d.ar, predict = predict(d.ar, n.ahead = 5))
autoplot(stats::arima(UKgas), data = UKgas)
autoplot(forecast::arfima(AirPassengers))
autoplot(forecast::nnetar(UKgas), is.date = FALSE)

d.holt <- stats::HoltWinters(USAccDeaths)
autoplot(d.holt)
autoplot(d.holt, predict = predict(d.holt, n.ahead = 5))
autoplot(d.holt, predict = predict(d.holt, n.ahead = 5, prediction.interval = TRUE))

## End(Not run)
```

---

autoplot.varprd *Autoplot* vars::varprd

Description

Autoplot vars::varprd

Usage

```
## S3 method for class 'varprd'
autoplot(
  object,
  is.date = NULL,
  ts.connect = TRUE,
  scales = "free_y",
  predict.geom = "line",
  predict.colour = "#0000FF",
  predict.size = NULL,
  predict.linetype = NULL,
  predict.alpha = NULL,
  predict.fill = NULL,
```

```
  predict.shape = NULL,
  conf.int = TRUE,
  conf.int.colour = "#0000FF",
  conf.int.linetype = "none",
  conf.int.fill = "#000000",
  conf.int.alpha = 0.3,
  ...
)
```

Arguments

object	vars::varpred instance
is.date	Logical frag indicates whether the stats::ts is date or not. If not provided, regard the input as date when the frequency is 4 or 12.
ts.connect	Logical frag indicates whether connects original time-series and predicted values
scales	Scale value passed to ggplot2
predict.geom	geometric string for predicted time-series
predict.colour	line colour for predicted time-series
predict.size	point size for predicted time-series
predict.linetype	line type for predicted time-series
predict.alpha	alpha for predicted time-series
predict.fill	fill colour for predicted time-series
predict.shape	point shape for predicted time-series
conf.int	Logical flag indicating whether to plot confidence intervals
conf.int.colour	line colour for confidence intervals
conf.int.linetype	line type for confidence intervals
conf.int.fill	fill colour for confidence intervals
conf.int.alpha	alpha for confidence intervals
...	other arguments passed to autoplot.ts

Value

ggplot

Examples

```
## Not run:
data(Canada, package = 'vars')
d.var <- vars::VAR(Canada, p = 3, type = 'const')
autoplot(stats::predict(d.var, n.ahead = 50), is.date = TRUE)
autoplot(stats::predict(d.var, n.ahead = 50), conf.int = FALSE)

## End(Not run)
```

cbind_wraps *Wrapper for cbind*

Description

Wrapper for cbind

Usage

```
cbind_wraps(df1, df2)
```

Arguments

df1	1st data
df2	2nd data

Value

list

Examples

```
ggfortify:::cbind_wraps(iris[1:2], iris[3:5])
```

check_names *Check data names are equal with expected*

Description

Check data names are equal with expected

Usage

```
check_names(data, expected)
```

Arguments

data	list instance to be checked
expected	expected character vector

Value

logical

confint.acf *Calculate confidence interval for* stats::acf

Description

Calculate confidence interval for stats::acf

Usage

```
## S3 method for class 'acf'
confint(x, ci = 0.95, ci.type = "white")
```

Arguments

x	stats::acf instance
ci	Float value for confidence interval
ci.type	"white" or "ma"

Value

vector

Examples

```
## Not run:
air.acf <- acf(AirPassengers, plot = FALSE)
ggfortify:::confint.acf(air.acf)
ggfortify:::confint.acf(air.acf, ci.type = 'ma')

## End(Not run)
```

deprecate.warning *Show deprecate warning*

Description

Show deprecate warning

Usage

```
deprecate.warning(old.kw, new.kw)
```

Arguments

old.kw	Keyword being deprecated
new.kw	Keyword being replaced

Examples

```
ggfortify:::deprecate.warning('old', 'new')
```

---

fitted.ar *Calculate fitted values for* stats::ar

Description

Calculate fitted values for stats::ar

Usage

```
## S3 method for class 'ar'
fitted(object, ...)
```

Arguments

object	stats::ar instance
...	other keywords

Value

ts An time series of the one-step forecasts

Examples

```
## Not run:
fitted(ar(WWWusage))

## End(Not run)
```

---

flatten *Flatten dataframe contains matrix*

Description

tains list or matrix as column

Usage

```
flatten(df)
```

Arguments

df	data.frame to be flatten

`fortify.aareg` *Convert* `survival::aareg` *to* `data.frame`

Description

Convert `survival::aareg` to `data.frame`

Usage

```
## S3 method for class 'aareg'
fortify(
  model,
  data = NULL,
  maxtime = NULL,
  surv.connect = TRUE,
  melt = FALSE,
  ...
)
```

Arguments

`model`	`survival::aareg` instance
`data`	original dataset, if needed
`maxtime`	truncate the input to the model at time "maxtime"
`surv.connect`	logical frag indicates whether connects survival curve to the origin
`melt`	Logical flag indicating whether to melt each timeseries as variable
`...`	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
if (requireNamespace("survival", quietly = TRUE)) {
  fortify(aareg(Surv(time, status) ~ age + sex + ph.ecog, data = lung, nmin = 1))
 fortify(aareg(Surv(time, status) ~ age + sex + ph.ecog, data = lung, nmin = 1), melt = TRUE)
}

## End(Not run)
```

`fortify.acf` *Convert* `stats::acf` *to* `data.frame`

Description

Convert `stats::acf` to `data.frame`

Usage

```
## S3 method for class 'acf'
fortify(
  model,
  data = NULL,
  conf.int = TRUE,
  conf.int.value = 0.95,
  conf.int.type = "white",
  ...
)
```

Arguments

`model`	`stats::acf` instance
`data`	original dataset, if needed
`conf.int`	Logical flag indicating whether to attach confidence intervals
`conf.int.value`	Coverage probability for confidence interval
`conf.int.type`	Type of confidence interval, 'white' for white noise or 'ma' MA(k-1) model
`...`	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
fortify(stats::acf(AirPassengers))
fortify(stats::pacf(AirPassengers))
fortify(stats::ccf(AirPassengers, AirPassengers))

fortify(stats::acf(AirPassengers), conf.int = TRUE)

## End(Not run)
```

`fortify.basis` *Convert spline basis instances to* `data.frame`

Description

Convert spline basis instances to `data.frame`

Usage

```
## S3 method for class 'basis'
fortify(model, data, n = 256, ...)
```

Arguments

`model`	spline basis object
`data`	x-values at which to evaluate the splines. Optional. By default, an evenly spaced sequence of 256 values covering the range of the splines will be used.
`n`	If data is not provided, instead use an evenly-spaced sequence of x-values of this length (plus one, since both endpoints are included). If data is provided, this argument is ignored.
`...`	other arguments passed to methods

Value

data.frame with 3 columns: Spline (character), x (numeric), and y (numeric); giving the interpolated x and y values for each of the splines in the basis.

Examples

```
## Not run:
library(splines)
x <- seq(0, 1, by=0.001)
spl <- bs(x, df=6)
fortify(spl)

## End(Not run)
```

fortify.cpt *Convert* changepoint::cpt *and* strucchange::breakpoints *to* data.frame

Description

Convert changepoint::cpt and strucchange::breakpoints to data.frame

Usage

```
## S3 method for class 'cpt'
fortify(model, data = NULL, is.date = NULL, ...)
```

Arguments

model	chantepoint::cpt or strucchange::breakpoints instance
data	original dataset, if needed
is.date	Logical frag indicates whether the stats::ts is date or not. If not provided, regard the input as date when the frequency is 4 or 12.
...	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
library(changepoint)
fortify(cpt.mean(AirPassengers))
fortify(cpt.var(AirPassengers))
fortify(cpt.meanvar(AirPassengers))

library(strucchange)
bp.nile <- breakpoints(Nile ~ 1)
fortify(bp.nile)
fortify(breakpoints(bp.nile, breaks = 2))
fortify(breakpoints(bp.nile, breaks = 2), data = Nile)

## End(Not run)
```

fortify.cv.glmnet *Convert* glmnet::cv.glmnet *to* data.frame

Description

Convert glmnet::cv.glmnet to data.frame

Usage

```
## S3 method for class 'cv.glmnet'
fortify(model, data = NULL, ...)
```

Arguments

model	glmnet::cv.glmnet instance
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

Examples

```
if (requireNamespace("survival", quietly = TRUE)) {
  fortify(glmnet::cv.glmnet(data.matrix(Orange[-3]), data.matrix(Orange[3])))
}
```

fortify.density *Convert* stats::density *to* data.frame

Description

Convert stats::density to data.frame

Usage

```
## S3 method for class 'density'
fortify(model, data = NULL, ...)
```

Arguments

model	stats::density instance
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

Examples

```
fortify(stats::density(stats::rnorm(1:50)))
```

---

fortify.dist *Convert* stats::dist *to* data.frame

Description

Convert stats::dist to data.frame

Usage

```
## S3 method for class 'dist'
fortify(model, data = NULL, ...)
```

Arguments

model	stats::dist instance
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

Examples

```
fortify(eurodist)
```

---

fortify.ets *Convert* forecast::bats *and* forecast::ets *to* data.frame

---

Description

Convert forecast::bats and forecast::ets to data.frame

Usage

```
## S3 method for class 'ets'
fortify(model, data = NULL, ...)
```

Arguments

model	forecast::bats or forecast::ets instance
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
fortify(forecast::bats(UKgas))
fortify(forecast::ets(UKgas))

## End(Not run)
```

---

fortify.factanal *Convert* stats::factanal *to* data.frame

Description

Convert stats::factanal to data.frame

Usage

```
## S3 method for class 'factanal'
fortify(model, data = NULL, ...)
```

Arguments

model	stats::factanal instance
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
d.factanal <- stats::factanal(state.x77, factors = 3, scores = 'regression')
fortify(d.factanal)
fortify(d.factanal, data = state.x77)

## End(Not run)
```

fortify.forecast *Convert* forecast::forecast *to* data.frame

Description

Convert forecast::forecast to data.frame

Usage

```
## S3 method for class 'forecast'
fortify(model, data = NULL, is.date = NULL, ts.connect = FALSE, ...)
```

Arguments

model	forecast::forecast instance
data	original dataset, if needed
is.date	Logical frag indicates whether the stats::ts is date or not. If not provided, regard the input as date when the frequency is 4 or 12.
ts.connect	Logical frag indicates whether connects original time-series and predicted values
...	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
d.arima <- forecast::auto.arima(AirPassengers)
d.forecast <- forecast::forecast(d.arima, level = c(95), h = 50)
fortify(d.forecast)
fortify(d.forecast, ts.connect = TRUE)

## End(Not run)
```

fortify.glmnet *Convert* glmnet::glmnet *to* data.frame

Description

Convert glmnet::glmnet to data.frame

Usage

```
## S3 method for class 'glmnet'
fortify(model, data = NULL, ...)
```

Arguments

model	glmnet::glmnet instance
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
fortify(glmnet::glmnet(data.matrix(Orange[-3]), data.matrix(Orange[3])))

## End(Not run)
```

---

fortify.kmeans *Convert cluster instances to* data.frame

Description

Convert cluster instances to data.frame

Usage

```
## S3 method for class 'kmeans'
fortify(model, data = NULL, ...)
```

Arguments

model	Clustered instance
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
fortify(stats::kmeans(iris[-5], 3))
fortify(stats::kmeans(iris[-5], 3), data = iris)
fortify(cluster::clara(iris[-5], 3))
fortify(cluster::fanny(iris[-5], 3))
fortify(cluster::pam(iris[-5], 3), data = iris)

## End(Not run)
```

`fortify.lfda` *Convert* `lfda::lfda` *or* `lfda::klfda` *or* `lfda::self` *to* `data.frame`

Description

Convert `lfda::lfda` or `lfda::klfda` or `lfda::self` to `data.frame`

Usage

```
## S3 method for class 'lfda'
fortify(model, data = NULL, ...)
```

Arguments

`model`	`lfda::lfda` or `lfda::klfda` or `lfda::self` instance
`data`	original dataset, if needed
`...`	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
model <- lfda::lfda(iris[, -5], iris[, 5], 3, metric = "plain")
fortify(model)

## End(Not run)
```

fortify.list *Convert list to data.frame*

Description

Convert list to data.frame

Usage

```
## S3 method for class 'list'
fortify(model, data = NULL, ...)
```

Arguments

model	list instance
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

fortify.matrix *Convert* base::matrix *to* data.frame

Description

Different from as.data.frame

Usage

```
## S3 method for class 'matrix'
fortify(model, data = NULL, compat = FALSE, ...)
```

Arguments

model	base::matrix instance
data	original dataset, if needed
compat	Logical frag to specify the behaviour when converting matrix which has no column name. If FALSE, result has character columns like c('1', '2', ...). If TRUE, result has character columns like c('V1', 'V2', ...).
...	other arguments passed to methods

Value

data.frame

Examples

```
fortify(matrix(1:6, nrow=2, ncol=3))
```

---

fortify.MSM.lm *Convert* MSwM::MSM.lm *to* data.frame

Description

Convert MSwM::MSM.lm to data.frame

Usage

```
## S3 method for class 'MSM.lm'
fortify(model, data = NULL, melt = FALSE, ...)
```

Arguments

model	MSwM::MSM.lm instance
data	original dataset, if needed
melt	Logical flag indicating whether to melt each models
...	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
library(MSwM)
d <- data.frame(Data = c(rnorm(50, mean = -10), rnorm(50, mean = 10)),
                exog = cos(seq(-pi/2, pi/2, length.out = 100)))
d.mswm <- MSwM::msmFit(lm(Data ~.-1, data = d), k=2, sw=rep(TRUE, 2),
                       control = list(parallelization = FALSE))
fortify(d.mswm)

## End(Not run)
```

fortify.performance *Convert* ROCR::performance *objects to* data.frame

Description

Convert ROCR::performance objects to data.frame

Usage

```
## S3 method for class 'performance'
fortify(model, data = NULL, ...)
```

Arguments

model	performance instances
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

fortify.prcomp *Convert* stats::prcomp, stats::princomp *to* data.frame

Description

Convert stats::prcomp, stats::princomp to data.frame

Usage

```
## S3 method for class 'prcomp'
fortify(model, data = NULL, ...)
```

Arguments

model	stats::prcomp or stats::princomp instance
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
fortify(stats::prcomp(iris[-5]))
fortify(stats::prcomp(iris[-5]), data = iris)

fortify(stats::princomp(iris[-5]))
fortify(stats::princomp(iris[-5]), data = iris)

## End(Not run)
```

`fortify.RasterCommon` *Convert* `raster` *to* `data.frame`

Description

Convert `raster` to `data.frame`

Usage

```
## S3 method for class 'RasterCommon'
fortify(model, data = NULL, maxpixels = 1e+05, rename = TRUE, ...)
```

Arguments

`model`	`raster` instances
`data`	original dataset, if needed
`maxpixels`	number of pixels for resampling
`rename`	logical flag indicating whether to rename coordinates to long and lat
`...`	other arguments passed to methods

Value

data.frame

`fortify.silhouette` *Convert* `cluster::silhouette` *to* `data.frame`

Description

Convert `cluster::silhouette` to `data.frame`

Usage

```
## S3 method for class 'silhouette'
fortify(model, data = NULL, ...)
```

Arguments

model	Silhouette instance
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
fortify(cluster::silhouette(cluster::pam(iris[-5], 3)))
fortify(cluster::silhouette(cluster::clara(iris[-5], 3)))
fortify(cluster::silhouette(cluster::fanny(iris[-5], 3)))

mod = stats::kmeans(iris[-5], 3)
fortify(cluster::silhouette(mod$cluster, stats::dist(iris[-5])))

## End(Not run)
```

---

fortify.SpatialCommon *Convert* sp *instances to* data.frame.

Description

Convert sp instances to data.frame.

Usage

```
## S3 method for class 'SpatialCommon'
fortify(model, data = NULL, rename = TRUE, ...)
```

Arguments

model	sp instances
data	original dataset, if needed
rename	logical flag indicating whether to rename coordinates to long and lat
...	other arguments passed to methods

Value

data.frame

fortify.spec *Convert* stats::spec *to* data.frame

Description

Convert stats::spec to data.frame

Usage

```
## S3 method for class 'spec'
fortify(model, data = NULL, ...)
```

Arguments

model	stats::spec instance
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
fortify(spectrum(AirPassengers))
fortify(stats::spec.ar(AirPassengers))
fortify(stats::spec.pgram(AirPassengers))

## End(Not run)
```

fortify.stepfun *Convert* stats::stepfun *to* data.frame

Description

Convert stats::stepfun to data.frame

Usage

```
## S3 method for class 'stepfun'
fortify(model, data, ...)
```

Arguments

model	stats::stepfun instance
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

Examples

```
fortify(stepfun(c(1, 2, 3), c(4, 5, 6, 7)))
fortify(stepfun(c(1), c(4, 5)))
fortify(stepfun(c(1, 3, 4, 8), c(4, 5, 2, 3, 5)))
fortify(stepfun(c(1, 2, 3, 4, 5, 6, 7, 8, 10), c(4, 5, 6, 7, 8, 9, 10, 11, 12, 9)))
```

---

fortify.survfit *Convert* survival::survfit *to* data.frame

Description

Convert survival::survfit to data.frame

Usage

```
## S3 method for class 'survfit'
fortify(model, data = NULL, surv.connect = FALSE, fun = NULL, ...)
```

Arguments

model	survival::survfit instance
data	original dataset, if needed
surv.connect	logical frag indicates whether connects survival curve to the origin
fun	an arbitrary function defining a transformation of the survival curve
...	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
if (requireNamespace("survival", quietly = TRUE)) {
  fortify(survfit(Surv(time, status) ~ sex, data = lung))
  fortify(survfit(Surv(time, status) ~ 1, data = lung))
  fortify(survfit(coxph(Surv(time, status) ~ sex, data = lung)))
  fortify(survfit(coxph(Surv(time, status) ~ 1, data = lung)))
}

## End(Not run)
```

---

fortify.table *Convert* base::table *to* data.frame

Description

Convert base::table to data.frame

Usage

```
## S3 method for class 'table'
fortify(model, data, ...)
```

Arguments

model	base::table instance
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

Examples

```
fortify(Titanic)
```

`fortify.ts` *Convert time-series-like to data.frame*

Description

Convert time-series-like to data.frame

Usage

```
## S3 method for class 'ts'
fortify(
  model,
  data = NULL,
  columns = NULL,
  is.date = NULL,
  index.name = "Index",
  data.name = "Data",
  scale = FALSE,
  melt = FALSE,
  ...
)
```

Arguments

`model`	time-series-like instance
`data`	original dataset, if needed
`columns`	character vector specifies target column name(s)
`is.date`	logical frag indicates whether the `stats::ts` is date or not If not provided, regard the input as date when the frequency is 4 or 12
`index.name`	specify column name for time series index
`data.name`	specify column name for univariate time series data. Ignored in multivariate time series.
`scale`	logical flag indicating whether to perform scaling each timeseries
`melt`	logical flag indicating whether to melt each timeseries as variable
`...`	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
fortify(AirPassengers)
fortify(timeSeries::as.timeSeries(AirPassengers))
fortify(tseries::irts(cumsum(rexp(10, rate = 0.1)), matrix(rnorm(20), ncol=2)))
fortify(stats::stl(UKgas, s.window = 'periodic'))
fortify(stats::decompose(UKgas))

## End(Not run)
```

`fortify.tsmodel` *Convert time series models (like AR, ARIMA) to* `data.frame`

Description

Convert time series models (like AR, ARIMA) to `data.frame`

Usage

```
## S3 method for class 'tsmodel'
fortify(
  model,
  data = NULL,
  predict = NULL,
  is.date = NULL,
  ts.connect = TRUE,
  ...
)
```

Arguments

`model`	Time series model instance
`data`	original dataset, needed for `stats::ar`, `stats::Arima`
`predict`	Predicted `stats::ts` If not provided, try to retrieve from current environment using variable name.
`is.date`	Logical frag indicates whether the `stats::ts` is date or not. If not provided, regard the input as date when the frequency is 4 or 12.
`ts.connect`	Logical frag indicates whether connects original time-series and predicted values
`...`	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
fortify(stats::ar(AirPassengers))
fortify(stats::arima(UKgas))
fortify(stats::arima(UKgas), data = UKgas, is.date = TRUE)
fortify(forecast::auto.arima(austres))
fortify(forecast::arfima(AirPassengers))
fortify(forecast::nnetar(UKgas))
fortify(stats::HoltWinters(USAccDeaths))

data(LPP2005REC, package = 'timeSeries')
x = timeSeries::as.timeSeries(LPP2005REC)
d.Garch = fGarch::garchFit(LPP40 ~ garch(1, 1), data = 100 * x, trace = FALSE)
fortify(d.Garch)

## End(Not run)
```

`fortify.varprd` *Convert* `vars::varprd` *to* `data.frame`

Description

Convert `vars::varprd` to `data.frame`

Usage

```
## S3 method for class 'varprd'
fortify(
  model,
  data = NULL,
  is.date = NULL,
  ts.connect = FALSE,
  melt = FALSE,
  ...
)
```

Arguments

`model`	`vars::varprd` instance
`data`	original dataset, if needed
`is.date`	Logical frag indicates whether the `stats::ts` is date or not. If not provided, regard the input as date when the frequency is 4 or 12.
`ts.connect`	Logical frag indicates whether connects original time-series and predicted values
`melt`	Logical flag indicating whether to melt each timeseries as variable
`...`	other arguments passed to methods

Value

data.frame

Examples

```
## Not run:
data(Canada, package = 'vars')
d.var <- vars::VAR(Canada, p = 3, type = 'const')
fortify(stats::predict(d.var, n.ahead = 50))

## End(Not run)
```

---

fortify_base *Convert* base::table *to* data.frame

Description

Convert base::table to data.frame

Usage

```
fortify_base(model, data, ...)
```

Arguments

model	base::table instance
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

---

fortify_map *Convert* maps::map *to* data.frame.

Description

Convert maps::map to data.frame.

Usage

```
fortify_map(model, data = NULL, ...)
```

Arguments

model	maps::map instance
data	original dataset, if needed
...	other arguments passed to methods

Value

data.frame

---

geom_confint *Connect observations by stairs.*

Description

Connect observations by stairs.

Usage

```
geom_confint(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "identity",
  na.rm = FALSE,
  ...
)
```

Arguments

mapping	the aesthetic mapping
data	a layer specific dataset
stat	the statistical transformation to use on the data for this layer
position	the position adjustment to use for overlapping points on this layer
na.rm	logical frag whether silently remove missing values
...	other arguments passed to methods

geom_factory *Factory function to control* ggplot2::geom_xxx *functions*

Description

Factory function to control ggplot2::geom_xxx functions

Usage

```
geom_factory(geomfunc, data = NULL, position = NULL, ...)
```

Arguments

geomfunc	ggplot2::geom_xxx function
data	plotting data
position	A position function or character
...	other arguments passed to methods

Value

proto

get.dtindex *Convert* ts *index to* Date vector

Description

Convert ts index to Date vector

Usage

```
get.dtindex(data, is.tsp = FALSE, is.date = NULL)
```

Arguments

data	ts instance
is.tsp	Logical frag whether data is tsp itself or not
is.date	Logical frag indicates whether the stats::ts is date or not. If not provided, regard the input as date when the frequency is 4 or 12.

Value

vector

Examples

```
## Not run:
ggfortify:::get.dtindex(AirPassengers)
ggfortify:::get.dtindex(UKgas)
ggfortify:::get.dtindex(Nile, is.date = FALSE)
ggfortify:::get.dtindex(Nile, is.date = TRUE)

## End(Not run)
```

`get.dtindex.continuous`

Get `Date vector` *continue to* `ts` *index*

Description

Get `Date vector` continue to `ts` index

Usage

```
get.dtindex.continuous(data, length, is.tsp = FALSE, is.date = NULL)
```

Arguments

`data`	`ts` instance
`length`	A number to continue
`is.tsp`	Logical frag whether data is `tsp` itself or not
`is.date`	Logical frag indicates whether the `stats::ts` is date or not. If not provided, regard the input as date when the frequency is 4 or 12.

Value

vector

Examples

```
## Not run:
ggfortify:::get.dtindex.continuous(AirPassengers, length = 10)
ggfortify:::get.dtindex.continuous(UKgas, length = 10)

## End(Not run)
```

get.layout *Calcurate layout matrix for* ggmultiplot

Description

Calcurate layout matrix for ggmultiplot

Usage

```
get.layout(nplots, ncol, nrow)
```

Arguments

nplots	Number of plots
ncol	Number of grid columns
nrow	Number of grid rows

Value

matrix

Examples

```
ggfortify:::get.layout(3, 2, 2)
```

get_geom_function *Factory function to control* ggplot2::geom_xxx *functions*

Description

Factory function to control ggplot2::geom_xxx functions

Usage

```
get_geom_function(geom, allowed = c("line", "bar", "point"))
```

Arguments

geom	string representation of ggplot2::geom_xxx function
allowed	character vector contains allowed values

Value

function

Examples

```
ggfortify:::get_geom_function('point')
ggfortify:::get_geom_function('line', allowed = c('line'))
```

---

ggbiplot *Draw* biplot *using* ggplot2.

Description

Draw biplot using ggplot2.

Usage

```
ggbiplot(
  plot.data,
  loadings.data = NULL,
  colour = NULL,
  size = NULL,
  linetype = NULL,
  alpha = NULL,
  fill = NULL,
  shape = NULL,
  label = FALSE,
  label.label = "rownames",
  label.colour = colour,
  label.alpha = NULL,
  label.size = NULL,
  label.angle = NULL,
  label.family = NULL,
  label.fontface = NULL,
  label.lineheight = NULL,
  label.hjust = NULL,
  label.vjust = NULL,
  label.repel = FALSE,
  label.position = "identity",
  loadings = FALSE,
  loadings.cutoff = NULL,
  loadings.arrow = grid::arrow(length = grid::unit(8, "points")),
  loadings.colour = "#FF0000",
  loadings.linewidth = 0.5,
  loadings.label = FALSE,
  loadings.label.label = "rownames",
  loadings.label.colour = "#FF0000",
  loadings.label.alpha = NULL,
  loadings.label.size = NULL,
  loadings.label.angle = NULL,
  loadings.label.family = NULL,
```

```
  loadings.label.fontface = NULL,
  loadings.label.lineheight = NULL,
  loadings.label.hjust = NULL,
  loadings.label.vjust = NULL,
  loadings.label.repel = FALSE,
  label.show.legend = NA,
  frame = FALSE,
  frame.type = NULL,
  frame.colour = colour,
  frame.level = 0.95,
  frame.alpha = 0.2,
  xlim = c(NA, NA),
  ylim = c(NA, NA),
  log = "",
  main = NULL,
  xlab = NULL,
  ylab = NULL,
  asp = NULL,
  ...
)
```

Arguments

plot.data	data.frame
loadings.data	data.frame
colour	colour
size	size
linetype	line type
alpha	alpha
fill	fill
shape	shape
label	Logical value whether to display data labels
label.label	Column name used for label text
label.colour	Colour for text labels
label.alpha	Alpha for text labels
label.size	Size for text labels
label.angle	Angle for text labels
label.family	Font family for text labels
label.fontface	Fontface for text labels
label.lineheight	Lineheight for text labels
label.hjust	Horizontal adjustment for text labels
label.vjust	Vertical adjustment for text labels

label.repel Logical flag indicating whether to use ggrepel, enabling this may take some time for plotting

label.position Character or a position function

loadings Logical value whether to display loadings arrows

loadings.cutoff
Minimum Euclidean length of the unscaled loading vectors in the selected two-dimensional component space. Disabled when NULL.

loadings.arrow An arrow definition

loadings.colour
Point colour for data

loadings.linewidth
Segment linewidth for loadings

loadings.label Logical value whether to display loadings labels

loadings.label.label
Column name used for loadings text labels

loadings.label.colour
Colour for loadings text labels

loadings.label.alpha
Alpha for loadings text labels

loadings.label.size
Size for loadings text labels

loadings.label.angle
Angle for loadings text labels

loadings.label.family
Font family for loadings text labels

loadings.label.fontface
Fontface for loadings text labels

loadings.label.lineheight
Lineheight for loadings text labels

loadings.label.hjust
Horizontal adjustment for loadings text labels

loadings.label.vjust
Vertical adjustment for loadings text labels

loadings.label.repel
Logical flag indicating whether to use ggrepel automatically

label.show.legend
Logical value indicating whether to show the legend of text labels

frame Logical value whether to draw outliner convex / ellipse

frame.type Character specifying frame type. 'convex' or types supporeted by ggplot2::stat_ellipse can be used.

frame.colour Colour for frame

frame.level Passed for ggplot2::stat_ellipse 's level. Ignored in 'convex'.

frame.alpha Alpha for frame

xlim	limits for x axis
ylim	limits for y axis
log	which variables to log transform ("x", "y", or "xy")
main	character vector or expression for plot title
xlab	character vector or expression for x axis label
ylab	character vector or expression for y axis label
asp	the y/x aspect ratio
...	other arguments passed to methods

Value

ggplot

`ggcpgram` *Plots a cumulative periodogram*

Description

Plots a cumulative periodogram

Usage

```
ggcpgram(
  ts,
  taper = 0.1,
  colour = "#000000",
  linetype = "solid",
  conf.int = TRUE,
  conf.int.colour = "#0000FF",
  conf.int.linetype = "dashed",
  conf.int.fill = NULL,
  conf.int.alpha = 0.3
)
```

Arguments

ts	`stats::ts` instance
taper	Proportion tapered in forming the periodogram
colour	Line colour
linetype	Line type
conf.int	Logical flag indicating whether to plot confidence intervals
conf.int.colour	line colour for confidence intervals
conf.int.linetype	line type for confidence intervals
conf.int.fill	fill colour for confidence intervals
conf.int.alpha	alpha for confidence intervals

Value

ggplot

Examples

```
## Not run:
ggcpgram(AirPassengers)

## End(Not run)
```

`ggdistribution` *Plot distribution*

Description

Plot distribution

Usage

```
ggdistribution(
  func,
  x,
  p = NULL,
  colour = "#000000",
  linetype = NULL,
  fill = NULL,
  alpha = NULL,
  xlim = c(NA, NA),
  ylim = c(NA, NA),
  log = "",
  main = NULL,
  xlab = NULL,
  ylab = NULL,
  asp = NULL,
  ...
)
```

Arguments

`func`	PDF or CDF function
`x`	Numeric vector to be passed to func
`p`	`ggplot2::ggplot` instance to plot
`colour`	Line colour
`linetype`	Line type
`fill`	Fill colour

alpha	Alpha
xlim	X axis limit
ylim	Y axis limit
log	log
main	main
xlab	xlab
ylab	ylab
asp	asp
...	Keywords passed to PDC/CDF func

Value

ggplot

Examples

```
ggdistribution(dnorm, seq(-3, 3, 0.1), mean = 0, sd = 1)
ggdistribution(ppois, seq(0, 30), lambda = 20)

p <- ggdistribution(pchisq, 0:20, df = 7, fill = 'blue')
ggdistribution(pchisq, 0:20, p = p, df = 9, fill = 'red')
```

---

ggfortify *ggfortify*

Description

Define Fortify and Autoplot to Allow 'ggplot2' to Draw Some Popular Packages

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See Also

Useful links:

- https://github.com/sinhrks/ggfortify
- Report bugs at https://github.com/sinhrks/ggfortify/issues

`ggfreqplot` *Plot seasonal subseries of time series, generalization of* `stats::monthplot`

Description

Plot seasonal subseries of time series, generalization of `stats::monthplot`

Usage

```
ggfreqplot(
  data,
  freq = NULL,
  nrow = NULL,
  ncol = NULL,
  conf.int = FALSE,
  conf.int.colour = "#0000FF",
  conf.int.linetype = "dashed",
  conf.int.fill = NULL,
  conf.int.alpha = 0.3,
  conf.int.value = 0.95,
  facet.labeller = NULL,
  ...
)
```

Arguments

`data`	`stats::ts` instance
`freq`	Length of frequency. If not provided, use time-series frequency
`nrow`	Number of plot rows
`ncol`	Number of plot columns
`conf.int`	Logical flag indicating whether to plot confidence intervals
`conf.int.colour`	line colour for confidence intervals
`conf.int.linetype`	line type for confidence intervals
`conf.int.fill`	fill colour for confidence intervals
`conf.int.alpha`	alpha for confidence intervals

conf.int.value	Coverage probability for confidence interval
facet.labeller	A function mapping current facet labels to new labels, or a vector with the same length as freq used as facet labels
...	Keywords passed to autoplot.ts

Value

ggplot

Examples

```
## Not run:
ggfreqplot(AirPassengers)
ggfreqplot(AirPassengers, freq = 4)
ggfreqplot(AirPassengers, conf.int = TRUE)
ggfreqplot(AirPassengers,
           facet.labeller = function(x) month.abb[as.integer(x)])

## End(Not run)
```

---

ggmultiplot-class *An S4 class to hold multiple* ggplot2::ggplot *instances*

Description

An S4 class to hold multiple ggplot2::ggplot instances

Usage

```
## S4 method for signature 'ggmultiplot'
length(x)

## S4 method for signature 'ggmultiplot,ANY,ANY,ANY'
x[i, j, ..., drop = TRUE]

## S4 method for signature 'ggmultiplot'
x[[i, j, ..., drop]]

## S4 replacement method for signature 'ggmultiplot,ANY,ANY,ANY'
x[i, j, ...] <- value

## S4 replacement method for signature 'ggmultiplot'
x[[i, j, ...]] <- value
```

Arguments

x	ggmultiplot
i	elements to extract or replace
j	not used
...	not used
drop	not used
value	value to be set

Slots

plots List of ggplot2::ggplot instances

ncol Number of grid columns

nrow Number of grid rows

---

ggtsdiag *Plots time-series diagnostics*

Description

Plots time-series diagnostics

Usage

```
ggtsdiag(
  object,
  gof.lag = 10,
  conf.int = TRUE,
  conf.int.colour = "#0000FF",
  conf.int.linetype = "dashed",
  conf.int.fill = NULL,
  conf.int.alpha = 0.3,
  ad.colour = "#888888",
  ad.linetype = "dashed",
  ad.size = 0.2,
  nrow = NULL,
  ncol = 1,
  ...
)
```

Arguments

object	A fitted time-series model
gof.lag	The maximum number of lags for a Portmanteau goodness-of-fit test
conf.int	Logical flag indicating whether to plot confidence intervals
conf.int.colour	line colour for confidence intervals
conf.int.linetype	line type for confidence intervals
conf.int.fill	fill colour for confidence intervals
conf.int.alpha	alpha for confidence intervals
ad.colour	Line colour for additional lines
ad.linetype	Line type for additional lines
ad.size	Fill colour for additional lines
nrow	Number of facet/subplot rows
ncol	Number of facet/subplot columns
...	other keywords

Value

ggplot

Examples

```
## Not run:
ggtsdiag(arima(AirPassengers))

## End(Not run)
```

---

grid.draw.ggmultiplot *The implemented grid.draw method for ggmultiplot, in order to work with ggsave() properly*

Description

The implemented grid.draw method for ggmultiplot, in order to work with ggsave() properly

Usage

```
## S3 method for class 'ggmultiplot'
grid.draw(x, recording = TRUE)
```

Arguments

x	ggmultiplot
recording	ggmultiplot

infer *Infer class name*

Description

Infer class name

Usage

```
infer(data)
```

Arguments

data	list instance

Value

character

is.univariate *Check if Validates number of* ts *variates*

Description

Check if Validates number of ts variates

Usage

```
is.univariate(data, raise = TRUE)
```

Arguments

data	ts instance
raise	Logical flag whether raise an error

Value

logical

Examples

```
## Not run:
ggfortify:::is.univariate(AirPassengers)

## End(Not run)
```

is_derived_from *Check object is target class, or object is* data.frame *fortified from target.*

Description

Check object is target class, or object is data.frame fortified from target.

Usage

```
is_derived_from(object, target)
```

Arguments

object	instance to be checked. For data.frame, check whether it is fortified from target class
target	class name

Value

logical

Examples

```
ggfortify:::is_derived_from(prcomp(iris[-5]), 'prcomp')
```

plot_confint *Attach confidence interval to* ggplot2::ggplot

Description

Attach confidence interval to ggplot2::ggplot

Usage

```
plot_confint(
  p,
  data = NULL,
  lower = "lower",
  upper = "upper",
  conf.int = TRUE,
  conf.int.geom = "line",
  conf.int.group = NULL,
  conf.int.colour = "#0000FF",
  conf.int.linetype = "none",
  conf.int.fill = "#000000",
  conf.int.alpha = 0.3
)
```

Arguments

p	ggplot2::ggplot instance
data	data contains lower and upper confidence intervals
lower	column name for lower confidence interval
upper	column name for upper confidence interval
conf.int	Logical flag indicating whether to plot confidence intervals
conf.int.geom	geometric string for confidence interval. 'line' or 'step'
conf.int.group	name of grouping variable for confidence intervals
conf.int.colour	line colour for confidence intervals
conf.int.linetype	line type for confidence intervals
conf.int.fill	fill colour for confidence intervals
conf.int.alpha	alpha for confidence intervals

Value

ggplot

Examples

```
d <- fortify(stats::acf(AirPassengers, plot = FALSE))
p <- ggplot(data = d, mapping = aes(x = Lag))
ggfortify:::plot_confint(p, data = d)
```

---

plot_label *Attach label to* ggplot2::ggplot

Description

Attach label to ggplot2::ggplot

Usage

```
plot_label(
  p,
  data,
  x = NULL,
  y = NULL,
  label = TRUE,
  label.label = "rownames",
  label.colour = NULL,
  label.alpha = NULL,
  label.size = NULL,
```

```
  label.angle = NULL,
  label.family = NULL,
  label.fontface = NULL,
  label.lineheight = NULL,
  label.hjust = NULL,
  label.vjust = NULL,
  label.repel = FALSE,
  label.show.legend = NA,
  label.position = "identity"
)
```

Arguments

p	ggplot2::ggplot instance
data	Data contains text label
x	x coordinates for label
y	y coordinates for label
label	Logical value whether to display labels
label.label	Column name used for label text
label.colour	Colour for text labels
label.alpha	Alpha for text labels
label.size	Size for text labels
label.angle	Angle for text labels
label.family	Font family for text labels
label.fontface	Fontface for text labels
label.lineheight	Lineheight for text labels
label.hjust	Horizontal adjustment for text labels
label.vjust	Vertical adjustment for text labels
label.repel	Logical flag indicating whether to use ggrepel, enabling this may take some time for plotting
label.show.legend	Logical value indicating whether to show the legend of the text labels
label.position	Character or a position function

Value

ggplot

post_autoplot *Post process for fortify. Based on* ggplot2::qplot

Description

Post process for fortify. Based on ggplot2::qplot

Usage

```
post_autoplot(
  p,
  xlim = c(NA, NA),
  ylim = c(NA, NA),
  log = "",
  main = NULL,
  xlab = NULL,
  ylab = NULL,
  asp = NULL
)
```

Arguments

p	ggplot2::ggplot instances
xlim	limits for x axis
ylim	limits for y axis
log	which variables to log transform ("x", "y", or "xy")
main	character vector or expression for plot title
xlab	character vector or expression for x axis label
ylab	character vector or expression for y axis label
asp	the y/x aspect ratio

Value

data.frame

Examples

```
p <- qplot(Petal.Length, Petal.Width, data = iris)
ggfortify:::post_autoplot(p, xlim = c(1, 5), ylim = c(1, 5), log = 'xy', main = 'title',
                          xlab = 'x', ylab = 'y', asp = 1.5)
```

post_fortify *Post process for fortify.*

Description

Post process for fortify.

Usage

```
post_fortify(data, klass = NULL)
```

Arguments

data	data.frame
klass	instance to be added as base_class attr, should be original model before fortified

Value

data.frame

print,ggmultiplot-method *Generic print function for* ggmultiplot

Description

Generic print function for ggmultiplot

Usage

```
## S4 method for signature 'ggmultiplot'
print(x)
```

Arguments

x	ggmultiplot

rbind_ts *Rbind original and predicted time-series-like instances as fortified* `data.frame`

Description

Rbind original and predicted time-series-like instances as fortified `data.frame`

Usage

```
rbind_ts(
  data,
  original,
  ts.connect = TRUE,
  index.name = "Index",
  data.name = "Data"
)
```

Arguments

`data`	Predicted/forecasted `ts` instance
`original`	Original `ts` instance
`ts.connect`	Logical frag indicates whether connects original time-series and predicted values
`index.name`	Specify column name for time series index
`data.name`	Specify column name for univariate time series data. Ignored in multivariate time series.

Value

data.frame

Examples

```
## Not run:
predicted <- predict(stats::HoltWinters(UKgas), n.ahead = 5, prediction.interval = TRUE)
rbind_ts(predicted, UKgas, ts.connect = TRUE)

## End(Not run)
```

residuals.ar *Calculate residuals for* stats::ar

Description

Calculate residuals for stats::ar

Usage

```
## S3 method for class 'ar'
residuals(object, ...)
```

Arguments

object	stats::ar instance
...	other keywords

Value

ts Residuals extracted from the object object.

Examples

```
## Not run:
residuals(ar(WWWusage))

## End(Not run)
```

show,ggmultiplot-method *Generic show function for* ggmultiplot

Description

Generic show function for ggmultiplot

Usage

```
## S4 method for signature 'ggmultiplot'
show(object)
```

Arguments

object	ggmultiplot

support_autoplot *Check if passed object is supported by* ggplot2::autoplot

Description

Check if passed object is supported by ggplot2::autoplot

Usage

```
support_autoplot(obj)
```

Arguments

obj	object

Value

logical

unscale *Backtransform* scale*-ed object*

Description

Backtransform scale-ed object

Usage

```
unscale(data, center = NULL, scale = NULL)
```

Arguments

data	Scaled data
center	Centered vector
scale	Scale vector

Value

data.frame

Examples

```
df <- iris[-5]
ggfortify::unscale(base::scale(df))
```

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