Package 'tidymv'

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Type Package

Title Tidy Model Visualisation for Generalised Additive Models

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Description Provides functions for visualising generalised
additive models and getting predicted values using tidy tools from the 'tidyverse' packages.

URL https://github.com/stefanocoretta/tidymv,
https://stefanocoretta.github.io/tidymv/

BugReports https://github.com/stefanocoretta/tidymv/issues

Encoding UTF-8

LazyData true

RoxygenNote 7.2.1

Depends R (>= 2.10)

Imports dplyr, ggplot2, magrittr, mgcv, rlang, tibble, tidyr

Suggests knitr, rmarkdown

VignetteBuilder knitr

Language en_GB

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NeedsCompilation no

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R topics documented:

`create_start_event` *Create a start event column.*

Description

Create a new column which marks the beginning of each series in a tibble (for example, time series).

Usage

```
create_start_event(tibble, series_col)
```

Arguments

`tibble`	A tibble arranged according to the series.
`series_col`	The name of the column that defines the group of series, as an unquoted expression.

Value

A tibble with an extra column that marks the beginning of the series.

Examples

```
library(dplyr)
series_tbl <- tibble(
  time_series = rep(1:5, 3),
  group = rep(c("a", "b", "c"), each = 5)
) %>%
  create_start_event(group)
```

`geom_smooth_ci` *Smooths and confidence intervals.*

Description

It provides a 'geom' for plotting GAM smooths with confidence intervals from the output of predict_gam. It inherits the following aesthetics from a call to `ggplot`:

- The term defining the x-axis.
- The fitted values (the `fit` column in the tibble returned by predict_gam).
- The standard error of the fit (the `se.fit` column in the tibble returned by predict_gam).

Usage

```
geom_smooth_ci(group = NULL, ci_z = 1.96, ci_alpha = 0.1, data = NULL, ...)
```

Arguments

`group`	The optional grouping factor.
`ci_z`	The z-value for calculating the CIs (the default is `1.96` for 95 percent CI).
`ci_alpha`	Transparency value of CIs (the default is `0.1`).
`data`	The data to be displayed in this layer. If `NULL`, it is inherited.
`...`	Arguments passed to `geom_path()`.

Examples

```
library(mgcv)
library(ggplot2)
set.seed(10)
data <- gamSim(4)
model <- gam(y ~ fac + s(x2) + s(x2, by = fac), data = data)

# get predictions
p <- predict_gam(model)

# plot smooths and confidence intervals
ggplot(p, aes(x2, fit)) + geom_smooth_ci(fac)
```

`get_gam_predictions` *Get predictions from a GAM model.*

Description

It returns a tibble with the predictions from a gam or bam object.

Usage

```
get_gam_predictions(
  model,
  series,
  series_length = 25,
  conditions = NULL,
  exclude_random = TRUE,
  exclude_terms = NULL,
  split = NULL,
  sep = "\\.",
  time_series,
  transform = NULL,
  ci_z = 1.96,
  .comparison = NULL
)
```

Arguments

`model`	A `gam` or `bam` model object.
`series`	An unquoted expression indicating the model term that defines the series on which smoothing is applied. This is the term that is displayed on the x-axis when plotting.
`series_length`	An integer indicating how many values along the time series to use for predicting the outcome term.
`conditions`	A list of quosures with `quos` specifying the levels to plot from the model terms.
`exclude_random`	Whether to exclude random smooths (the default is `TRUE`).
`exclude_terms`	Terms to be excluded from the prediction. Term names should be given as they appear in the model summary (for example, `"s(x0,x1)"`).
`split`	Columns to separate as a named list.
`sep`	Separator between columns (default is `"\."`, which is the default with). If character, it is interpreted as a regular expression.
`time_series`	Deprecated, use `series` instead.
`transform`	Function used to transform the fitted values (useful for getting plots on the response scale).
`ci_z`	The z-value for calculating the CIs (the default is `1.96` for 95 percent CI).
`.comparison`	Internal parameter, passed from plot_smooths().

Value

A tibble with predictions from a gam or bam model.

Examples

```
library(mgcv)
set.seed(10)
data <- gamSim(4)
model <- gam(y ~ fac + s(x2) + s(x2, by = fac) + s(x0), data = data)

pred <- get_gam_predictions(model, x2)
```

`get_smooths_difference` *Get difference of smooths from a GAM model*

Description

It returns a tibble with difference of the specified levels of a smooth from a gam or bam. The `sig_diff` column states whether the CI includes 0.

Usage

```
get_smooths_difference(
  model,
  series,
  difference,
  conditions = NULL,
  exclude_random = TRUE,
  series_length = 100,
  time_series
)
```

Arguments

`model`	A `gam` or `bam` model object.
`series`	An unquoted expression indicating the model term that defines the series on which smoothing is applied. This is the term that is displayed on the x-axis when plotting.
`difference`	A named list with the levels to compute the difference of.
`conditions`	A named list specifying the levels to plot from the model terms not among `series` or `difference`. Notice the difference with plot_smooths, which uses `quos`.
`exclude_random`	Whether to exclude random smooths (the default is `TRUE`).
`series_length`	An integer indicating how many values along the time series to use for predicting the outcome term.
`time_series`	Deprecated, use `series` instead.

Value

A tibble.

Examples

```
library(mgcv)
set.seed(10)
data <- gamSim(4)
model <- gam(y ~ fac + s(x2) + s(x2, by = fac) + s(x0), data = data)

get_smooths_difference(model, x2, list(fac = c("1", "2")))

# For details, see vignette
## Not run:
vignette("plot-smooths", package = "tidymv")

## End(Not run)
```

---

inter_df *Dataset with two factors*

Description

A dataset with a normal-distributed outcome variable and two factors.

Usage

```
inter_df
```

Format

A tibble with 1259 observations and 4 variables.

`x0` time series

`y` outcome variable

`x1` factor with three levels

`x2` factor with two levels

plot_difference *Plot difference smooth from a GAM.*

Description

It plots the difference smooth from a gam or bam. Significant differences are marked with red areas.

Usage

```
plot_difference(
  model,
  series,
  difference,
  conditions = NULL,
  exclude_random = TRUE,
  series_length = 100,
  ci_z = 1.96,
  time_series
)
```

Arguments

model	A gam or bam model object.
series	An unquoted expression indicating the model term that defines the series on which smoothing is applied. This is the term that is displayed on the x-axis when plotting.
difference	A named list with the levels to compute the difference of.
conditions	A named list specifying the levels to plot from the model terms not among series or difference. Notice the difference with plot_smooths, which uses quos.
exclude_random	Whether to exclude random smooths (the default is TRUE).
series_length	An integer indicating how many values along the time series to use for predicting the outcome term.
ci_z	The z-value for calculating the CIs (the default is 1.96 for 95 percent CI).
time_series	Deprecated, use series instead.

Value

A ggplot object.

Examples

```
library(mgcv)
set.seed(10)
data <- gamSim(4)
```

```
model <- gam(y ~ fac + s(x2) + s(x2, by = fac) + s(x0), data = data)

plot_difference(model, x2, list(fac = c("1", "2")))

# For details, see vignette
## Not run:
vignette("plot-smooths", package = "tidymv")

## End(Not run)
```

`plot_smooths` *Plot GAM smooths.*

Description

It plots the smooths from the estimates of a gam or bam object.

Usage

```
plot_smooths(
  model,
  series,
  comparison = NULL,
  facet_terms = NULL,
  conditions = NULL,
  exclude_random = TRUE,
  exclude_terms = NULL,
  series_length = 25,
  split = NULL,
  sep = "\\.",
  transform = NULL,
  ci_z = 1.96,
  time_series
)
```

Arguments

`model`	A `gam` or `bam` model object.
`series`	An unquoted expression indicating the model term that defines the series on which smoothing is applied. This is the term that is displayed on the x-axis when plotting.
`comparison`	An unquoted expression indicating the model term for which the comparison will be plotted.
`facet_terms`	An unquoted formula with the terms used for faceting.
`conditions`	A list of quosures with `quos` specifying the levels to plot from the model terms not among `series`, `comparison`, or `facet_terms`.

exclude_random	Whether to exclude random smooths (the default is TRUE).
exclude_terms	Terms to be excluded from the prediction. Term names should be given as they appear in the model summary (for example, "s(x0,x1)").
series_length	An integer indicating how many values along the time series to use for predicting the outcome term.
split	Columns to separate as a named list.
sep	Separator between columns (default is "\.", which is the default with). If character, it is interpreted as a regular expression.
transform	Function used to transform the fitted values (useful for getting plots on the response scale).
ci_z	The z-value for calculating the CIs (the default is 1.96 for 95 percent CI).
time_series	Deprecated, use series instead.

Value

A ggplot object.

Examples

```
library(mgcv)
set.seed(10)
data <- gamSim(4)
model <- gam(y ~ fac + s(x2) + s(x2, by = fac) + s(x0), data = data)

plot_smooths(model, x2, fac)

# alternative model specification
model <- gam(y ~ s(fac, bs = "re") + s(x2) + s(x2, by = fac) + s(x0), data = data)
plot_smooths(model, x2, fac)

# For details, see vignette
## Not run:
vignette("plot-smooths", package = "tidymv")

## End(Not run)
```

---

pois_df *Dataset with a Poisson outcome variable*

Description

A dataset with a Poisson-distributed outcome variable and a factor.

Usage

```
pois_df
```

Format

A tibble with 2500 observations and 3 variables.

`y` outcome count variable

`x` time series

`fac` factor with two levels

`predict_gam` *Get predictions from a GAM model.*

Description

It returns a tibble with the predictions from all the terms in a gam or bam model.

Usage

```
predict_gam(
  model,
  exclude_terms = NULL,
  length_out = 50,
  values = NULL,
  type = "link"
)
```

Arguments

`model`	A `gam` or `bam` model object.
`exclude_terms`	Terms to be excluded from the prediction. Term names should be given as they appear in the model summary (for example, `"s(x0,x1)"`).
`length_out`	An integer indicating how many values along the numeric predictors to use for predicting the outcome term (the default is `50`).
`values`	User supplied values for specific terms as a named list. If the value is `NULL`, the first value of the term is selected (useful when excluding terms).
`type`	Either `"link"` or `"terms"`. See Details below.

Details

If you simply want to return a tibble with the predicted values of the response/outcome variable based on all terms (minus excluded smooth terms), set `type = "link"` (the default). Note that if `type = "link"`, parametric terms cannot be excluded from the prediction, due to limitations of `mgcv`. If you want to return a tibble with the predicted values of the response/outcome variable for each term in the model separately, set `type = "terms"`. This type can be helpful if you want more flexibility in plotting.

Value

A tibble with predictions from a gam or bam model.

Examples

```
## Not run:
library(mgcv)
set.seed(10)
data <- gamSim(4)
model <- gam(y ~ fac + s(x2) + s(x2, by = fac) + s(x0), data = data)

# get predictions
p <- predict_gam(model)

# get predictions excluding x0 (the coefficient of x0 is set to 0);
# setting the value for the excluded term to NULL with the argument 'values'
# reduces computation time
p_2 <- predict_gam(model, exclude_terms = "s(x0)", values = list(x0 = NULL))

# get predictions with chosen values of x0

p_3 <- predict_gam(model, values = list(x0 = c(0.250599, 0.503313, 0.756028)))

## End(Not run)
```

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