Package 'tidymv'

April 18, 2022

Type Package

Title Tidy Model Visualisation for Generalised Additive Models

Version 3.3.1

Date 2022-05-18

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 7.1.2

Depends R (>= 2.10)

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

Suggests knitr, rmarkdown

VignetteBuilder knitr

Language en_GB

License GPL (>= 3)

NeedsCompilation no

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Repository CRAN

Date/Publication 2022-04-18 17:30:02 UTC

R **topics documented:**

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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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