Constrained Linear

Parametrization

This model is like a "fixed" effect where you can constrained the coefficient of a covariate to be in an interval:

$$\eta_i = \beta x_i$$

where β is in the interval [`low`, `high`] and x are the covariates.

Hyperparameters

The β parameter, since its is constrained in general, is a hyperparamter. The internal transformation depends on the values of `low` and `high`. If `low` is `-Inf` and `high` is `Inf`, then

$$\beta = \theta$$

and the prior is put on θ. If `low` is finite and `high` is `Inf`, then

$$\beta = \text{low} + \exp(\theta)$$

and the prior is put on θ. If `low` is finite and `high` is finite, then

$$\beta = \text{low} + (\text{high} - \text{low})\frac{\exp(\theta)}{1 + \exp(\theta)}$$

and the prior is put on θ.

Specification

```
f(x, model="clinear", range = c(low, high), precision = <precision>)
```

where `precision` is the precision for the tiny noise used to implement this as a latent model.

Hyperparameter spesification and default values

hyper

theta

name beta
short.name b
initial 1
fixed FALSE
prior normal
param 1 10
to.theta `function(x, REPLACE.ME.low, REPLACE.ME.high) {`

```
                stopifnot(low < high)
            } else if (all(is.finite(c(low, high)))) {
                stopifnot(low < high)
            } else if (is.finite(low) && is.infinite(high) && hi
                return (log(x-low))
                stop("Condition not yet implemented")
        }
```

from.theta `function(x, REPLACE.ME.low, REPLACE.ME.high) {`

```
                                        stopifnot(low < high)
                                    } else if (all(is.finite(c(low, high)))) {
                                        stopifnot(low < high)
                                    } else if (is.finite(low) && is.infinite(high) && hi
                                        return (low + exp(x))
                                        stop("Condition not yet implemented")
                                }
```

constr FALSE

nrow.ncol FALSE

augmented FALSE

aug.factor 1

aug.constr

n.div.by

n.required FALSE

set.default.values FALSE

pdf clinear

Example

```
n = 100
x = runif(n)
y = 1 + x + rnorm(n)
r = inla(y ~ f(x, model = "clinear", range = c(0, Inf)),
         data = data.frame(y,x))
summary(r)
```

Notes

None