

ME-fixed effect

Parametrisation

This family is part of the “ME” (measurement error) family to emulate various measurement error models. This ME-fixed-effect represent this model

$$\beta(x + u)$$

where β is the fixed-effect, x is the observed covariate, and u is the Gaussian error with precision τ .

Link-function

Not relevant.

Hyperparameters

This model has two hyperparameters. The fixed-effect β is θ_1 ,

$$\theta_1 = \beta$$

and the log-precision of the Gaussian error is θ_2 ,

$$\theta_2 = \log(\tau)$$

The prior is defined on (θ_1, θ_2) .

Specification

- family = `mefixedeffect`
- Required arguments: x (as the response)

Hyperparameter spesification and default values

hyper

theta1

```
name    beta
short.name  beta
initial 1
fixed   FALSE
prior   normal
param   0 0.01
to.theta function(x) x
from.theta function(x) x
```

theta2

```
name    log precision
short.name  prec
initial 4
fixed   FALSE
prior   loggamma
param   1 5e-04
```

```

    to.theta function(x) log(x)
    from.theta function(x) exp(x)

survival FALSE

discrete FALSE

link default identity

pdf mefixedeffect

status experimental

```

Example

```

n = 1000
beta.x = 2
prec.x = 100
prec.y = 1000 ## fixed

x.true = rnorm(n)
x = x.true + rnorm(n, sd = sqrt(1/prec.x))
y = 1 + beta.x * x.true + rnorm(n, sd = sqrt(1/prec.y))

formula = Y ~ -1 + intercept +
  f(me.fixed.effect, model="iid",
    hyper = list(prec = list(initial = -5, fixed=TRUE)))

intercept = c(rep(1, n), rep(0, n))
me.fixed.effect = rep(1:n, 2)

Y = matrix(NA, 2*n, 2)
Y[1:n, 1] = y
Y[(1:n) + n, 2] = x

r = inla(formula,
  data = list(Y=Y, intercept=intercept,
    me.fixed.effect = me.fixed.effect),
  family = c("gaussian", "mefixedeffect"),
  control.family = list(list(
    hyper = list(
      prec = list(
        initial = log(prec.y),
        fixed=TRUE)
      )
    ),
  list()),
  verbose=TRUE)

```

Notes

This model is classified as “work in progress” and can be changed without further notice. In the future, it will appear as a “f()” model, but the internal structure in the code prevent this from happen

right now.