

Independent random noise model

Parametrization

This model simply defines \mathbf{x} to be a vector of independent and Gaussian distributed random variable (possibly scaled) with precision τ :

$$\pi(\mathbf{x}|\tau) = \prod_{i=1}^n \frac{1}{\sqrt{2\pi}} \sqrt{(s_i\tau)} \exp\left(\frac{1}{2}(s_i\tau)x_i^2\right)$$

where $s_i > 0$ is an optional fixed scale

Hyperparameters

The precision parameter τ is represented as

$$\theta = \log \tau$$

and the prior is defined on θ .

Specification

The independent model is specified inside the `f()` function as

```
f(<whatever>, model="iid", hyper = <hyper>, scale = <scale>)
```

where the option `scale` is optional and default to (all) 1.

Hyperparameter spesification and default values

`doc` Gaussian random effects in dim=1

`hyper`

`theta`

`hyperid 1001`

`name log precision`

`short.name prec`

`prior loggamma`

`param 1 5e-05`

`initial 4`

`fixed FALSE`

`to.theta function(x) log(x)`

`from.theta function(x) exp(x)`

`constr FALSE`

`nrow.ncol FALSE`

`augmented FALSE`

`aug.factor 1`

`aug.constr`

`n.div.by`

`n.required` FALSE

`set.default.values` FALSE

`pdf` indep

Example

```
n=12
Ntrials = sample(c(80:100), size=n, replace=TRUE)
eta = rnorm(n,0,0.5)
prob = exp(eta)/(1 + exp(eta))
y = rbinom(n, size=Ntrials, prob = prob)

data=data.frame(y=y,z=1:n)

formula=y~f(z,model="iid",
            hyper=list(theta=list(prior="loggamma",param=c(1,0.01))))
result=inla(formula,data=data,family="binomial",Ntrials=Ntrials)
```

Notes

The option `scale` defines the scaling in the same order as argument `values`. It is therefore advised to also give argument `values` when `scale` is used to be sure that they are consistent.