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

hyper

theta

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 adviced to also give argument `values` when `scale` is used to be sure that they are consistent.