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)
```

result=inla(formula,data=data,family="binomial",Ntrials=Ntrials)

Notes

formula=y~f(z,model="iid",

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.

hyper=list(theta=list(prior="loggamma",param=c(1,0.01))))