Independent random noise model

Parametrization

This model simply defines **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

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