

Linkmodel: robit

Parametrization

This is the link that map $p \in (0, 1)$ into $x \in \Re$, where

$$F_\nu(x) = p$$

and F_ν is the cummulative distribution function for Student-t with ν degrees of freedom, normalized to have unit variance and $\nu > 2$.

Hyperparameters

The parameter ν represented as

$$\nu = 2 + \exp(\theta)$$

and the prior is defined on θ . ν is default fixed and set to 7 (to estimate ν is somewhat challenging).

Specification

Use `model="robit"` within `control.link`.

Hyperparameter spesification and default values

doc Robit link

hyper

theta

hyperid 49021

name log degrees of freedom

short.name dof

initial 1.6094379124341

fixed TRUE

prior pc.dof

param 50 0.5

to.theta function(x) log(x-2)

from.theta function(x) 2+exp(x)

status experimental

pdf robit

Example

```
n = 300
```

```
Nt = 2
```

```
x = rnorm(n, sd = 0.3)
```

```
eta = 1 + x
```

```
df = 7
```

```
y = rbinom(n, size=Nt, prob = inla.link.invrobit(eta, df = df))
```

```
r = inla(y ~ 1 + x,  
         family = "binomial",
```

```

Ntrials = Nt,
data = data.frame(y, x, Nt),
control.family = list(
  control.link = list(
    model = "robit",
    hyper = list(dof = list(
      initial = log(df - 2),
      fixed = FALSE))))))
summary(r)

```

Notes

- The link-function is also available as R-functions `inla.link.robit` and `inla.link.invrobit`
- This link-model is experimental for the moment.