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)`

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.