

Linkmodel: sn (EXPERIMENTAL)

Parametrization

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

$$F_a(x) = p$$

and F_a is the cummulative distribution function for the skew-normal distribution,

$$2\phi(x)\Phi(a^{1/3}x)$$

which is renormalized to have zero mean and unit variance (expression omitted).

Hyperparameters

The parameter a represented using the (standarized) skewness s (expression omitted) where

$$s = s_{\max} \left(2 \frac{\exp(\theta)}{1 + \exp(\theta)} - 1 \right)$$

$s_{\max} = 0.988$, and the prior is defined on θ . There is a PC prior available for θ . The PC-prior is corrected for this bound, whereas the pc-prior in the R-functions `inla.pc.{r,p,q,d}sn` does not define a such bound (but use the bound defined by the Skew-Normal itself, 0.99527...).

Specification

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

Hyperparameter spesification and default values

doc Skew-normal link

hyper

theta1

hyperid 49031

name skew

short.name skew

initial 0.00123456789

fixed FALSE

prior pc.sn

param 10

to.theta function(x, skew.max = 0.988) log((1+x/skew.max)/(1-x/skew.max))

from.theta function(x, skew.max = 0.988) skew.max*(2*exp(x)/(1+exp(x))-1)

theta2

hyperid 49032

name intercept

short.name intercept

initial 0

fixed FALSE

prior linksnintercept

```
param 0 0
to.theta function(x) log(x/(1-x))
from.theta function(x) exp(x)/(1+exp(x))
```

pdf linksn

Example

Notes

- The link-function is also available as R-functions `inla.link.sn` and `inla.link.invsn`
- This link-model is experimental for the moment.
- Setting the initial value for the hyperparameter “intercept” to infinity, will remove the intercept from the link-model.