Linkmodel: sn

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 cumulative 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.

Hyperparameters

The parameter a represented as

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

and the prior is defined on θ . There is a PC prior available for θ . The (absolute) bound of $a_{\text{max}} = 3.2^3 = 32.768$, is there for for stability reasons¹. The PC-prior will be 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.

Specification

Use model="sn" within control.link.

Hyperparameter spesification and default values

doc Skew-normal link

hyper

```
theta
```

```
hyperid 49031
name alpha
short.name alpha
initial 0
fixed TRUE
prior pc.sn
param 50
to.theta function(x, amax3 = 3.2^3) log((1+x/amax3)/(1-x/amax3))
from.theta function(x, amax3 = 3.2^3) amax3*(2*exp(x)/(1+exp(x))-1)
```

status experimental

pdf linksn

Example

¹This constant is defined as LINK_SN_AMAX in the file inla.h.

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.