

AN ALGORITHM FOR THRESHOLD MODELS USING CUMULATIVE GAUSSIAN OR CUMMULATIVE STUDENT'S "T" DISTRIBUTIONS

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- **ABSTRACT:** *Categorical data can be modeled by a underlying continuous variable (L) that relates realizations of random response variable (Y categories) to the belonging of a linked interval. The link function used is the difference on (cumulated) distribution functions evaluated in the interval limits. This can be translated in a linear model for the conditional expectation of L. The Gibbs sampler was the first algorithm proposed to get samples from the joint posterior distribution in fixed effects models. The same algorithm was modified by Sørensen et al. (1995) to mixed effects models with normal distribution for the random effects. In this paper we fit a mixed model assuming both distributions for link functions (cumulative normal and cumulative Student t). Convergence and fit properties from both distributions were compared. A sensory analysis example was used in which three sugar solutions with different concentrations were used to dehydrate a landrace of banana fruits. Color of the product was evaluated using a nine points hedonic scale. There was no evidence for differences in convergence times from both link functions. Cumulative t link function has presented the best fit, being the more likely model according to the Bayes factor.*
- **KEYWORDS:** *Gibbs sampler; normal link; probit models; threshold models; t link.*

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