

A FRIENDLY INTERFACE TO THE *LME* AND *GLS* FUNCTIONS IN R

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The *nlme* library implements mixed and generalized linear models through the functions *lme* and *gls*. These functions allow researchers to model several properties of their experimental data including nested random effects, heterogeneous variances and correlations among observations. These functions are very flexible but not easy to use, because there are a lot of syntactic details that need to be taken into account.

We present a Windows implementation of a friendly interface to *lme* and *gls* functions of R's *nlme* library. This implementation is in the framework of the InfoStat statistical software. The core of the interface relies on DCOM-R (an R server that runs in the background, <http://cran.r-project.org/contrib/extra/dcom/RSrv250.exe>) and a set of Delphi public routines due to Dieter Menne (dieter.menne@menne-biomed.de) that interface Delphi with the R server. The interface allows the user to specify the fixed and random effects part of the model, as well as possible sources of heterogeneous variances, and to model correlations among data within optional grouping criteria. A friendly dialog allows the user to specify comparisons between adjusted means for the fixed-effect components of the model using multiple comparison methods, and to specify contrasts among levels of the fixed effects. Currently there are no simple routines implemented within *nlme* library to perform this task.

Additionally, a diagnostic tool allows the user to compare several models already fitted as well as to visualize Pearson's residuals in many different ways, calculate and visualize the auto correlation function, and display a *levelplot* of residuals according to a set of coordinates, which is useful when the user wants to model correlations among geo-referenced data. An experienced R user can also explore a fitted model using additional R tools, switching to an R interpreter (which accesses all objects already created) without leaving the InfoStat framework. A tutorial is included as part of the implementation.