

Generalized Linear Mixed Model with Spatial Covariates

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We analyzed measured numerical characteristics $z = z(i, x, y)$ of subjects i that belong to a number of groups $G : i \in G$ and are in different spatial locations characterized by 2D coordinates (x_i, y_i) . Our task was to separate the group and spatial components in the measured characteristics:

$$g(z) = f_1(G) + f_2(x, y) + noise$$

where g is a linking function and $f_1(G)$ is considered as a fixed or random effect.

We solved the problem in R by iteration with sequence of general linear mixed model (glmm) and kriging cross-validation `krige.cv` (package `gstat`), using exponential fitting of variogram with four parameters: (nugget, range, sill and anisotropy). GUI was done in package `tcltk`.