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Gibbsian T-tessellation model for agricultural landscape

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Gibbsian T-tessellation model [1] is based on an energy function involving a set of tessellation statistics. Depending on the selected statistics the model can control various T-tessellation features. This property of the model can be applied in modelling and simulating agricultural landscape patterns.

We propose a model for agricultural landscape controlling the number of cells, the metrics related to cells shape and size as well as the proportion of edges types. We illustrate the model fit on a French landscape example. The original data set is first approximated by a T-tessellation. We apply MCML method [2] to calculate model parameters. Model assessment is based on the comparison of the empty-space distance distribution for the observed pattern and model simulations.

References

- [1] K. Kiêu, K. Adamczyk-Chauvat, H. Monod, R.S. Stoica (2013). A completely random T-tessellation model and Gibbsian extensions. *Spatial Statistics*, 6:118-138.
- [2] C.J. Geyer (1994). On the convergence of Monte Carlo Maximum Likelihood calculations. *J. R. Statist. Soc. B* , 56(3):261-274.