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SOFTWARE HIGHLIGHT

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INFERNO
INFERENCE IN R WITH BAYESIAN NONPARAMETRICS

Despite the *intrinsic* flaws of p-values and frequentist statistics, many researchers in important areas such as medicine still use them today, instead of using coherent Bayesian methods. And among Bayesian practitioners, many still use parametric methods, which make statistical assumptions that may be unrealistic.

Until a few decades ago there were pragmatic reasons that somehow justified such choices:

- Better methods were computationally too expensive.
- The problems were low-dimensional, and one could *visually* check whether the method or assumptions were roughly appropriate to the problem, and change them otherwise, or consider the results as simply qualitative.

But today these reasons cannot be given anymore in many statistical problems approached by frequentist statistics or by Bayesian parametric methods:

- Bayesian methods, even nonparametric, are computationally feasible for many problems.
- Many statistical problems are very high-dimensional, and it is impossible to visually check whether the method or assumptions are acceptable, or by how much they error.

(Draper, 1995)(Walker, 2010)

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