Memory Length Determination for Categorical Longitudinal Data

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Abstract: Given a longitudinal categorical data box

$$S := \{(x_{ij}(t)|1 \leq i \leq m, 1 \leq j \leq n, t = 0, 1, 2, \dots\},$$

where is are the panel identification indexes, js the variable indexes, ts the time indexes. Let $X := (x_1, \dots, x_n)$ be the joint distribution of the variables $v_1, \dots, v_n$. We may and shall regard this box as an empirical realization of a stochastic process. This process can be Markov or non-Markov. We apply our dependence degree measure $\omega^{u|v}$ and its variations to determine the memory length for the empirical process, and discuss its relative issues.