The Estimation in Finite Markov Chain Imbedding Approach

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This paper proposes a Bayesian estimator in the finite Markov chain imbedding approach. The finite Markov chain imbedding (fMCI) technique is invented by Fu and Koutras in 1994 aimed to obtain the exact distribution of some waiting times of run statistics and patterns appeared in a sequence of a multi-state trial. The fMCI approach provides an alternate to the non-trivial traditional combinatorial method based on an imbedded Markov transitional matrix of known entries, which are associated with generating probabilities of sequences of a multi-state trial. This paper studies the estimation inference when those generating probabilities are unknown, i.e., only outcomes of some sequences of finite length from a multi-state trial are observed. A simulation experiment was conducted to evaluate the performance of these estimators for several cases applying fMCI.

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