

Recursive equations in finite Markov chain imbedding

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Abstract In this paper, recursive equations for waiting time distributions of r -th occurrence of a compound pattern are studied via the finite Markov chain imbedding technique under overlapping and non-overlapping counting schemes in sequences of independent and identically distributed (i.i.d.) or Markov dependent multi-state trials. Using the relationship between number of patterns and r -th waiting time, distributions of number of patterns can also be obtained. The probability generating functions are also obtained. Examples and numerical results are given to illustrate our theoretical results.

Keywords Recursive equation · Simple and compound patterns · Waiting time · Finite Markov chain imbedding · Probability generating function