

A New Randomness Test Based on the Overlapping Blocks

Let $\{r_i\} = r_1, r_2, r_3, \dots$ be a binary sequence and fix a pattern say $P = b_1 b_2 \dots b_l$ of length l . The probability that the pattern P appears for the first time at a specific position k has been studied by various researchers by making use of different techniques. In this work we present a graph theoretical approach for the solution of the problem. In particular, we compute the probability values for $l = 3$ and $l = 4$ explicitly.

Depending on the computed values we define a statistical randomness test for binary sequences.