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University of Latvia, Raina bulvaris 29, Riga, LV-1459, Latvia. *Hamming distances for state transitions*. Preliminary report.

In computer science there is a concept of Hamming distance between two binary sequences. Here we introduce a concept of Hamming distance between two sets of state transitions in a finite deterministic automata. Let the Hamming distance between two sets of state transitions  $A$  and  $B$  be sum of such cases when a state  $s_i$  transitions into  $s_k$  in transition set  $A$ , while  $s_i$  transitions into  $s_j$  in transition set  $B$  where  $k \neq j$ . A method was defined to map sets of state transitions to permutations and further research was conducted on these permutations. We researched such permutation  $P_n$  sets, where for any pair of elements the above mentioned Hamming distance is larger or equal than a given constant  $c$  ( $0 \leq c \leq n$ ). As a result an estimate that  $f(n, k) \leq n!/(n - k - 1)!$ , where  $k = n - c$  was achieved. In addition we conducted experimental research in several specific cases. (Received February 27, 2007)