

Multi-Island Finite Automata and Their Even Computation

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This talk concerns the topic of a paper of the same name which discusses n -island finite automata whose transition graphs can be expressed as n -member sequences of islands i_1, i_2, \dots, i_n , where there is a bridge leaving i_j and entering i_{j+1} for each $1 \leq j \leq n - 1$. It concentrates its attention on even computation defined as any sequence of moves during which these automata make the same number of moves in each of the islands. Under the assumption that these automata work only in an evenly computational way, the paper proves that the language family defined by m -island finite automata is properly contained in that defined by $(m + 1)$ -island finite automata, for all $m \geq 0$. This infinite hierarchy occurs between the family of regular languages and that of context-sensitive languages, and it represents an automaton-based counterpart to the grammar-based hierarchy resulting from n -parallel right-linear grammars. Open questions are formulated in the conclusion.