

Application of Automata Theory On n-th Order Limit Language.

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Abstract: The application of automata theory on the DNA splicing system is rapidly growing from time to time. The idea of a splicing system is formalized by Tom Head in 1987. There are three essential parts in the splicing system models, which are the alphabets, initial strings, and the rules. The alphabets represent the nucleotides or the DNA, known as Adenine, Thymine, Guanine, and Cytosine, which are later abbreviated as a, t, g, c following Watson-Cricks complementary. On the other hand, the set of rules represents the restriction enzyme used for the splicing process. In this research, automata theory is used to transform the limit language into a transition graph. The n-th order limit language is then derived from grammar shown as an automated diagram and shown by transition graphs, which represent the language of transitional labels of DNA molecules derived from the respective splicing system.
- **Keywords:** nucleotides, DNA molecules, Cytosine, Guanine