

Pongsakorn Tangsub 2010: An Analysis of LZW Genetic Algorithm using Schema Theorem. Master of Science (Computer Science), Major Field: Computer Science, Department of Computer Science. Thesis Advisor: Assistant Professor Worasait Suwannik, Ph.D. 60 pages.

Simple Genetic algorithm (GA) is an algorithm that solves problems by immitating natural evolution. A chromosome in GA is a binary string. A schema theorem explains the behavior of GA. A schema is a template of binary chromosomes. It has the same length as binary chromosomes but consists of 3 alphabets: 0, 1, and \*. The theorem can estimate the number of individuals in the next generation.

LZW Genetic Algorithm (LZWGA) combines compression with GA. A chromosome in LZWGA is in a format which can be decompressed by LZW decompression algorithm. Unlike GA, an LZWGA chromosome is an array of integer. Therefore, in order to analyze LWZGA, we changed the definition of a schema. From the experiment, a modified schema theorem can accurately predict the number of LZWGA individual in the next generation. The prediction is 92.14% and 92.86% accurate when tested with OneMax and RoyalRoad problem.

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Thesis Advisor's signature