

Nugool Sataporn 2012: Parallel Compact Genetic Algorithm on GPU.  
Master of Science (Computer Science), Major Field: Computer Science,  
Department of Computer Science. Thesis Advisor: Assistant Professor  
Worasait Suwannik, Ph.D. 81 pages.

The objective of this research is to accelerate the compact genetic algorithm (cGA). We propose implementations of parallel compact genetic algorithm (pcGA) on Graphic Processing Unit (GPU) by using two different fitness functions: one-thread method and reduction method as well as the different number of threads in block

For the experiment, we compare the performance of pcGA in 3 problems: OneMax, OneMax Noisy, and Royal Road. The results show that for a large problem (from 8x512 to 512x512 bits), the performance of the proposed algorithm is better than the performance of serial compact genetic algorithm either one-thread method or reduction method in all problems. By pcGA using one-thread fitness function perform better than pcGA using reduction fitness function. Further, reducing number of threads in block can accelerate pcGA.

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Thesis Advisor's signature