Parallelization Clonal Selection Algorithm with Message Passing Model and MPJ Express Case Study: Traveling Salesman Problem

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Abstract

This paper exploits the available parallelism potential on Clonal Selection Algorithm (CSA) as parallel-metaheuristic algorithm, due the lack of explanation detail of the stages of designing parallel algorithms. To parallelizing population-based algorithms, we need to exploit and define their granularity for each stage; do data or functional partition; and choose communication model. Using library for message passing model, such us MPJExpress, we define appropriate methods to implement process communication. This research results pseudo-code for two communication message passing model, using MPJExpress. This pseudo-code can be implemented using Java Language with dataset from Traveling Salesman Problem (TSP), and then compare their parallel performances.

Keywords: Clonal Selection Algorithm, parallel metaheuristic, parallel design, message passing model, MPJExpress, TSP