ABSTRACT

Asynchronous Island Model Genetic Algorithm for University Course Timetabling Problem

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Timetabling is a complex combinatorial problem classified as NP-Hard. University course timetabling problem (UCTP) is similar to other timetabling problems with some additional unique parts. UCTP involves assigning lecture events to timeslots and rooms subject to a variety of hard and soft constraints. Telkom University has almost similar problem with its course timetabling. The current solution with Informed Genetic Algorithm for Telkom University UCTP still has the time consuming problem.

Island Model informed Genetic Algorithm was used in this thesis to solve this problem. The idea of this thesis is making distributed model exchanges an island's local best Individu with another island. Island model GA could create university course timetabling in reasonable time. This distributed model could run faster rather than single machine model decreasing constraint violations to reach optimum fitness. It could have less constraint violations because it could escape from stagnant local optimum easier. Island model GA could even produced great accuracy for Telkom University dataset (99.74%) and acceptable accuracy at 96.80% for Purdue dataset for student level timetabling.

Keywords: timetabling, university course timetabling problem, informed genetic algorithm, island model genetic algorithm