



HYBRID METAHEURISTIC OF SIMULATED ANNEALING AND GENETIC ALGORITHM FOR SOLVING EXAMINATION TIMETABLING PROBLEM

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ABSTRACT

This paper introduces a hybrid metaheuristic of Simulated Annealing (SA) and Genetic Algorithm (GA) and demonstrates its superiority over the two hybridized algorithms in terms of their simulation time and software complexity measurement when used to solve a typical University Examination Timetabling Problem (ETP). Preparation of a timetable consists basically of allocating a number of events to a finite number of time periods (also called slots) in such a way that a certain set of constraints is satisfied. The developed model was used to schedule the first semester examination of Ladoke Akintola University of Technology, Ogbomoso Nigeria during the 2010/2011 session. A task involving 20,100 students, 652 courses, 52 examination venues for 17days excluding Saturdays and Sundays. The use of the implemented model resulted in significant time savings in the scheduling of the timetable, a shortening of the examination period and a well spread examination for the students. Also, none of the lecturers / examination invigilators was double booked or booked successively. It was clearly evident that the hybrid model outperformed Simulated Annealing and Genetic Algorithm in most of the evaluated parameters.

KEYWORDS: Hybrid Model, Simulated Annealing, Genetic Algorithm, Examination Timetabling Problem, Simulation Time and Software Complexity