

Abstract

University timetabling is a complex problem and many constraints that must be considered like clash of lecturer, clash of class, and clash of room, distribution of lecturer schedule, distribution of class schedule, etc. That constraints divided to 2 type that is *hardconstraint* and *softconstraint*, where *hardconstraint* is a constraint that shouldn't violated or don't violated and *softconstraint* is a constraint better if should not violated.

On this final task, genetic algorithm with direct encoding and directed mutation is an optimization method that can be used to build a system that can solve a problem in university timetabling. Where with a directed mutation can ensure reduction fitness value tend better or at least the fitness value is equal with the generation before and the direct encoding that mean more flexible and easy for many things such as AG operations, count of fitness, and build a chromosome.

Datasets being used for testing the system are lectures data from odd semester and from even semester of ITTelkom, Bandung, with a parameter that tested are number of trial, number of generation, number of chromosome, and average fitness. Based on own observations on some tests that can knew if number of trial is increased don't change consistency still the decrease of violation *softconstraint* on mutation and greedy can decrease a violation of *hardconstraint*. The increase of number generation can result greater a opportunity of chromosome to mutate, so the chromosome can have the decrease of violation (fitness) *softconstraint* that result can be better. The increase of number chromosome can make the decrease the value of fitness is better. The average fitness can be used for knowing an average of approximately fitness value for a certain parameter.

Keywords: university timetabling, Genetic Algorithm (GA), directed mutation, number of trial, number of generation, number of chromosome, average fitness.