THE NEXT GENERATION

Li Xiao (A0091591B)

Abstract

Genetic Algorithm (GA) is a numerical optimization technique inspired by both natural selection and natural genetics for a population in biological systems (Coley, 1999). It has proven to be effective in solving many large and complex optimization problems. In this thesis, Genetic Algorithm is applied in market research area. Nielsen runs surveys in many Asian countries to make national and regional estimates on the numbers of retail stores of various types, incorporating important characteristics of the stores (volume, product types sold by store, size, location and etc.). In order to provide up-to-date market information, Nielsen wanted to adopt an optimization technique to break its annual survey into three replicates, each of which covers four months. Each of the replicates should be a representative sample itself. In this project, Genetic Algorithm is applied to optimize the allocation of a sample data of retail stores collected from Thailand to three replicates to make them as similar as possible eventually in terms of number of sampling units, number of stores for different stores types and etc. And then comparisons of results for Genetic Algorithm and Simulated Annealing, which is the optimization technique used by Nielsen Singapore currently are included.

Implementation Software: R