

Exploiting the Local Optima in Genetic Algorithm using Tabu Search

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Abstract

Objectives: To explore the process of selecting retrieval schemes along with their weights, and fusion function for data fusion in information retrieval. **Methods/Statistical Analysis:** This has been carried out using the hybrid Genetic Algorithm. The fusion function, retrieval schemes and their weights lead to a tremendous combination. Finding an optimal solution from this great combination is entirely based on the exploration. **Findings:** We used, odd and even point crossover as an exploration tool. This exploration tool suffers a setback of slow convergence. The convergence rate can be improved by merging Tabu search, a best local search, with the genetic algorithm. This Tabu GA is used to select the retrieval schemes, weights and fusion function. The outcome of the experiments conducted over the test data sets namely: 1. adi, 2. cisi, and 3. cranlooks promising. We achieved 6.89% of improvement in performance, and the significance of the result is tested statistically. The convergence rate is also improved. **Application/Improvements:** We achieved 6.89% of improvement in performance, and the significance of the result is tested statistically. The convergence rate is also improved.

Keywords: Genetic Algorithm, Information Retrieval, Odd and Even Point Crossover, Tabu GA, Tabu Search