

Fixed vs. self-adaptive crossover first differential evolution

Abstract

Although the Differential Evolution (DE) algorithm is a powerful and commonly used stochastic evolutionary-based optimizer for solving non-linear, continuous optimization problems, it has a highly unconventional order of genetic operations when compared against canonical evolutionary-based optimizers whereby in DE, mutation is conducted first before crossover. This has led us to investigate both a fixed as well as self-adaptive crossover-first version of DE, of which the fixed version has yielded statistically significant improvements to its performance when solving two particular classes of continuous optimization problems. The self-adaptive version of this crossover-first DE was also observed to be producing optimization results which were superior than the conventional DE