## Fixed vs. Self-Adaptive Crossover First Differential Evolution

## Abstract

Although the Differential Evolution (DE) algorithm is a powerfuland commonly used stochastic evolutionary-based optimizer for solvingnon-linear, continuous optimization problems, it has a highly uncon-ventional order of genetic operations when compared against canonicalevolutionary-based optimizers whereby in DE, mutation is conductedfirst before crossover. This has led us to investigate both a fixed aswell as self-adaptive crossover-first version of DE, of which the fixedversion has yielded statistically significant improvements to its perfor-mance when solving two particular classes of continuous optimizationproblems. The self-adaptive version of this crossover-first DE was alsoobserved to be producing optimization results which were superior thanthe conventional DE.