

CHC

CHC by Eshelman (1991)

Cross generational elitest model

Rank based selection

n-best from $2n$ cross generation population

Heterogeneous uniform crossover

Mating is random without replacement

Incest prevention with the threshold of hamming distance

Heterogeneous Uniform crossover: Xover half the nonmatching alleles

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Cataclysmic mutation

Mutation not at the recombination stage

Restarts whenever the convergence is detected.

Each new individual is created by bit flipping a fixed portion (e.g., 35%) of the best.

Performance of CHC

Table 1: Mean Number of Evaluations to Find the Global Optimum

Func	Traditional GA			CHC		
	#opt ^a	mean ^b	sem ^c	#opt	mean	sem
F1	50	805	48	50	1089	25
F2	50	9201	703	50	9065	591
F3	50	1270	100	50	1169	27
F4	50	2228	135	50	1948	97
F5	50	1719	96	50	1396	38
F6	37	9272	1291	50	6496	725
F7	50	8688	738	50	3634	291
F8	11	30986	3712	50	7279	725
F9	1	24402	NA	29	24866	2404
F10	2	5520	1087	33	10217	1107

^a The number of searches out of 50 that the algorithm succeeded in finding the optimum value.

^b Mean number of evaluations to find the optimum in those searches where it did find the optimum.

^c Standard error of the mean.