

FIGURES

CHAPTER 8

EVOLUTIONARY COMPUTING

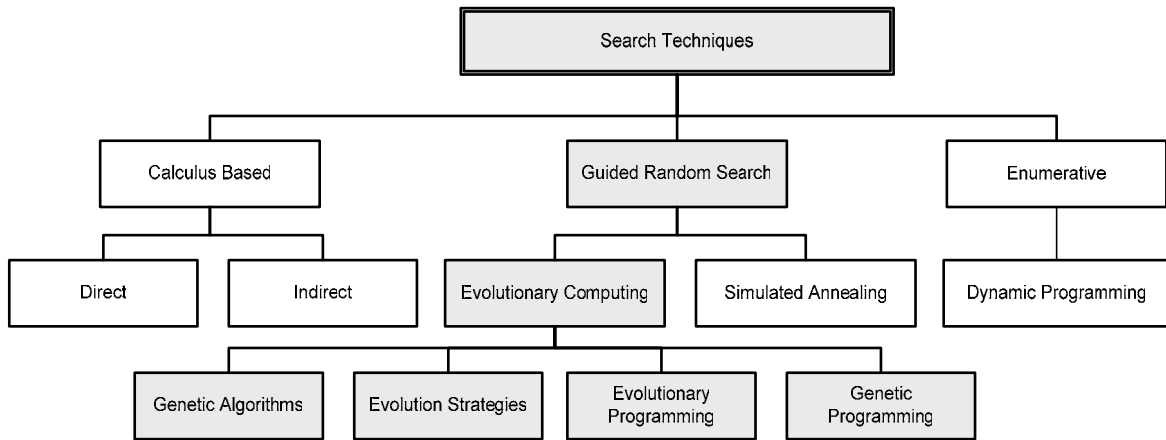


Figure 8.1: Search techniques

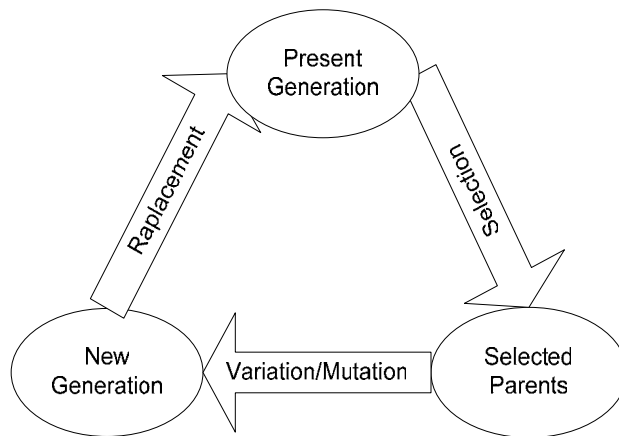


Figure 8.2: Basic Evolution Cycle

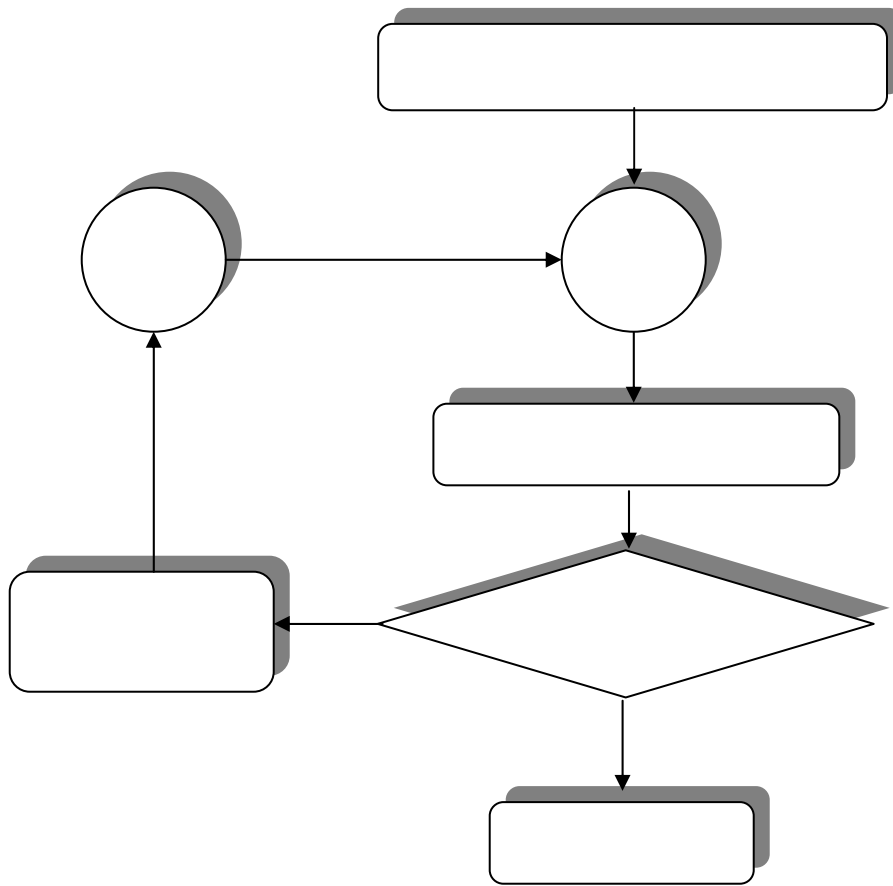


Fig. 8.3 Illustration of the basic structure of an evolutionary algorithm

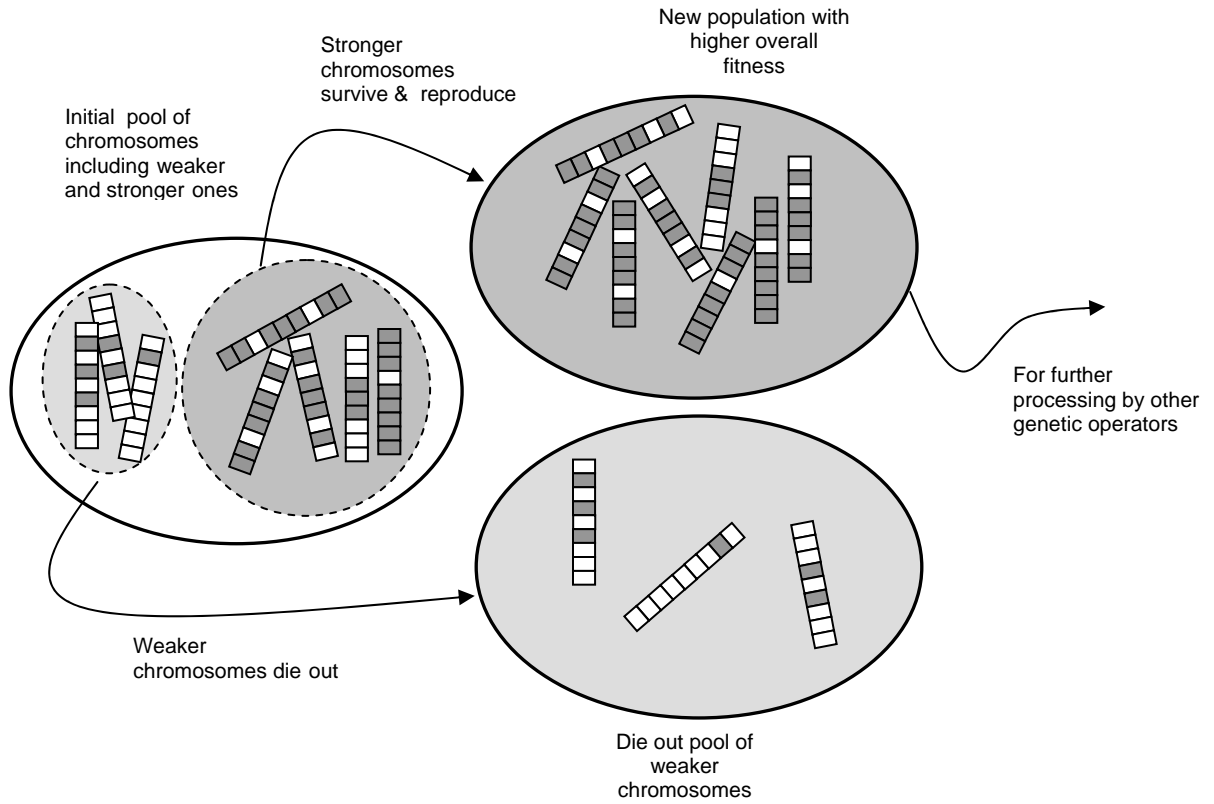


Figure 8.4. Illustration of the Selection Operation in GA (the darker is the chromosome, the higher is its fitness value)

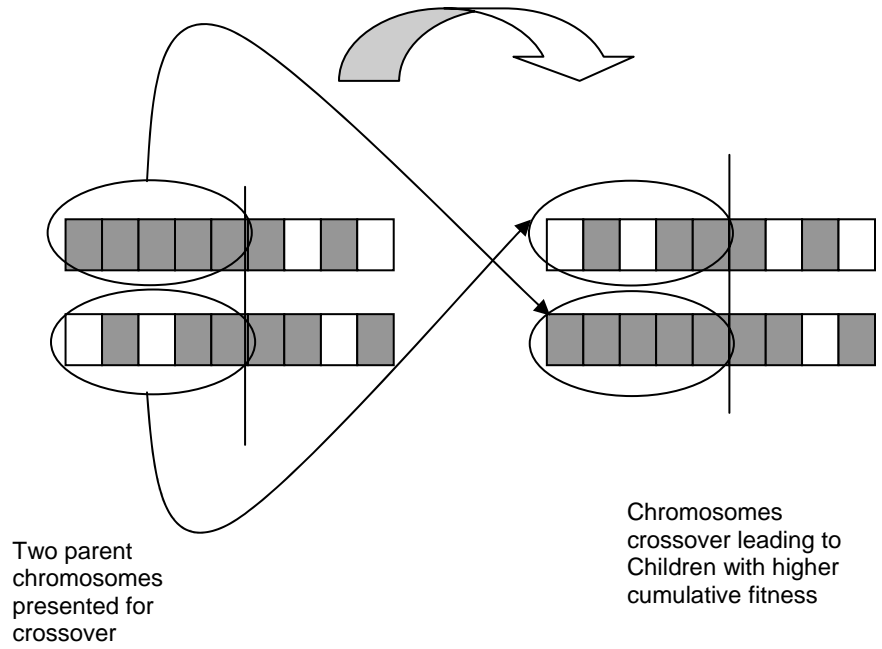


Figure 8.5. Crossover operation for two chromosomes

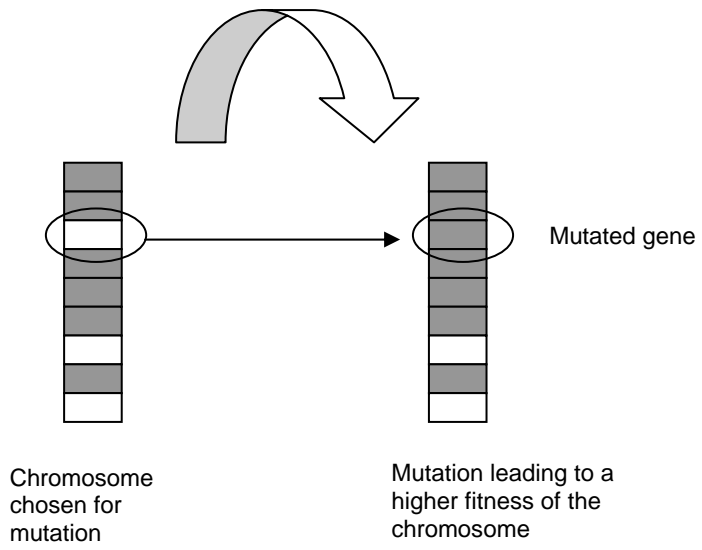


Figure 8.6. Mutation operation over a single gene

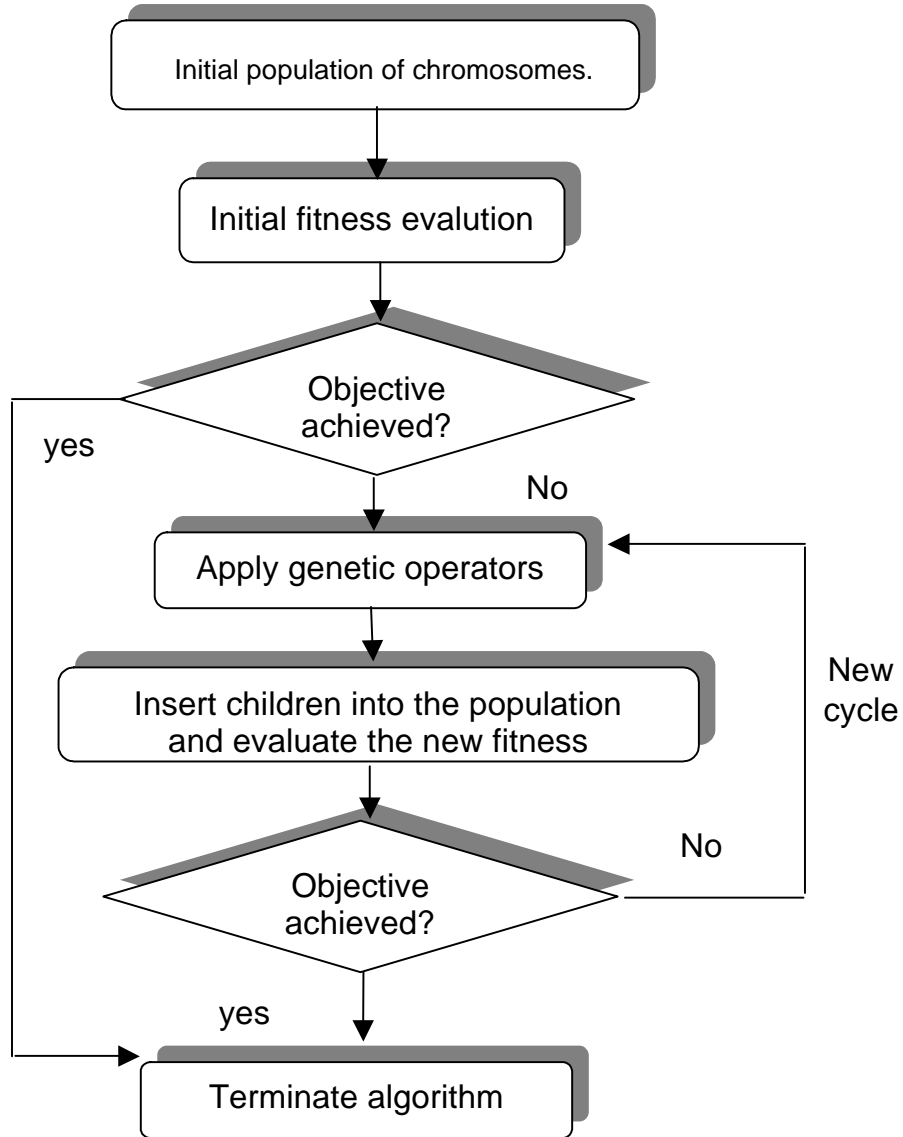


Figure 8.7. Schematic Representation of a Genetic Algorithm

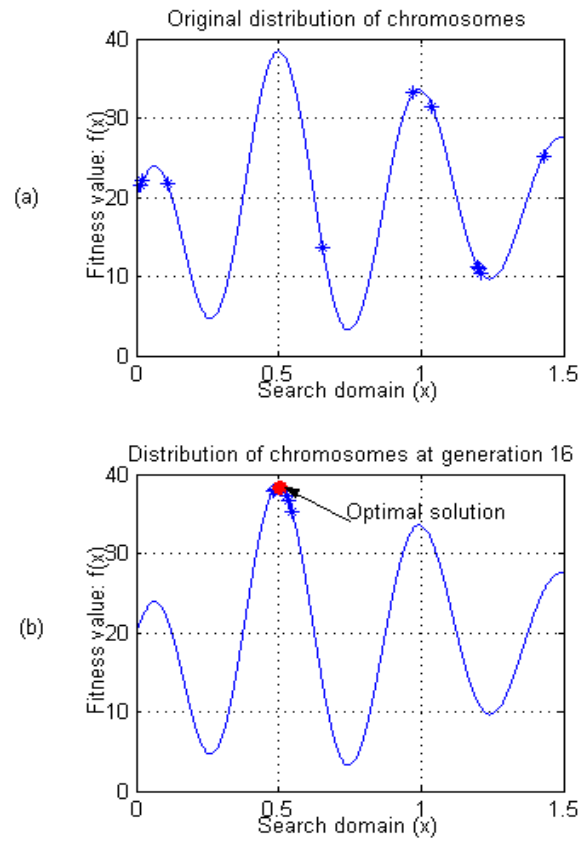
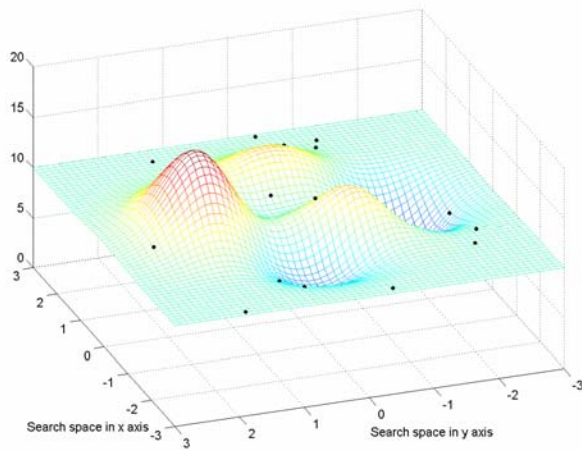


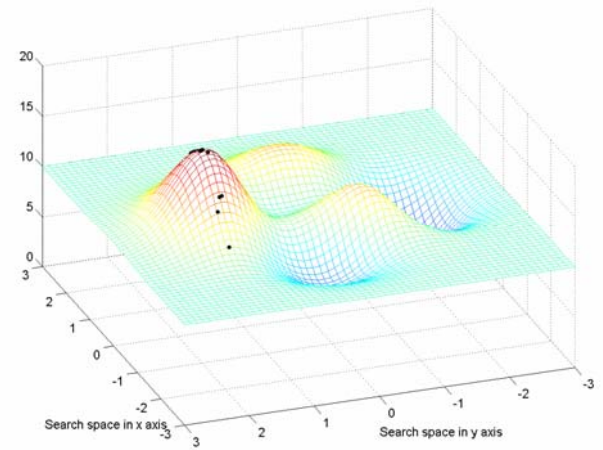
Figure 8.8. a) Original distribution of chromosomes on $f(x)$; b) Chromosomes distribution after 16 generations

Part x
Part y
1011100110101
0001001011100
 Compounded chromosome used for GA Analysis

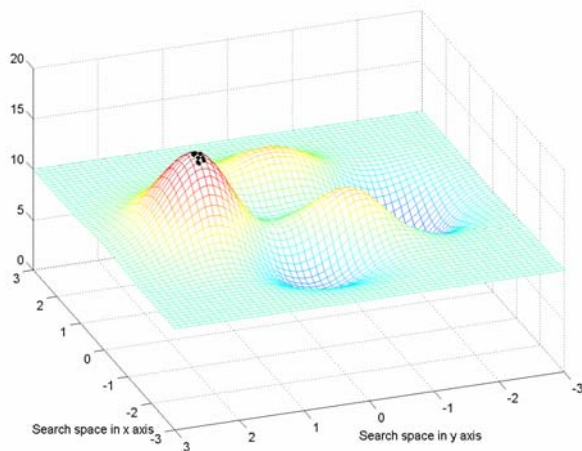
Figure 8.9. Chromosome concatenation in case of a function of multiple variables



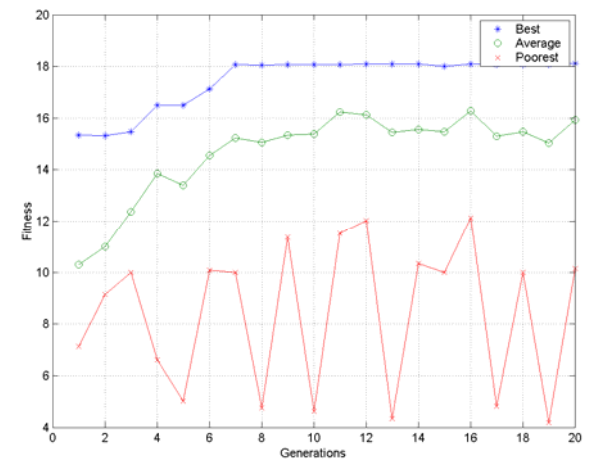
(a)



(b)



(c)



(d)

Figure 8.10 a) Chromosome population at the start of search, b) chromosome population after 10 generations, c) chromosome population after 20 generations, d) fitness evolution as function of generations.

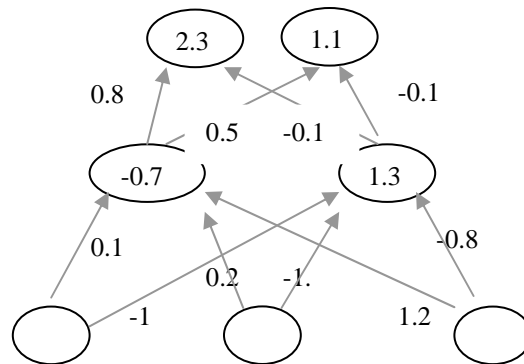


Figure 8.11. : Encoding of a neural network

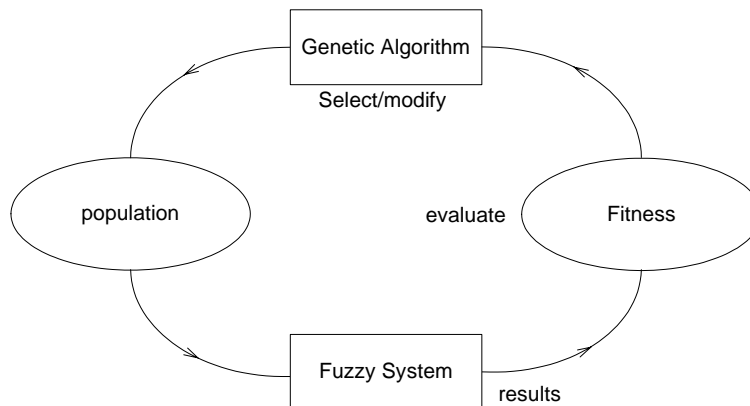
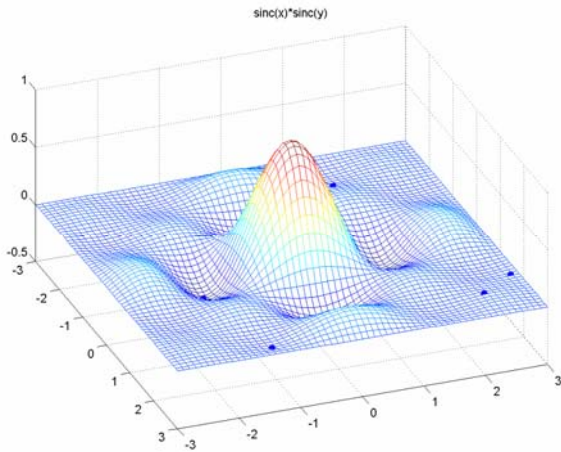
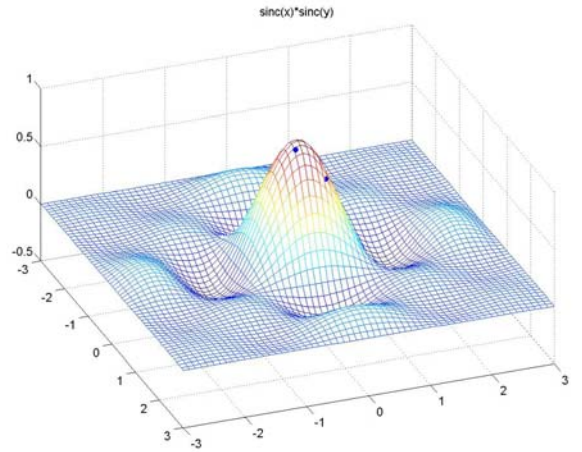


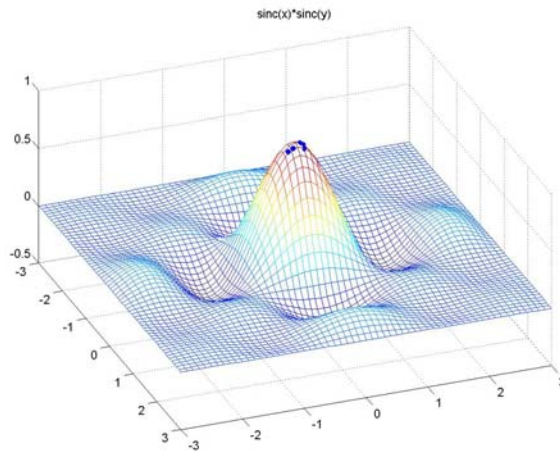
Figure 8.12 Integrated scheme of GA and fuzzy logic systems



(a)



(b)



(c)

Fig. 8.13: Evolution of the population of individuals after one round of evolution(a), after 10 rounds of evolution (b) and after 30 rounds of evolution (c).

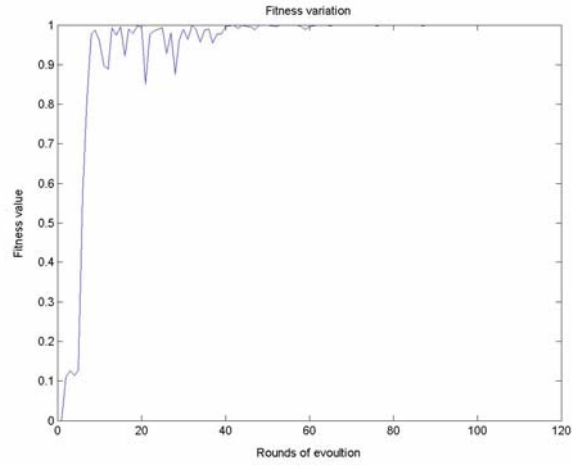


Fig. 8.14 Behavior of the objective function as the number of evolution rounds increases