Lecture 9 - Evolutionary programming

Evolutionary programming vs other Genetic algorithms

- There is no constraint on representation. The genome in genetic programming follows from the problem.
- The mutation operator changes the solutions according to statistical distribution. Minor variations are highly probable, substantial variations are unlikely. The severity of mutations is often reduced in time.

- The definition of mutation and crossover operations defines the landscape
- The smoother the landscape the better optimization
- Smoothness can be estimated using fitness-distance correlation
- Fitness-distance correlation is correlation of two variables: the difference in fitness of a pair of solutions and the difference in their genotypes for the set of solutions. The difference in their genotypes is the number of mutations needed to perform to get from solution A to solution B.
- Mapping between genotype space and the phenotype space is called embryogeny in biology.