The evolution of Evolution Strategies

(1+1)ES

Cons
two individuals
just creeping random search

Pros
June 12, 1964
worked in experiments (as opposed to other methods)

(μ+1)ES

μ ancestors
ridiculous waste of storage capacity

speedup through recombination

(1+λ)ES

λ descendants
ridiculous not to use new info. immediately

if parallel: speedup ~ log λ

(1,λ)ES

non-elitist
ridiculous to forget good intermed. solution

self-adaptation of mutability works (one common σ)

(μ,λ)ES

κ = 1
ridiculous to conserve inferior solutions

recombination helps auto-scaling, variable metric, and speeds up

(μ+λ)ES

κ = ∞
hampers self-adaptation, does not work for moving goals

elitist version – no loss of good results

(μ,κ,λ,ρ)ES

contemporary standard

$1 \leq \kappa \leq \infty$ max. life span (reproduction cycles)

$2 \leq \rho \leq \mu$ recombination uses ρ ancestors