

EE630 Summer 07
Homework 3

Problem 13 – Real Coded Genetic Algorithms / GOSET

Use GOSET to solve the problem

$$\max f(x_1, x_2) = 3(1 - x_1)^2 e^{-x_1^2 - (x_2 + 1)^2} - 10 \left(\frac{x_1}{5} - x_1^3 - x_2^5 \right) e^{-x_1^2 - x_2^2} - \frac{1}{3} e^{-(x_1^2 + 1) - x_2^2}$$
$$-3 < x_i < 3, \quad i = 1, 2$$

Do not use the GOSET GUI. Use a population size of 20. For grading purposes, attach you m-files and a copy of the population distribution and fitness plot.

Problem 14 – Real Coded Genetic Algorithms / GOSET

Repeat problem 13 using the GOSET GUI. For grading purposes, just indicate whether or not you did this (I'll take your word for it).

Problem 15 – Real Coded Genetic Algorithms / GOSET

Solve problem (13) with the added constraint that

$$(x_1 - 0.5)^2 + x_2^2 \leq 1$$

Again, use a population size of 20. Be sure to include the m-files and population distribution and fitness plot.

Problem 16 – Real Coded Genetic Algorithms / GOSET

See attached data file, which relates a function value f to argument values x . Determine an equation to fit the data using a GA. Note that the answer is not unique.