Home problems, set 2

Stochastic optimization algorithms FFR105

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Innehåll

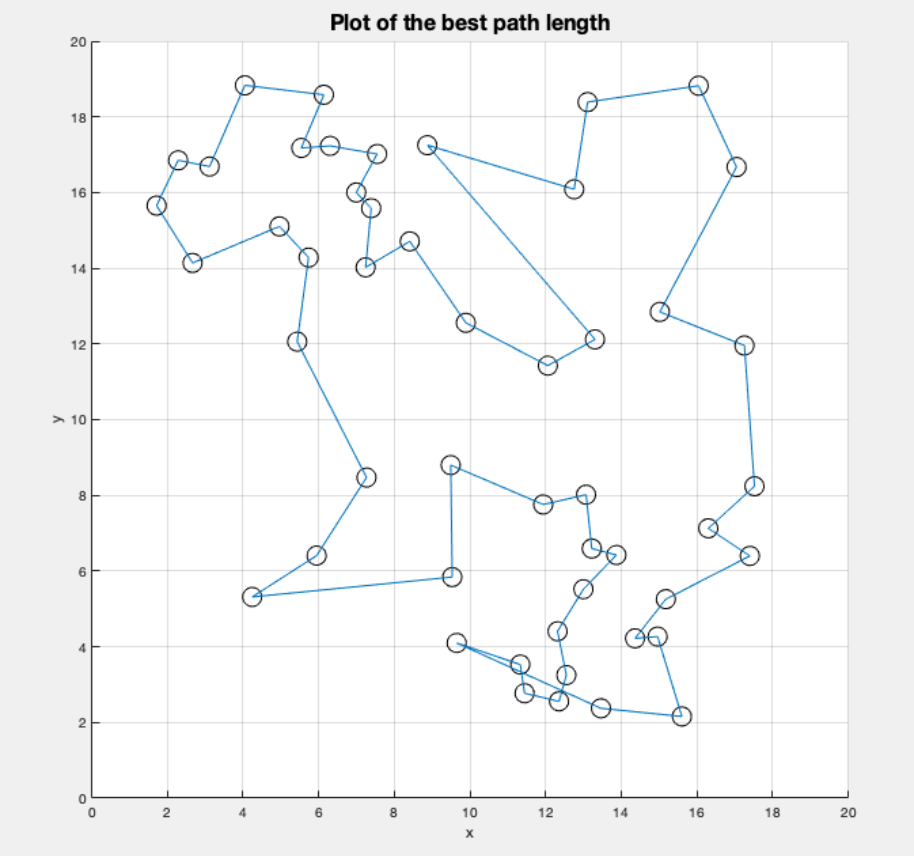
1 Problem 2.1, The traveling salesman problem **1**

2 Problem 2.2, Particle swarm optimization **2**

1 Problem 2.1, The traveling salesman problem

The length of the shortest path was: 99.13291

Figure 1 shows the best path.



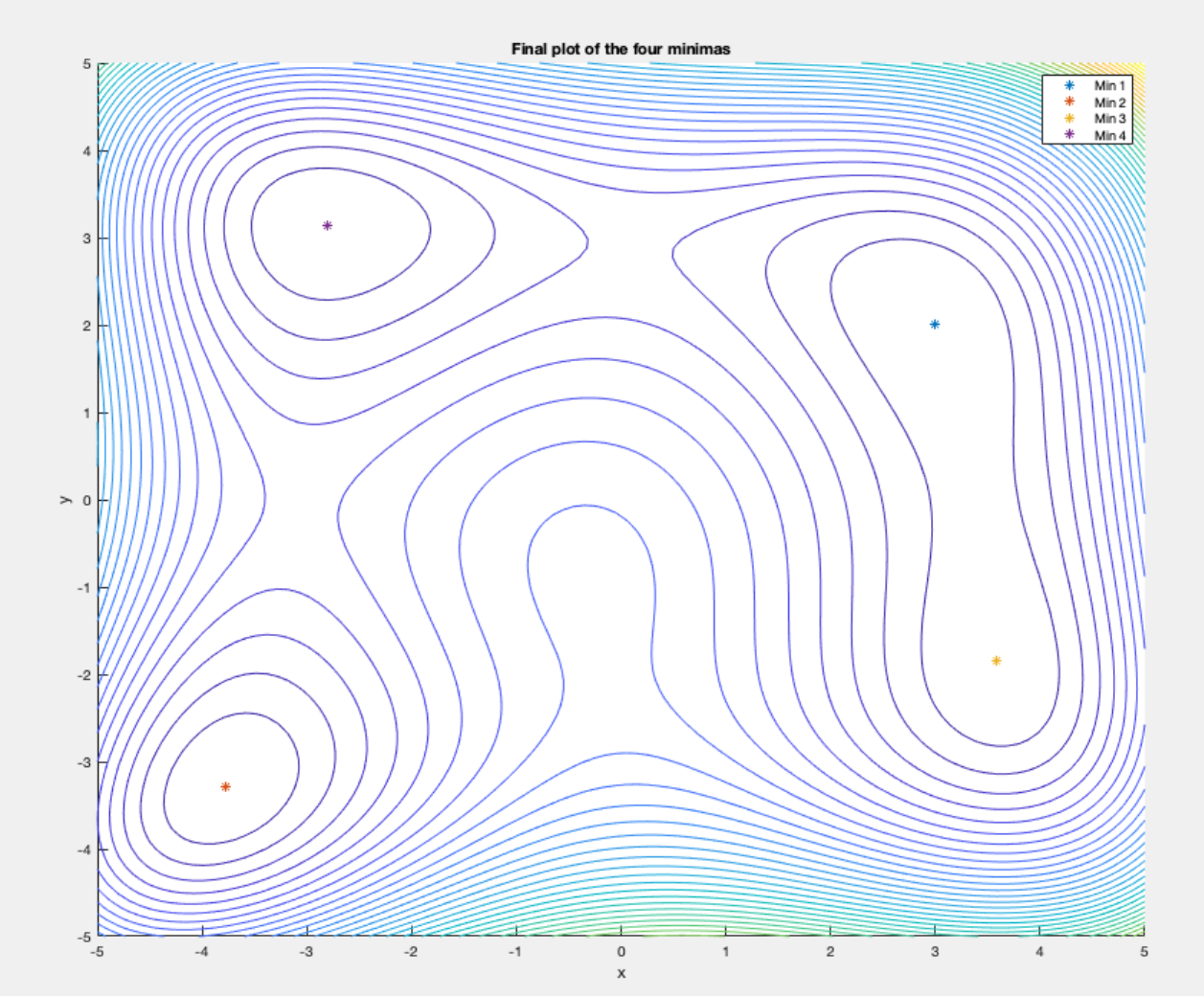
Figur 1: *Final plot with all the minima*

2 Problem 2.2, Particle swarm optimization

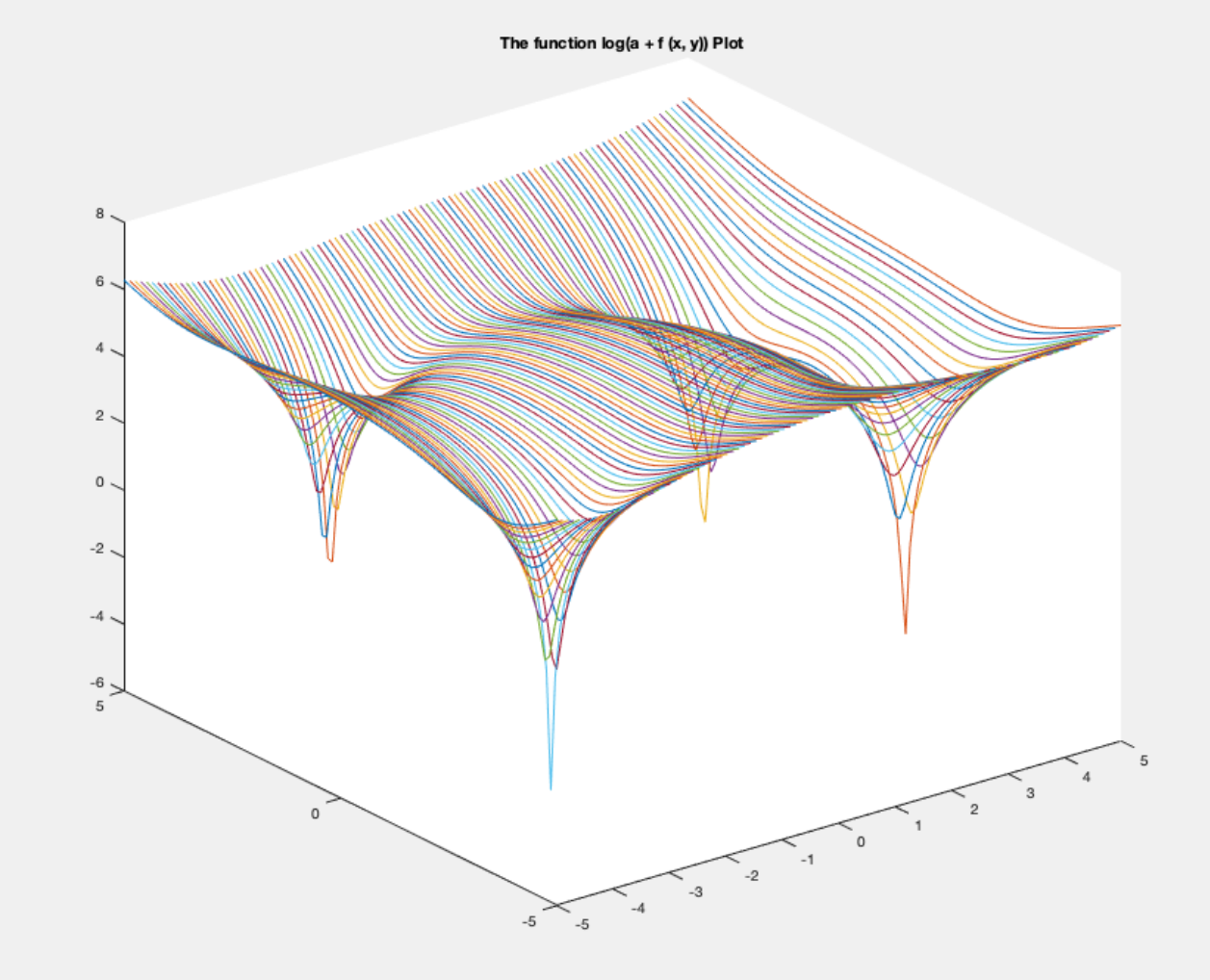
To obtain all the minima the code was executed several times to ensure that all the coordinates and the values for the minima were found. The four minima that were found is presented in table 1 with the different coordinates and corresponding function values f(xi,yi). The contour plot with the local minima is presented in figure 2, as one can see the values in the table corresponds to the minima in the plot.The plot in figure 3 were used to confirm the number of identified minima.

Tabell 1: Table with the data for the four minima

Coordinates for the four minima			
Index	x-coordinate	y-coordinate	$f(x_i,y_i)$
1	3.584428	-1.848127	1.451881e-18
2	3.000000	2.000000	2.527953e-21
3	-3.779310	-3.283186	9.845058e-20
4	-2.805118	3.131313	2.283508e-19



Figur 2: *Final plot with all the minima*



Figur 3: *Plot : log(a + f (x, y))*