Optimization with Estimation of Distribution Algorithms

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Programa de Actuaría

with Julia programming

Stochastic optimization

EDAs pseudocode

Example
- Function minimization
- Stochastic search
- (Possible) Solution

Estimation of Distribution Algorithms

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Evolutionary Computation

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Algorithms for **global optimization** inspired by biological evolution.

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EDAs $\rightarrow$ Learning and simulation from probability distributions fitted with the "best individuals" in order to approximate an optimal solution.

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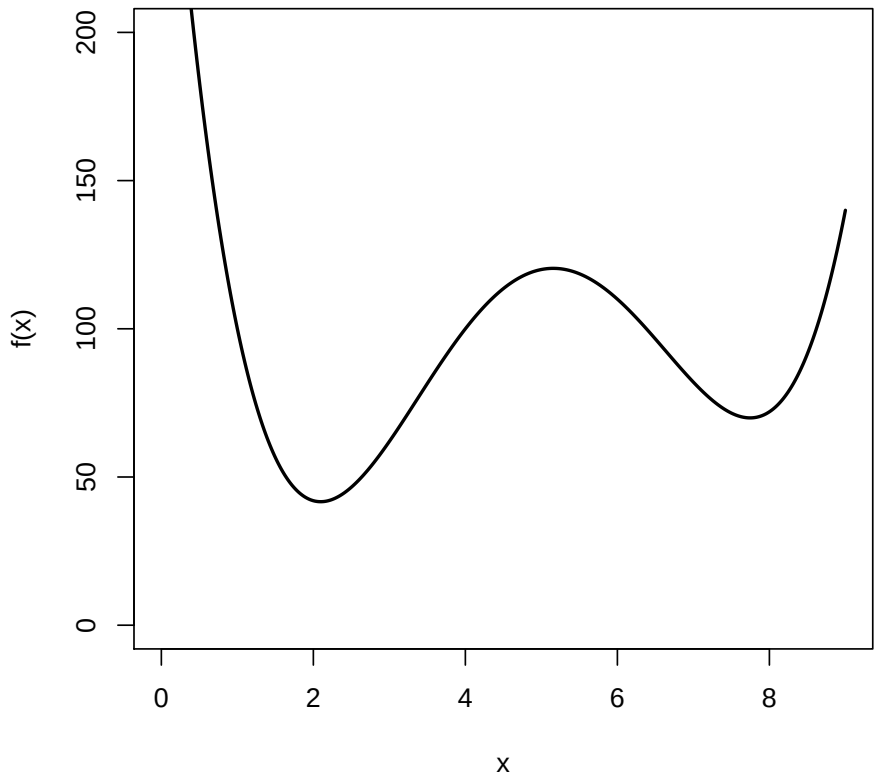
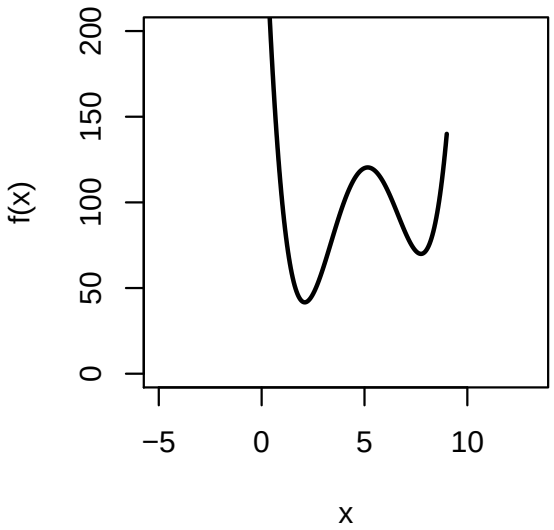
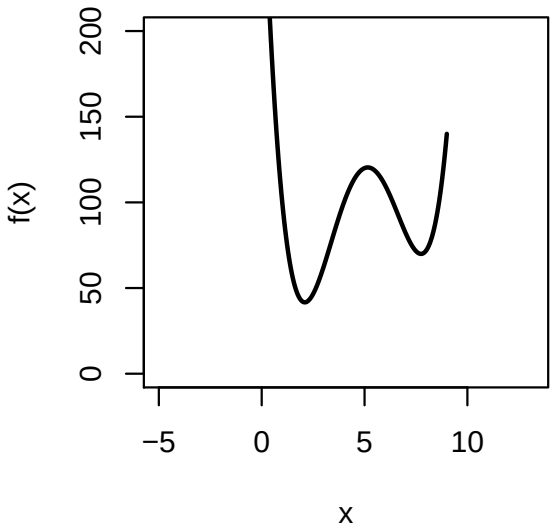
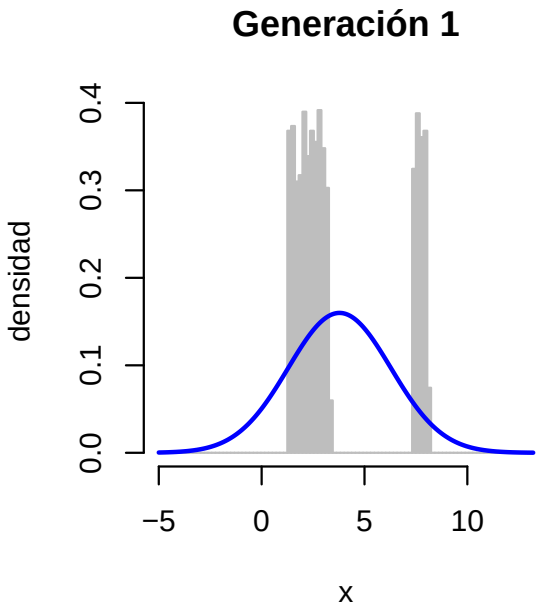
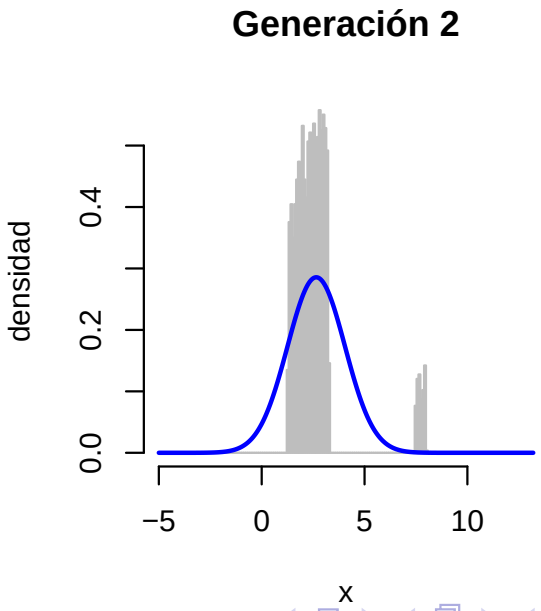
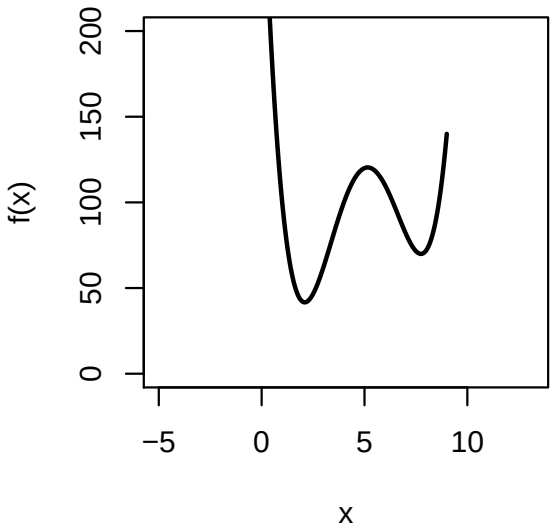


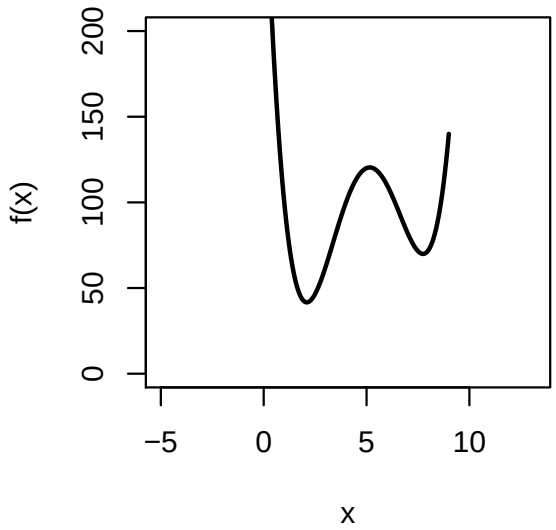

f(x)
0
50
100
150
200
−5
0
5
10
x

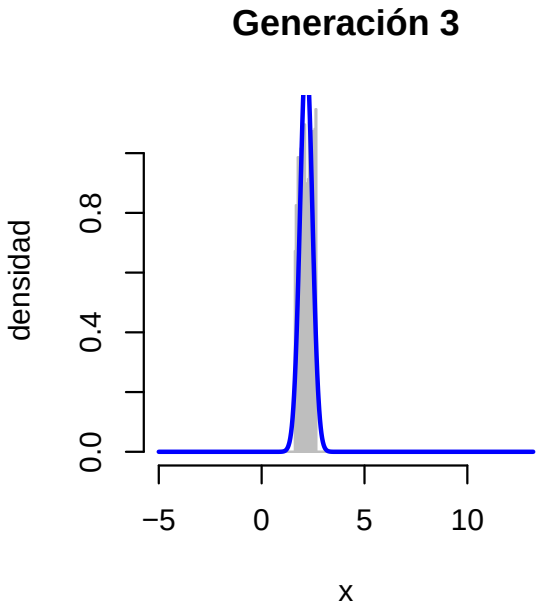

f(x)
0
50
100
150
200
−5
0
5
10
x

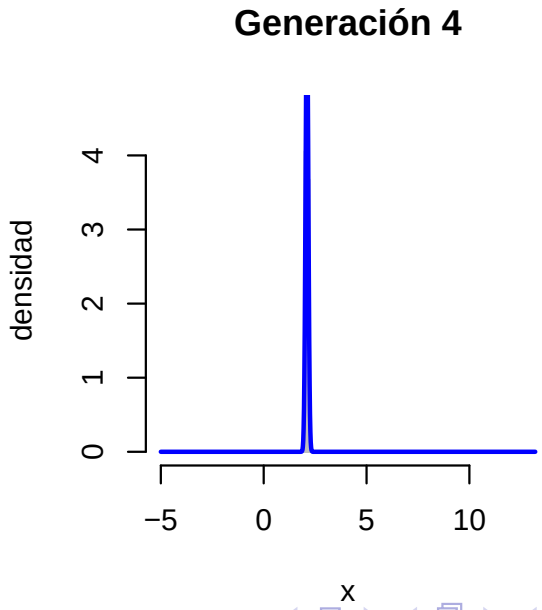

Generación 1
densidad
0.0
0.1
0.2
0.3
0.4
−5
0
5
10
x

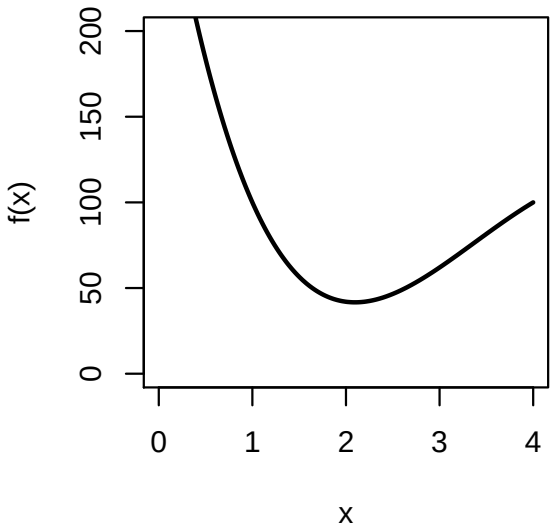

Generación 2
densidad
0.0
0.2
0.4
−5
0
5
10
x

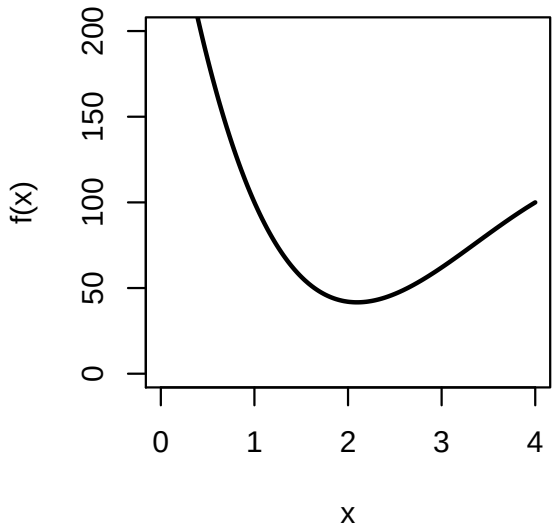

f(x)
0
50
100
150
200
−5
0
5
10
x

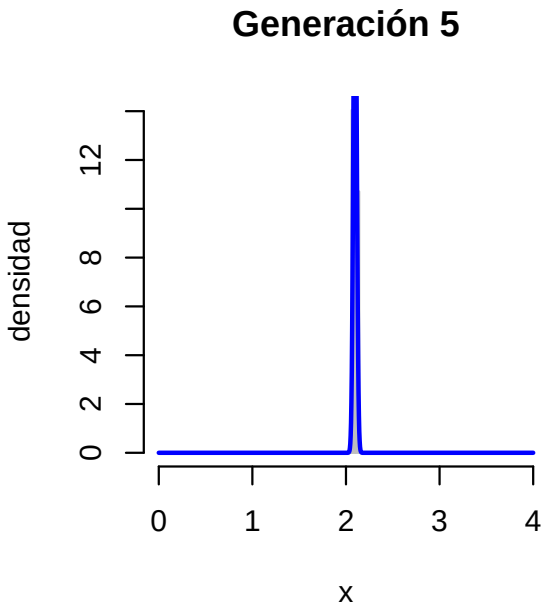

f(x)
0
50
100
150
200
−5
0
5
10
x

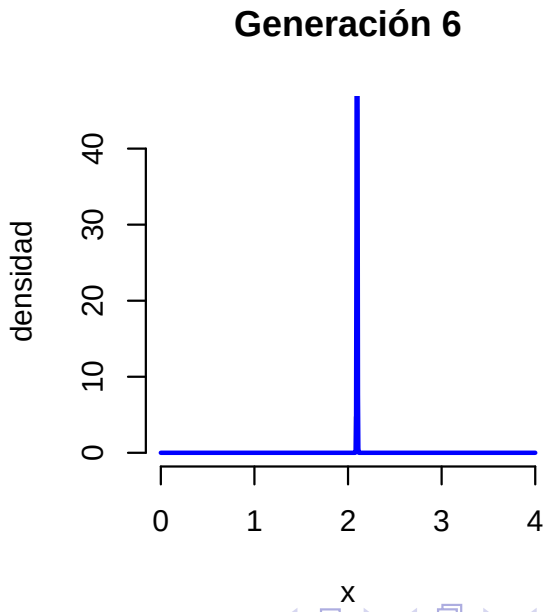

Generación 3
densidad
0.0
0.4
0.8
−5
0
5
10
x

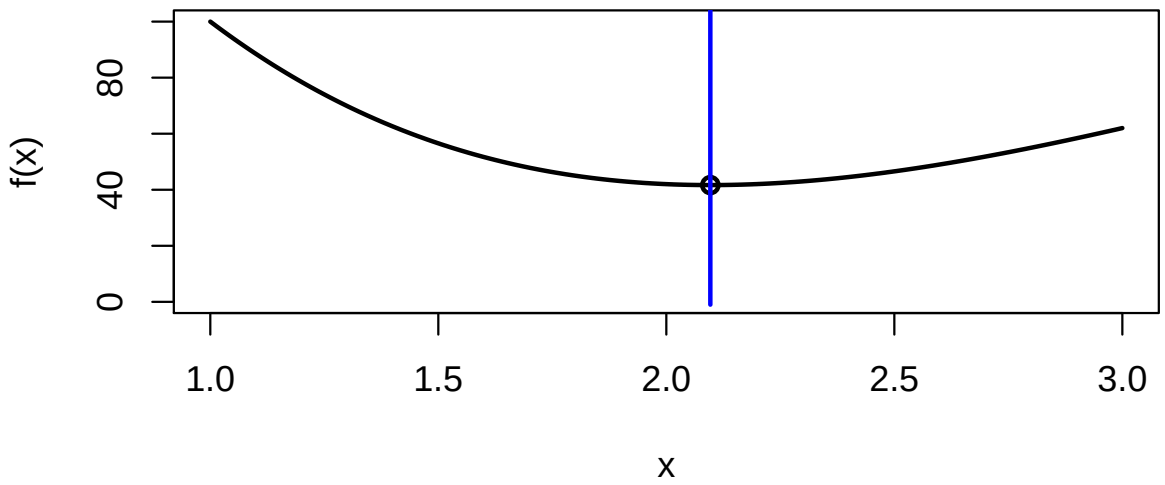

Generación 4
densidad
0
1
2
3
4
−5
0
5
10
x

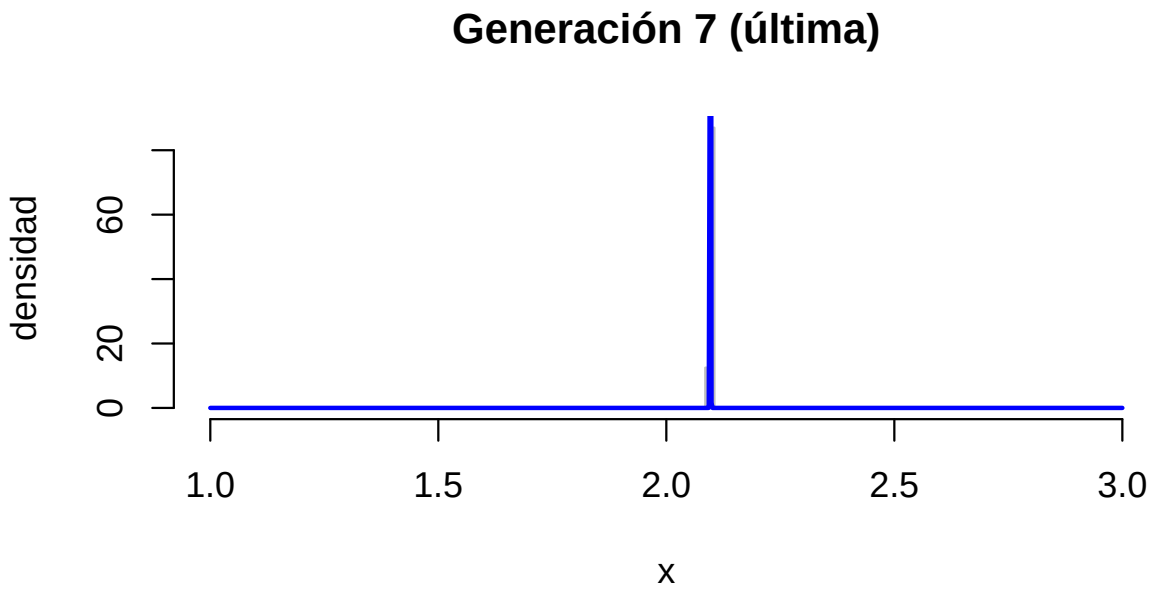

f(x)
0
50
100
150
200
0
1
2
3
4
x


f(x)
0
50
100
150
200
0
1
2
3
4
x


Generación 5
densidad
0
2
4
6
8
12
0
1
2
3
4
x


Generación 6
densidad
0
10
20
30
40
0
1
2
3
4
x


f(x)
0
40
80
1.0
1.5
2.0
2.5
3.0
x


Generación 7 (última)
densidad
0
20
60
1.0
1.5
2.0
2.5
3.0
x

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