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Size of chromosome: 10

Capacity of population: 20

Epoch (generations): 15

With mutation

Onepoint crossover

Truncate selection

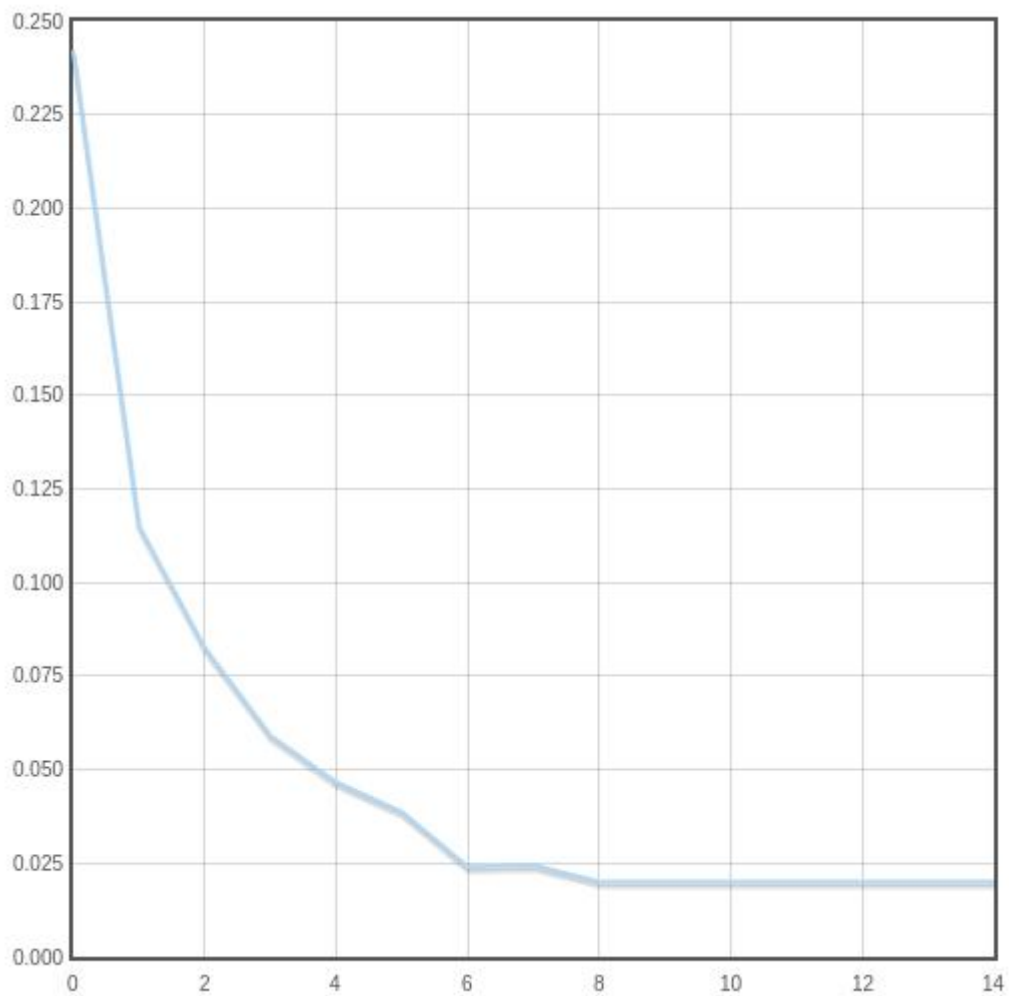
Evolution:

$$f1 = (x - 0.4)^2$$

$$f2 = (x - 0.6)^2$$

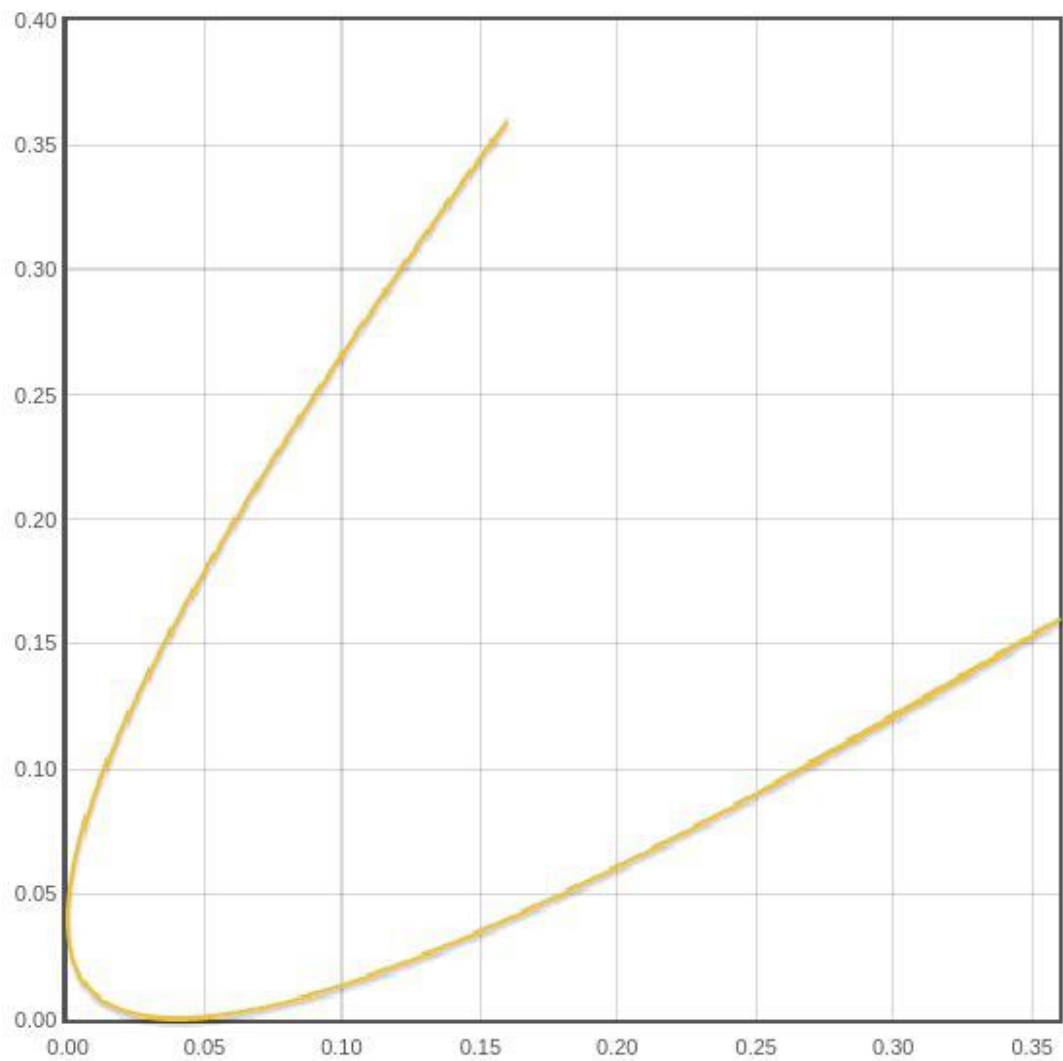
X - generations

Y - Error (misses)



Best result: 0.2 (x = 0.5)

Best chromosome per iteration
0 : 0.50878906 -> 0.020154495
1 : 0.50878906 -> 0.020154495
2 : 0.50878906 -> 0.020154495
3 : 0.50878906 -> 0.020154495
4 : 0.5 -> 0.02
5 : 0.5 -> 0.02
6 : 0.5 -> 0.02
7 : 0.5 -> 0.02
8 : 0.5 -> 0.02
9 : 0.5 -> 0.02
10 : 0.5 -> 0.02
11 : 0.5 -> 0.02
12 : 0.5 -> 0.02
13 : 0.5 -> 0.02
14 : 0.5 -> 0.02



F1 and F2

Start:

	rang	chromosome	f1	f2	dominated by dominate	
	18	1101101101	0.20834233	0.065764196	18	0
	17	10011001	0.062793314	0.20302768	17	1
	16	1101011110	0.19518448	0.05846573	16	2
	15	11101110	0.028082429	0.13511367	15	3
	14	100010000	0.01805664	0.11180664	14	4
	13	100111011	0.008534584	0.08548771	13	5
	12	101000101	0.0068256	0.079872474	12	6
	11	1010100011	0.06717411	0.0035022355	11	7
	10	101100011	0.0028430556	0.06417118	10	8
	9	101101100	0.0019830323	0.059795532	9	9
	8	1001110110	0.046325836	2.32E-04	8	10
	7	1001100001	0.037918434	2.78E-05	7	11
	6	1001011010	3.53E-02	1.47E-04	6	12
	5	110110011	6.15E-04	3.07E-02	5	13
	4	110111010	0.0010011292	0.028344879	4	14
	4	1000100101	0.018532142	0.004079018	4	15
	3	111011100	0.004204712	0.018267212	3	15
	2	1000100011	0.018004188	0.0043323133	2	16
	1	1000001110	0.012921295	0.007452545	1	17
	0	111111010	0.008862457	0.011206207	0	18

Iteration 10:

	rang	chromosome	f1	f2	dominated by dominate	
	7	111100011	0.0051379777	0.016466103	17	0
	6	111100011	0.0051379777	0.016466103	17	0
	6	1000011100	0.01621643	0.0052789305	16	2
	6	1000011010	0.01572281	0.005566559	15	3
	6	111101110	0.0067933653	0.013824616	14	4
	6	111111010	0.008862457	0.011206207	13	5
	6	1000000101	0.011000404	0.009047279	12	6
	6	111111100	0.009234008	0.010796509	0	7
	6	111111100	0.009234008	0.010796509	0	7
	6	111111100	0.009234008	0.010796509	0	7
	6	111111100	0.009234008	1.08E-02	0	7
	6	111111100	0.009234008	1.08E-02	0	7
	6	111111100	9.23E-03	1.08E-02	0	7
	5	111111100	9.23E-03	1.08E-02	0	7
	4	111111100	0.009234008	0.010796509	0	7
	3	111111100	0.009234008	0.010796509	0	7

2	111111100	0.009234008	0.010796509	0	7
1	111111100	0.009234008	0.010796509	0	7
0	111111100	0.009234008	0.010796509	0	7
0	1000000011	0.010594521	0.009422646	0	19

Finish:

rang	chromosome	f1	f2	dominated by	dominate
2	111100011	0.0051379777	0.016466103	17	0
2	111100011	0.0051379777	0.016466103	17	0
1	111111100	0.009234008	0.010796509	1	2
1	111111100	0.009234008	0.010796509	1	2
1	111111100	0.009234008	0.010796509	1	2
1	111111100	0.009234008	0.010796509	1	2
1	111111100	0.009234008	0.010796509	1	2
1	111111100	0.009234008	0.010796509	1	2
1	111111100	0.009234008	0.010796509	1	2
1	111111100	0.009234008	0.010796509	1	2
1	111111100	0.009234008	1.08E-02	1	2
1	111111100	0.009234008	1.08E-02	1	2
1	111111100	9.23E-03	1.08E-02	1	2
1	111111100	9.23E-03	1.08E-02	1	2
1	111111100	0.009234008	0.010796509	1	2
1	111111100	0.009234008	0.010796509	1	2
1	111111100	0.009234008	0.010796509	1	2
1	111111100	0.009234008	0.010796509	1	2
0	1000000011	0.010594521	0.009422646	0	18
0	1000000011	0.010594521	0.009422646	0	18

Conclusion: Algorithm can found optimum for both functions $y_1(x) = (x-0.4)^2$ and $y_2(x) = (x-0.6)^2$. Optimum for both is $y_1(x)=y_2(x)=0.02$ and $x = 0.5$. To proof let to show trade-off graph:
axis X = $y_1(x)$
axis Y = $y_2(x)$