COMP SCI 5401 FS2017 Assignment 2b
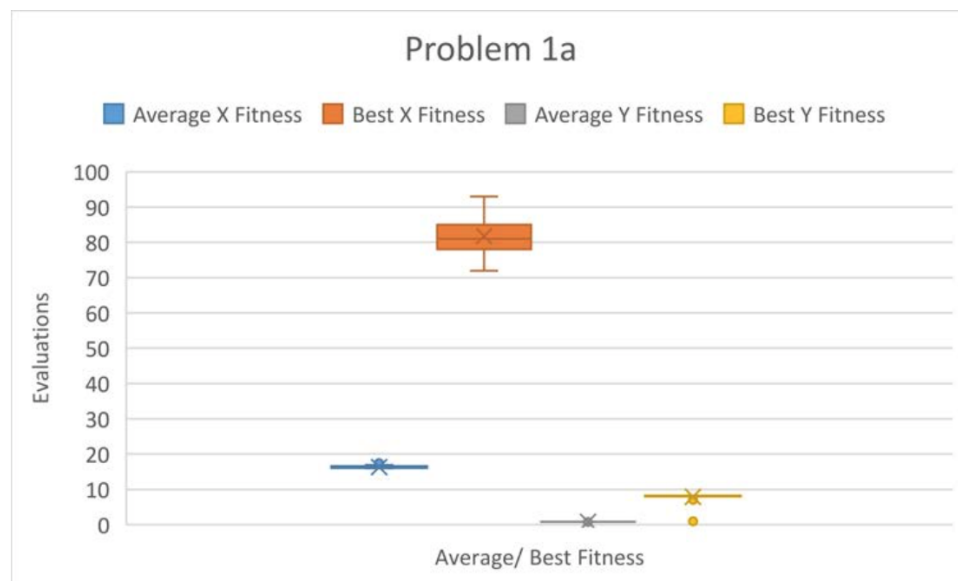
John Niemeyer
JJNB78@mst.edu

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Experiment parameters and graphs

1 IPD Results

1.1 Graphs

1.2 Result Tables

Problem 1a: final results

	Problem 1a			
	Average X Fitness	Best X Fitness	Average Y Fitness	Best Y Fitness
3	18.14	79	0.81	9
4	17.46	89	0.8	9
5	16.98	80	0.82	8
6	16.82	85	0.81	1
7	16.68	84	0.83	8
8	16.42	83	0.82	8
9	16.55	84	0.81	9
10	16.63	83	0.82	9
11	16.64	92	0.83	8
12	16.39	93	0.82	9
13	16.26	82	0.83	8
14	16.4	75	0.83	8
15	16.28	83	0.83	8
16	16.28	78	0.81	8
17	16.21	72	0.83	8
18	16.21	77	0.85	8
19	16.1	80	0.82	8
20	16.14	74	0.84	8
21	16.03	78	0.82	7
22	16.08	80	0.82	8
23	16.08	77	0.83	8
24	16.03	74	0.84	8
25	15.92	89	0.82	8
26	15.93	84	0.82	8
27	16.04	90	0.83	9
28	15.94	78	0.83	7
29	15.98	79	0.82	8
30	16.04	86	0.86	8
31	15.91	85	0.81	9
32	15.94	79	0.84	8

1.3 Statistical Analysis

	Problem 1a: Best Fitness					Problem 1a: Average Fitness			
subject #	Fitness 1c	fitness 1d	x-y	$(x-y)^2$	subject #	Fitness 1c	fitness 1d	x-y	$(x-y)^2$
1	68	79	-11	121	1	5.4	18.14	-12.74	162.3076
2	77	89	-12	144	2	4.74	17.46	-12.72	161.7984
3	79	80	-1	1	3	4.67	16.98	-12.31	151.5361
4	75	85	-10	100	4	4.4	16.82	-12.42	154.2564
5	77	84	-7	49	5	4.48	16.68	-12.2	148.84
6	69	83	-14	196	6	4.23	16.42	-12.19	148.5961
7	75	84	-9	81	7	4.36	16.55	-12.19	148.5961
8	71	83	-12	144	8	4.19	16.63	-12.44	154.7536
9	65	92	-27	729	9	4.16	16.64	-12.48	155.7504
10	69	93	-24	576	10	4.13	16.39	-12.26	150.3076
11	77	82	-5	25	11	4.03	16.26	-12.23	149.5729
12	73	75	-2	4	12	4.11	16.4	-12.29	151.0441
13	73	83	-10	100	13	4.32	16.28	-11.96	143.0416
14	80	78	2	4	14	4.15	16.28	-12.13	147.1369
15	76	72	4	16	15	4.02	16.21	-12.19	148.5961
16	73	77	-4	16	16	4.21	16.21	-12	144
17	77	80	-3	9	17	4.08	16.1	-12.02	144.4804
18	73	74	-1	1	18	3.99	16.14	-12.15	147.6225
19	72	78	-6	36	19	3.89	16.03	-12.14	147.3796
20	74	80	-6	36	20	3.88	16.08	-12.2	148.84
21	77	77	0	0	21	3.84	16.08	-12.24	149.8176
22	71	74	-3	9	22	3.82	16.03	-12.21	149.0841
23	74	89	-15	225	23	4.02	15.92	-11.9	141.61
24	75	84	-9	81	24	4.01	15.93	-11.92	142.0864
25	65	90	-25	625	25	3.85	16.04	-12.19	148.5961
26	70	78	-8	64	26	3.72	15.94	-12.22	149.3284
27	66	79	-13	169	27	4.01	15.98	-11.97	143.2809
28	84	86	-2	4	28	3.65	16.04	-12.39	153.5121
29	72	85	-13	169	29	3.77	15.91	-12.14	147.3796
30	69	79	-10	100	30	3.86	15.94	-12.08	145.9264
SUM:			-256	3834	SUM:			-366.52	4479.078
	t-value:	-0.21508		df: 29		t-value:	-0.98697		df: 29
	P-Value:	0.8312		t-value: 2.045		P-Value:	0.3318		t-value: 2.045

So according to the statistical analysis (shown above) the p-value for both best fitness and average fitness is not low enough to say that the results are statistically significant. That means that the t-value of -0.21508 and the t-value of -0.98697, computed using the tables given, were not far enough apart from the t-value given of 2.045 to make the difference in the fitness values statistically significant.

1.4 EA Configurations

If you want to get the same results you have to change the newSeed variable to 0 (Zero) in the configuration file in order to use the previous seed.

Using config1.txt

```
1  runs = 30
2  fitness = 10000
3
4  k = 5
5  d = 10
6  l = 30
7  n = 5
8  mu = 0.01
9  lambda = 2
10 parentNumber = 5
11 p = 1
12 terminationEvals = 3
13
14
15 prob_log_file = logs/log1.txt
16 prob_solution_file = solutions/solution1.txt
17
18
19 Initialize: Ramped_halfandhalf = 1
20
21 parentSelection: Fitness_Proportional_Selection = 1, Over_Selection
        = 0
22
23 Recombination: subTree_Crossover_Recombination = 1
24
25 Mutation: subTree_Crossover_Mutation = 1
26
27 survivalSelection: Truncation = 1, kTournament = 0
28
29 bloatControl: parsimonyPressure = 1
30
31 Termination: numEvals = 1, noChange = 0
32
33 newSeed = 1
```