COMP SCI 5401 FS2018 Assignment 2b

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Introduction

Main Assignment Deliverables

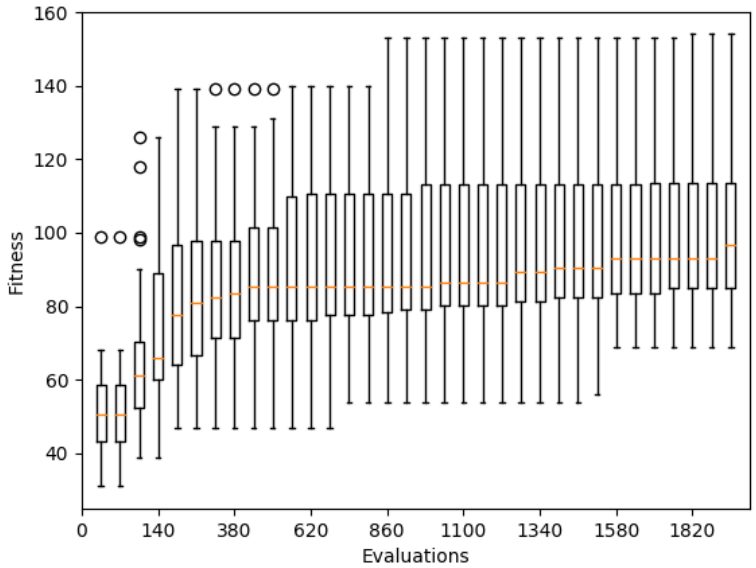

Figure 1: Global Best Fitness versus Fitness Evaluations for the **Small**, Randomly Generated World. The figure was generated with data obtained by running the GP with the **small.cfg** configuration file.

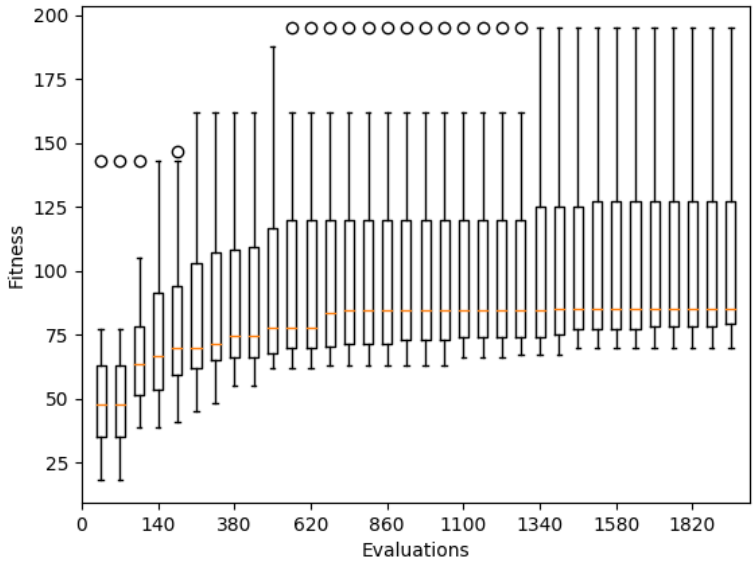

Figure 2: Global Best Fitness versus Fitness Evaluations for the **Large**, Randomly Generated World. The figure was generated with data obtained by running the GP with the **large.cfg** configuration file.

BONUS1: Multiple Pacmen Employing the Same Controller Discussion

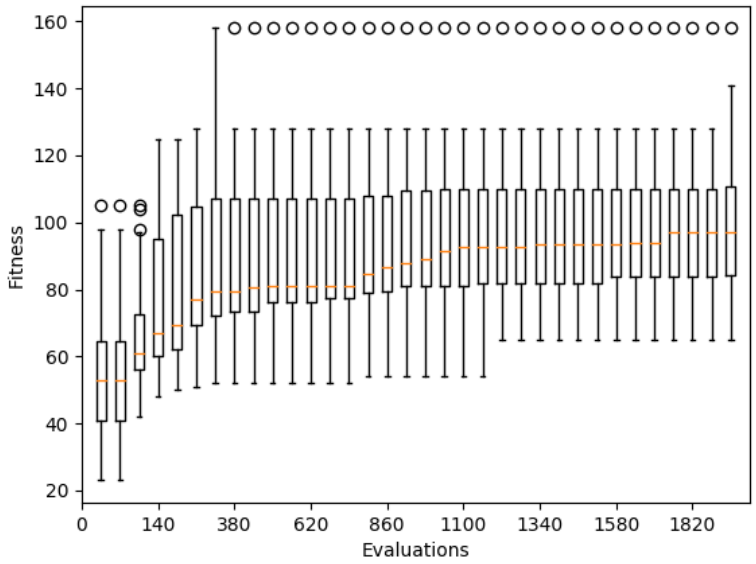

Figure 3: Global Best Fitness versus Fitness Evaluations for the **BONUS1 (Multiple Pacmen Using the Same Controller) Small**, Randomly Generated World. The figure was generated with data obtained by running the GP with the **BONUS_small.cfg** configuration file.

BONUS2: Multiple Pacmen Employing Different Controllers Discussion

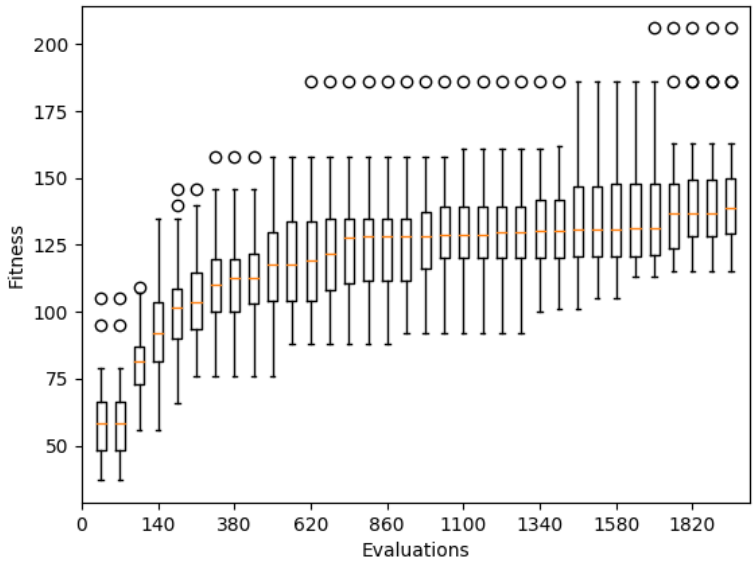

Figure 4: Global Best Fitness versus Fitness Evaluations for the **BONUS2 (Multiple Pacmen Using Different Controllers) Small**, Randomly Generated World. The figure was generated with data obtained by running the GP with the **BONUS_small_multi_controller.cfg** configuration file.

Analysis of Main Assignment, BONUS1, and BONUS2

Table 1: Statistical Analysis performed on the BONUS1 Small, Multi-Pacman World versus BONUS2 Small, Multi-Pacman World Employing Multiple Controllers

	BONUS_small_multi_controller	BONUS_small
mean	142.96666666666667	101.1
variance	439.96555555555557	408.8233333333334
standard deviation	20.975355910104494	20.21938014216394
observations	30	30
df	29	29
F	1.0761752563590357	
F critical	0.5373999648406917	
Unequal variances assumed		
observations	30	
df	31	
t Stat	7.738691619777811	
P two-tail	1.694665580406777e-10	
t Critical two-tail	2.0395	
BONUS_small_multi_controller is statistically better than BONUS_small		

Table 2: Statistical Analysis performed on the BONUS2 Small, Multi-Pacman World Employing Multiple Controllers versus Small, Single-Pacman World

	BONUS_small_multi_controller	small
mean	142.96666666666667	101.0
variance	439.96555555555557	494.46666666666664
standard deviation	20.975355910104494	22.23660645572221
observations	30	30
df	29	29
F	0.8897779875061795	
F critical	0.5373999648406917	
Unequal variances assumed		
observations	30	
df	31	
t Stat	7.393150913824469	
P two-tail	6.520299920112773e-10	
t Critical two-tail	2.0395	
BONUS_small_multi_controller is statistically better than small		

Table 3: Statistical Analysis performed on the BONUS1 Small, Multi-Pacman World versus Small, Single-Pacman World

	BONUS_small	small
mean	101.1	101.0
variance	408.8233333333334	494.46666666666664
standard deviation	20.21938014216394	22.23660645572221
observations	30	30
df	29	29
F	0.8267965484697318	
F critical	0.5373999648406917	
Unequal variances assumed		
observations	30	
df	31	
t Stat	0.01791782942177858	
P two-tail	0.9857664534615012	
t Critical two-tail	2.0395	
Nether small nor BONUS_small is statistically better		