

Assignment 2 Grading Rubric

Names: _____ **Report GRADE:** _____ **/300**

Code GRADE: _____ **/40**

Maximum page length is 12 pages. 10 pages is better.

You will not be able to re-write this assignment. It will only be graded once.

Author contributions must be included for report to be graded.

Introduction to entire report (Parts 1 & 2): _____ **/10 points**

Include background, definitions & goals of report in 2-3 paragraphs

Methods: _____ **/50 points**

Part 1 (15 points total)

Describe how you implemented

roulette selection (2 points)

1 point crossover (2 point)

elitism (2 point)

how you changed roulette for Whitley's function (2 points)

how you implemented mutation for Whitley's function (2 points)

a mechanism to speed up search for the last question in Part 1 (5 points)

Part 2.1 (5 points)—cite the code you use and describe it (e.g., mutation rate, crossover scheme & how fitness is calculated for competition & cooperation)

Part 2.2 (15 points)—explain what changes you implemented to crossover (2 kinds), mutation & selection. Explain how you analyzed the results (the parameters that control colonies and how they change over generations).

Part 2.3 (15 points)—explain what changes you implemented to improve fitness. Explain in sufficient detail that someone could reproduce your changes.

Results: _____ **/190 points**

Part 1 (60 points)

Compare roulette & tournament selection: 4 points

Table 1: 10 points

Table 2: 10 points

Maxones fitness figure & caption: 5 points

Whitley's fitness figure & caption: 5 points

Describe how much elitism improves search: 4 points

Describe how 1 & 2 point crossover speed search: 4 points

Describe best combination(s) of crossover, mutation & elitism: 4 points

Explain interesting interactions among parameters: 4 points

Show whether, how much & why your changes improve search: 10 pts

Part 2.1: (25 points)

Plot fitness vs. generation for competitive and cooperative colonies: 10 points

Describe changes in the parameters over time. Hypothesize why these changes occurred. Include appropriate quantitative metrics, figures and/or images to test your hypothesis: 15 pts

Part 2.2: (40 points)

Explain why you made the particular changes you made to crossover (2 ways), mutation & selection, and describe your results using appropriate figures and text.

*Call the visualization function to show how your best cooperative OR competitive parameter sets forage—this is required as part of your code grade.

Part 2.3: (65 points)

Explain how you changed the code, justify why you made the particular changes you made, and describe your results using appropriate figures, text, and data analysis. Make your decisions based on the prior results from this project, additional research that you've done, and your own creativity. The Mitchell 1994 paper provides an example of how to do detailed analysis of how and why parameters evolve (your analysis will obviously be shorter).

*Call the visualization function to show your best cooperative OR competitive parameter sets—this is required as part of your code grade

Conclusions:**/20 points**

Summarize main findings of part 1 (5 points)

Summarize main findings of part 2 (10 points)

Suggest interesting future work (5 points)

References:**/10 points**

Appropriate references are included inline in text and listed in references.

Writing style, grammar, spelling & readability:**/20 points****CODE:****Readme file: /10 points**

Your readme should include instructions to run your code. Follow the readme guidelines on course home page.

Code runs as specified (20 points):**/30 points**

Your code must run on the CS machines in order for your project to be graded.

Provide all files that the grader will need to run your code on the CS linux machines.

Follow the specifications for uploading a gradable version of your code. No second chances this time, so verify that your code runs before you submit it. If results in your report appear not to have come from your code, your project will not be graded.

Include code to run the 2 visualizations in Part 2* using the field visualization function that will be posted on the web page.