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CS 4740.001
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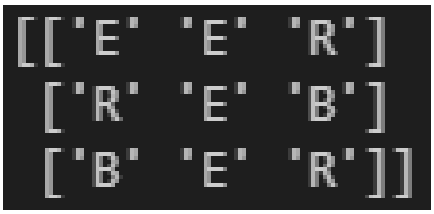
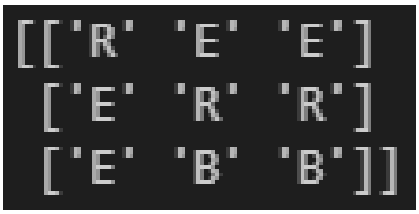
Project 2

Deliverable 1:

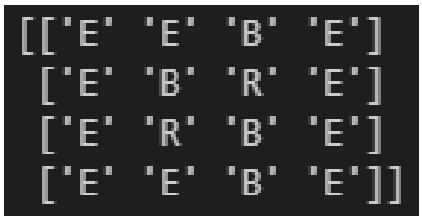
I initialized a nxn grid and filled it with the correct amount of random empty spaces first. After populating my grid with the correct amount of different colored agents, I reached the ambiguous part of the model. In order to check for neighbor satisfaction and solve the ambiguity of step 2, I iterated over the entire grid using two for loops. If the location was empty, I immediately skipped it. Overwise, I checked the neighbors and added all of the unhappy agents to a list. Then I created a while loop that continued to iterate while there were still agents in the unhappy list. The current agent was moved to a random empty location. If the agent was happy, the program moved to the next agent in the unhappy list. If the agent was still unhappy in the new location, the program would add the agent back onto the unhappy list and iterate again. All examples below were run with red_blue_split = 0.5, t = 0.3, and pct_empty = 0.8.

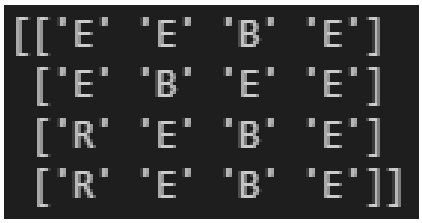
3x3 Example:



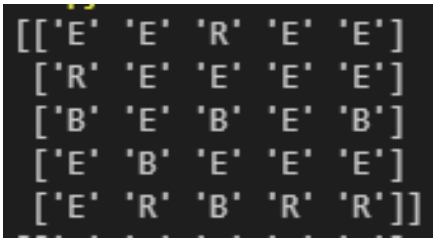


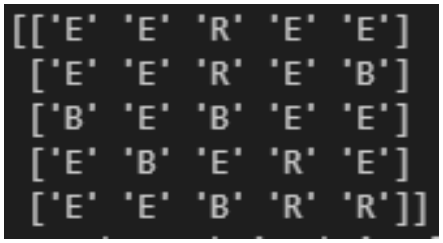
4x4 Example:





5x5 Example:

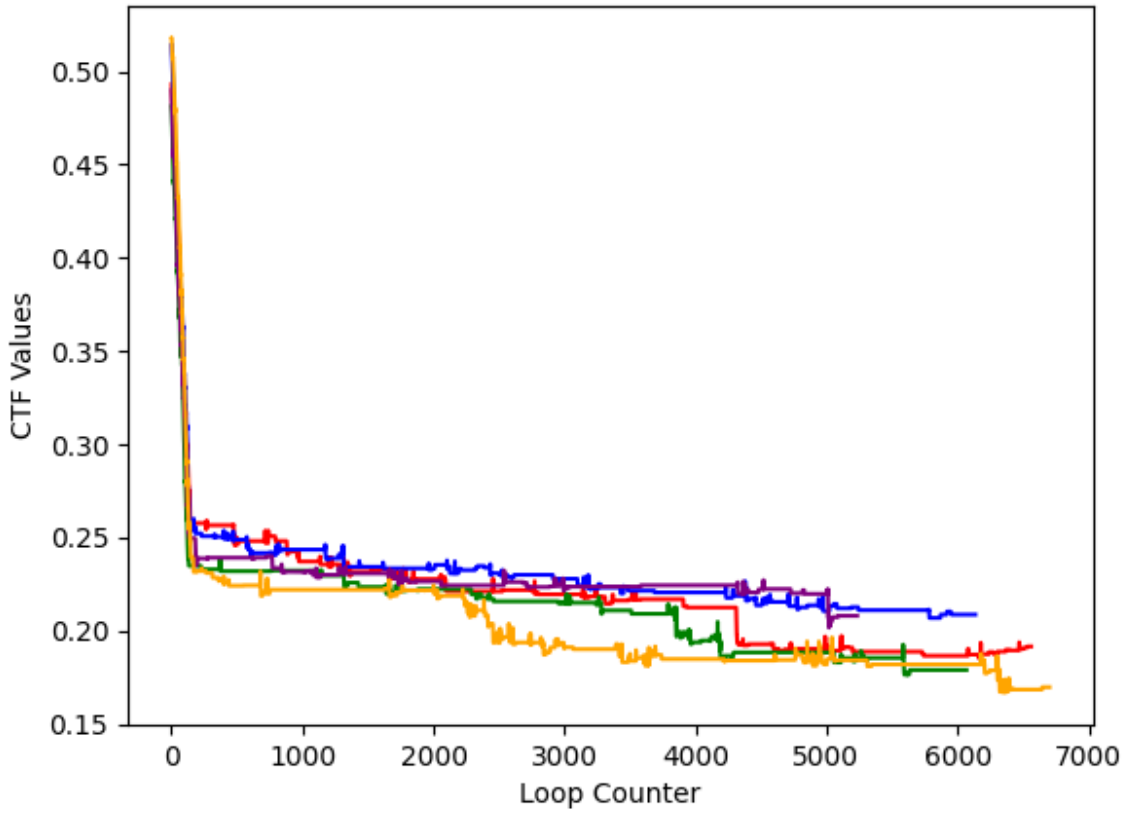




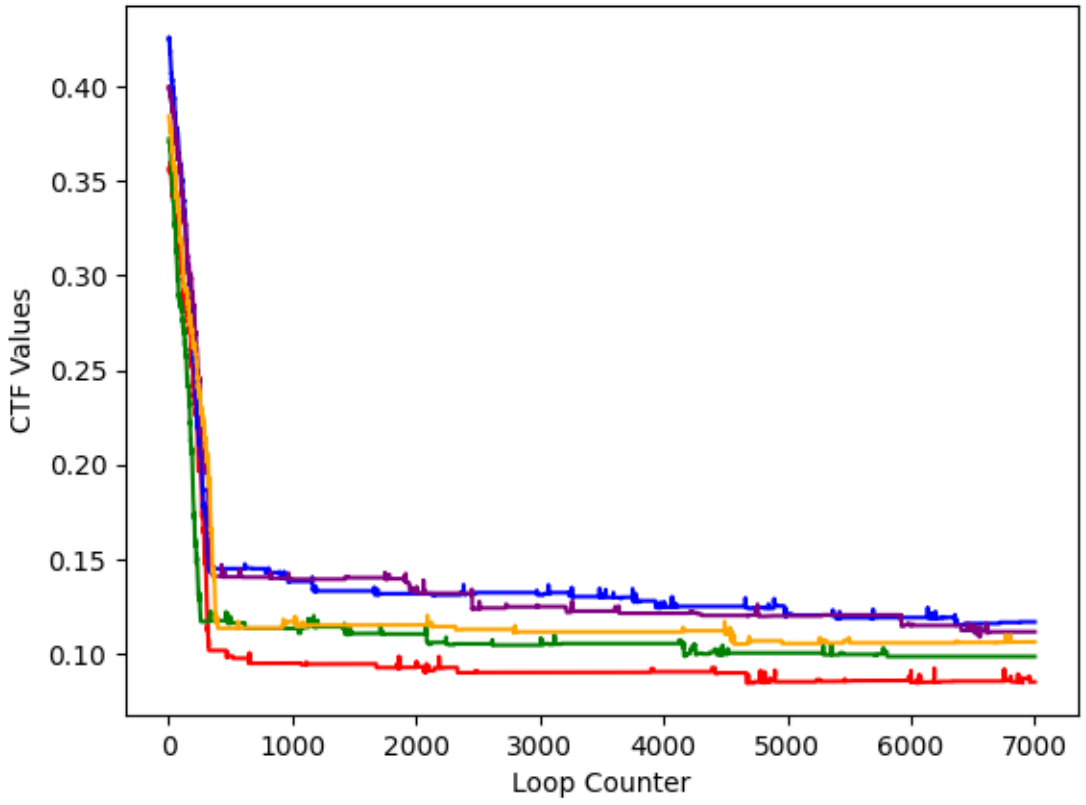
Deliverable 2:

I have three plots to show how the CTF changes over the course of several simulation runs for different parameter values.

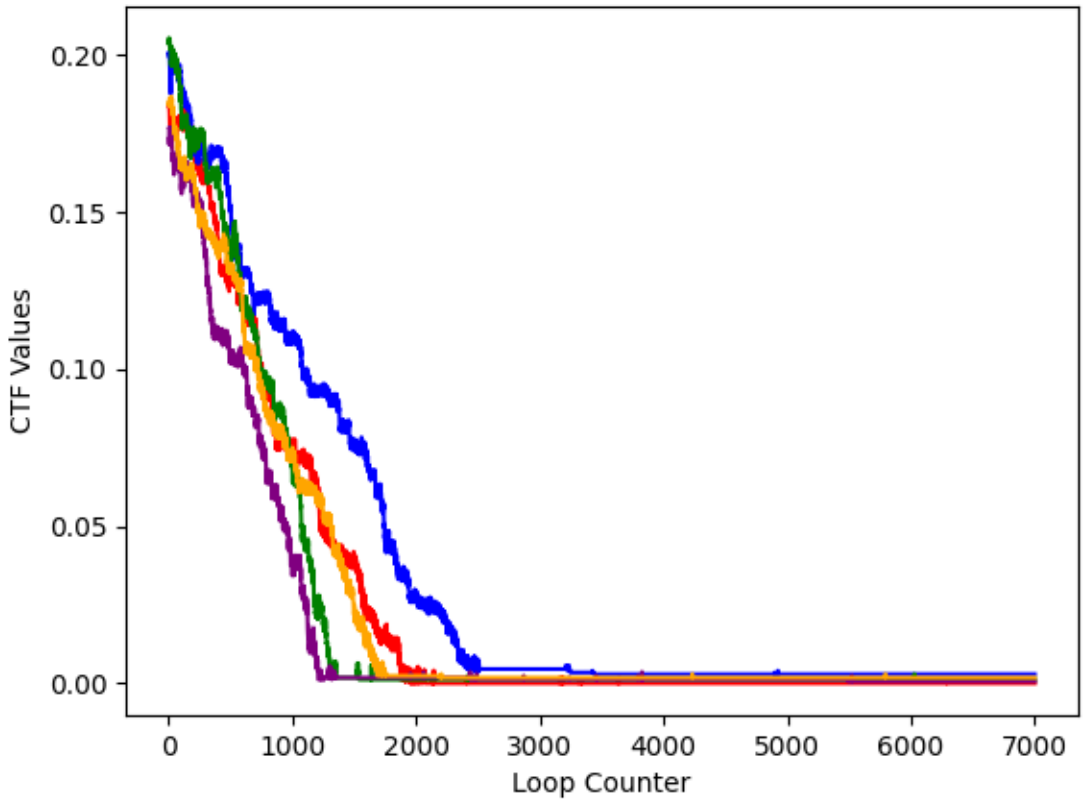
n = 30
red_blue_split = 0.5
t = 0.3
pct_empty = 0.8



n = 30
red_blue_split = 0.4
t = 0.4
pct_empty = 0.6



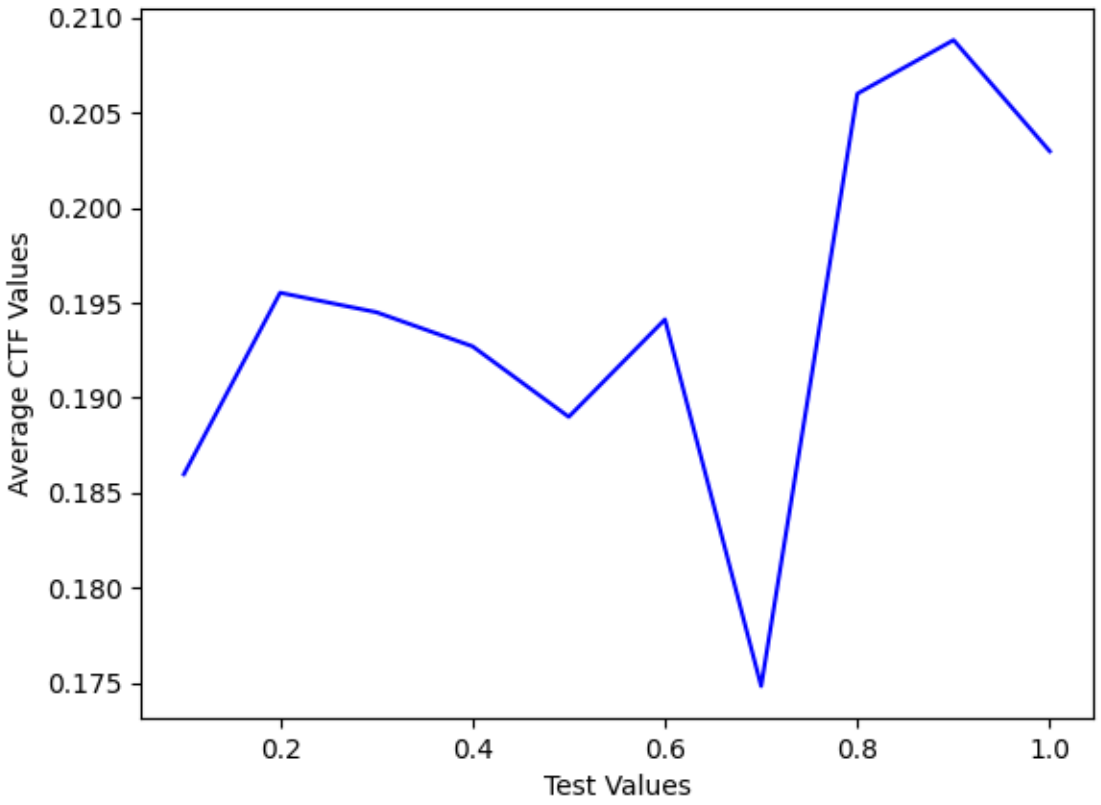
n = 30
red_blue_split = 0.2
t = 0.7
pct_empty = 0.4



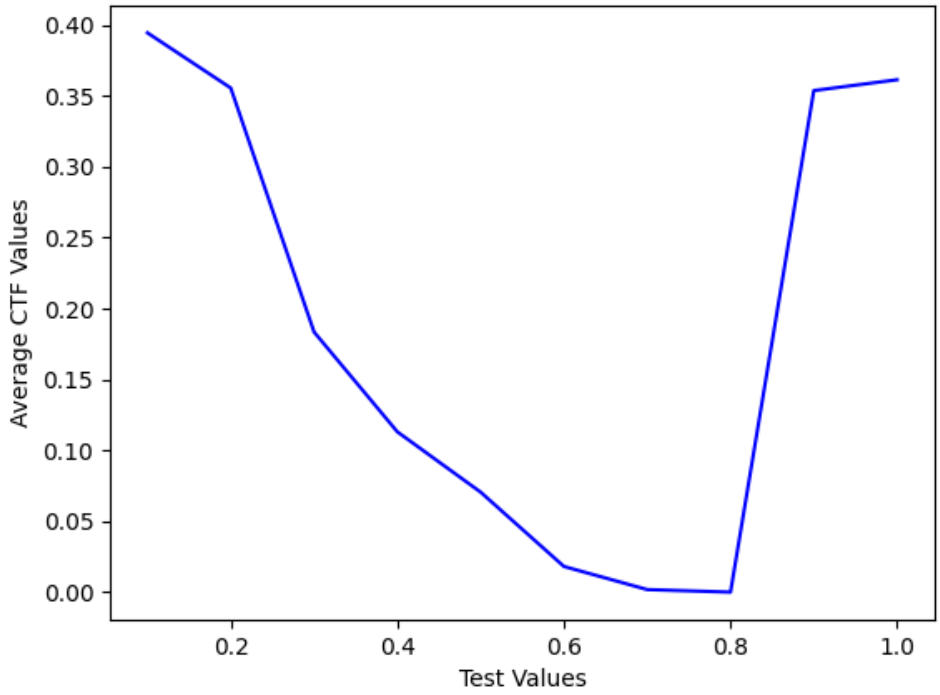
Deliverable 3:

Last, I have three plots depicting how the average CTF changes as a function of red_blue_split, t, and pct_empty.

Function of red_blue_split:



Function of t:



Function of pct_empty: