30sec: Main Idea -> finding a Majority function, when applied it to the 3 colored case , does doing similar things to the GKL rule ,which decides on the majority color and exhibit some phase transition behaviours.

20sec: I hypothesized a rule, which searches for the most common neighbours. Here is what I did for the 2 color case, and we can see in this plot here, the system has a behavioural change at .5 here, but the system does not reaches all red or all yellow. 2 color majority, 2d plot

30sec: We can do the same for 3 colors, but if we have to plot the system entirely, I would need to have a 4d graph, red, yellow and blue of different proportions against time. against

Here we can see the crossing points of the two surfaces, but it doesn’t really show a behavioural change in this case. There are some other rules which uses the hypothesized majority function, and here are some of the examples.

10sec: I have also performed some other searches. But because there are about 3^27 or more rules, it will be computationally too expensive. So I randomly picked some interesting rules which we can see here.

30sec: So to conclude, there is much to be done. I hope I can improve and extend on this topic in the future, like generalizing it to more than 3-colors. This is the end of my presentation and thank you everyone for listening.