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Multi-Agent Modeling

Final Project Status Report

I have now implemented the hubnet model (I still have to be able to handle errors in message passing, but that should be simple). I believe at this point I am finished with design and implementation and may be finished with data collection. For that reason this status update is quite short and less comprehensive than the others in terms of questions addressed, since very little has changed in terms of the actual model since last week.

I say I “may be finished” with data collection because I have not yet analyzed my data and my decide to perform further investigations, but I believe I have captured a fairly comprehensive set of the permutations of the parameters I was intending to vary. I am not entirely sure how to analyze my data as I have never analyzed this type of data before, but will be meeting with the TAs and reading more in the book to understand what analyses to perform and how to perform them.

In the HubNet model, turtles who were previous caught stealing move, then everyone else moves, then everyone decides what to do. Turtles can move anywhere on the screen; location is selected by clicking. If turtles do not respond quickly enough then they default to doing nothing. Other rules are implemented as in the standard model. There is a top-level slider setting the probability of getting away with stealing that is controlled by the administrator. Currently I may have too many reporters exposed to participants; I have to figure out exactly what to expose and what to keep hidden.

What remains at this point is to analyze the data and design and write the paper. Looking at individual runs, it seems (unsurprisingly) that the more likely turtles are to get away with stealing, the more stealing is selected for as a behavior. Surprisingly, it seems as though there is a bell shaped effect for mate-threshold, where if the threshold is too low or too high it selects for stealing behavior, but there is a wide range in the middle where it selects for protecting. I need to examine this finding in greater detail (it may not exist at all; I have observed it anecdotally). I still need to look into relevant game theory and evolutionary morality and altruism studies.