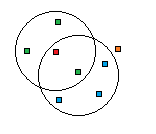
09 May – 23 May

The main accomplishment for this week was implementing communication between agents in the simulator. Agents are able to send and receive messages between all agents that are within their pre-defined communication radius. Additionally, agents can create a daisy chain to pass information. The maximum length of the daisy chain is currently 1 intermediate agent, but this parameter is easily changed.

 This type of daisy chain is shown in the illustration below. The red agent can exchange messages directly with the green agents. Additionally, any information the green agent in the overlapping radii receives from the blue agents it can pass on to the red agent. The orange agent cannot currently communicate with the red agent as its information would have to go through a blue and a green agent to reach red. The idea behind this limit is that the more agents that information passes through, the less reliable it likely is. The proper length limit depends on a number of factors and can be determined experimentally.

The message format is currently a vector of integers containing twice as many elements as there are agents. This can be thought of as *n* pairs of values with the first being an identifier for the target that is being engaged by a given agent and the second being a counter that shows how many agents that information has passed through. Currently, the agents accept the information that has the lowest counter though a voting system could be implemented in which the votes of agents with short chains are given more weight.

This message format makes the assumption that the agents have a certain amount of common knowledge. In particular, they have to agree on unique identifiers for all of the agents and targets. These aren’t unreasonable assumptions, but need to be kept in mind as the project progresses.

Dr. Brink had each of the students who are here so far give presentations on Wednesday about what our individual projects are. During his feedback portion, one thing he mentioned was utilizing GPUs. One avenue that might be worth considering, thinking about the John Rust paper here, is using this stochastic method for discrete decision processes in parallel and voting on the action to take. I am still working through that paper, but this problem definitely qualifies as a DDP as described, so I think it will be very useful.