Model Proposal

This ABM is a simulation-based, forward-in-time, application of the scientific process. Assume that we have a population of N agents. Reality is represented by a curve and, in a network of agents, we assume that there is a Dominant Method that tries to represent that curve. Agents can test the reality curve with known different methods, with various levels of complexity. They then sample from the world and confirm or disconfirm the tested model. At the start, we have a determined number of agents and a pool of methods that agents can choose from. Our goal is to see how agents spread their chosen method, until they reach a consensus.

In this model, samples are a number from determined range, that can give a different image depending on the model chosen to input them. This process repeats in different time steps and at each step, we choose two agents at random to interact. But during the simulation, agents chose at random one of the different methods in the method pool. We call this, 'decision time'. All the methods are chosen at random by the agents. They then chose a method to input the sample and read the corresponding image. If the image is not the correct one, they dismiss the result and inform the following agents that sample/model combination is incorrect. And so, no further agents use that combination in the future. Agents then test all the possibilities until they have confirmed which model represents correctly all the images.

Example: We start with a population of 100 agents, they have 5 models that they can choose, where to test the available 20 samples. An agent chooses a sample to test. They then chose a method to input the sample and read the corresponding image. If the image is not the correct one, they dismiss the result and inform the following agents that sample/model combination is expendable. And so, no further agents use that combination in the future. Agents then test all the combinations until they have confirmed which model is the correct one. To determine the combinations of image and model, we upload a csv table that has the intended results.

We record at each time step the population of agents and what method are they choosing at the moment. The idea is to export a csv file that can show for each time step:

1. each agent considered
2. what method did the choose (method 1, 2, 3, 4 or 5)
3. what sample they've chosen to test
4. the result of the test (if the image is correct or not)

The idea though, will be to support a network connection for the population of agents under a small world network, to better simulate the asymmetry in method sharing. This means every agent is eligible for pairing with any individual on every given round. We only stop when no further belief-revision can occur, when the best payoff model is eventually achieved. We need to make different simulations in various agent networks. We can use the different networks available in NetworkX for python (for example connected_watts_strogatz_graph) The example of the networks is given in the code at: https://networkx.org/documentation/stable/reference/generators.html An example of a ABM that also uses this kind of networks in python is presented at https://github.com/ageil/fakenews

Also, we need to do a simulator code, where we can change the variables for different simulation rounds. The variables that we can change for each experiment are the following:

- The number of agents in the population
- The number of methods in the method pool
- Chose the Current Method for the start of the simulation
- The length of the simulation
- The type of network used for connecting the agents

Once these values are set, we run a simulation, which will produce the csv file and export it.

To determine the pair results of image and model, we upload a csv table that has the intended results.