

Communication protocol for the Cat and Mouse Simulator

May 12, 2006

The first message sent by the agent is a `GETTASK` message from the agent, which returns the number of state variables and the number of action variables for this environment. Then, a fixed number of episodes is run, after which the environment disconnects.

At the start of each episode, the agent sends the message `INIT`. The environment sends back a message starting with the word `START`, followed by the number of states and the two dimensions of the grid. Then, the grid is sent as an array in which 0s mark obstacles. After this follows the description of the state, which contains the position of the mouse, in x and y coordinates, the positions of the cat, and the position of the cheese (all in x and y coordinates).

Then, the agent uses the message `STEP` to make a step. This message contains the dimensionality of the action vector (in this case, 1), and the action. The environment responds with a message containing the reward, a termination flag (1 if the episode has ended, 0 otherwise), the number of state variables sent (in our case, always 6) and the state variables (position of mouse, cat and cheese).

If anything unexpected happens, the environment closes the socket and terminates the session.

The cat is currently following a hand-coded policy that moves it towards the mouse. A different policy may be used for the cat in the competition.