**Intentional Sequence Evaluation Directions**

In this evaluation, you will be predicting the behavior of six different reinforcement learning agents navigating an environment to find a key, open a door, and get to a goal green square. You will examine 10 intentional sequences of behavior per agent. Each of the 10 sequences are associated with a GIF file and text description of the behavior. After taking time to understand the behaviors of an agent, you will predict how they would act in 50 scenarios. After these predictions are made, you will be asked which of the intentional sequences were the most informative to your understanding of the agent’s decision-making process to enable you to predict their behavior (ranked in-order).

Python Version: 3.9.6

1. Begin by cloning the following git repository <https://github.com/ereilly89/intentional-sequence-xai>

git clone <https://github.com/ereilly89/intentional-sequence-xai>

1. Pip install the custom gym-minigrid package.

pip install git+https://github.com/ereilly89/gym-minigrid@f4e582216cfdfe643a4eb5b2268da06c635fa06e

1. You will be examining sequences of agent behavior for six different agents. Navigate to the ‘intentional-sequence-xai/Results/intentional’ directory to view the intentional sequences for Model\_A, Model\_B, and Model\_C. Navigate to the ‘intentional-sequences-xai/Results/random’ directory to view the intentional sequences for Model\_D, Model\_E, and Model\_F.
2. For the first agent evaluation, only worry about examining the behavior of Model\_A. Take 5-10 minutes to try and understand the capabilities and limitations of the agent based on the behavior shown in each of the 10 intentional sequences.
3. Navigate back to the ‘Intentional-sequence-xai’ main directory.
4. To predict the behavior of Model\_A, run the following command.

python3 -m scripts.predictability --env MiniGrid-DoorKey-5x5-v0 --model Model\_A --episodes 50 –seed <pick a number>

For the ‘—seed’ parameter, choose an integer.

You will have to “pip install” an additional package each time you get a no module found error.

1. The environment will load with the first scenario. Use the following commands to mimic what you think the agent would do in each situation to get to the goal.

Turn Left: left arrow key

Turn right: right arrow key

Move forward: up arrow key

Pick Up (key): ‘page up’ key

Drop (key): ‘page down’ key

Open (door): space bar

1. After predicting 50 games for an agent, you will be asked which intentional sequences were the most informative to your understanding of the agent’s decision-making process, starting with the most informative. You will be repeatedly asked until you have ranked each of the 10 sequences for the agent.
2. Repeat steps 4 through 8 for Model\_B, Model\_C, Model\_D, Model\_E, and Model\_F.
3. Once you’ve completed the evaluation for each of the six models, email the following four csv files to [reillyem11@uww.edu](mailto:reillyem11@uww.edu).

Files Expected Observations

/Results/intentional\_correlation.csv 6 models x 10 each = 60 observations

/Results/intentional\_evaluation.csv 6 models x 50 each = 300 observations

/Results/random/correlation.csv 6 models x 10 each = 60 observations

/Results/random\_evaluation.csv 6 models x 50 each = 300 observations