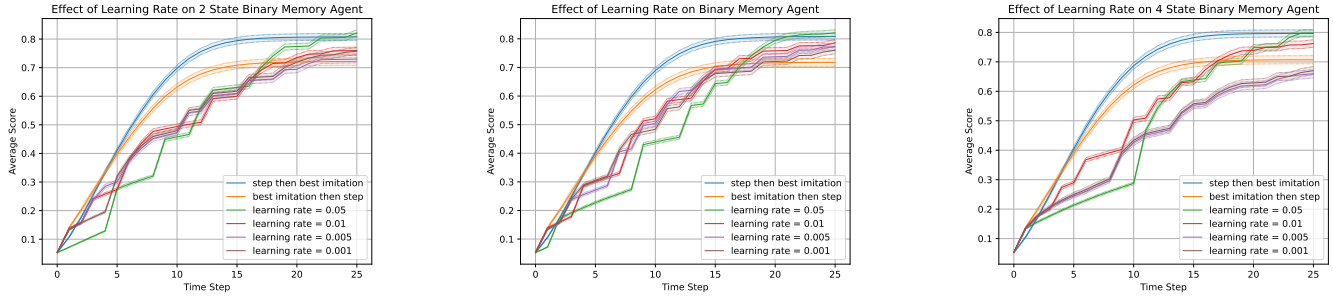
Notes

Constants

- deadline of 25
- regular graph
  - 30 nodes
  - 5 degrees per node
- trained over 10,000 episodes
- tested over 1,000 episodes

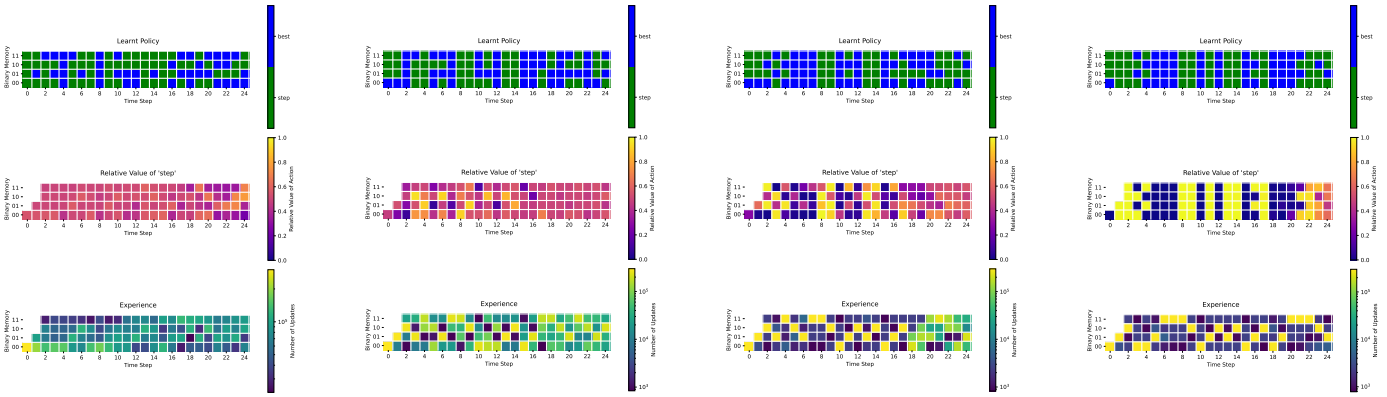
First Batch

The first batch of runs are illustrated in Figures 1, 2, 3, and 4. From these runs, a rough pattern is visible: an increase in the average of the average node score with an increase in learning rate. The size of memory doesn't appear correlate with the performance of agents.



(a) Memory Size of 2 bits (b) Memory Size of 3 bits (c) Memory Size of 4 bits

Figure 1: The Average and 95% confidence of the Average Node Score at each time step.

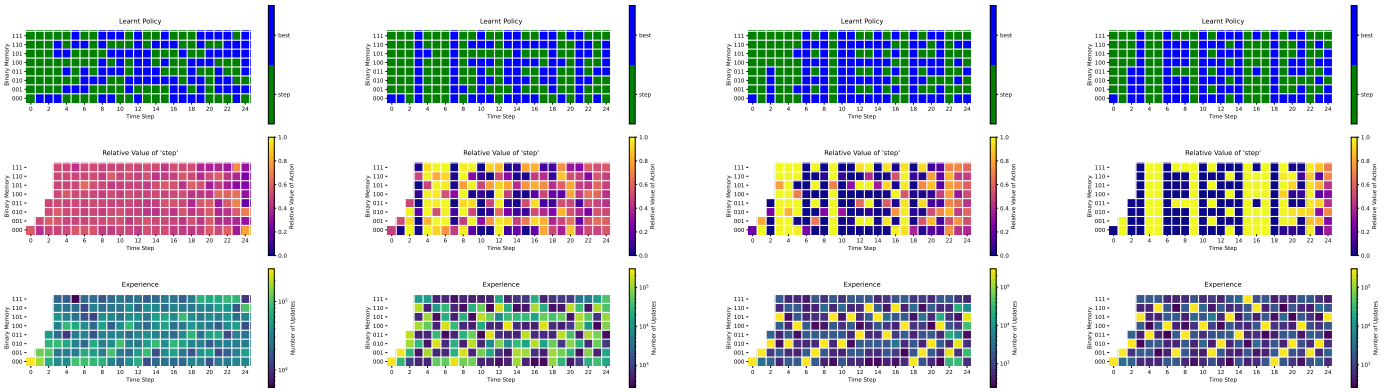


(a) Learning Rate of 0.05 (b) Learning Rate of 0.01 (c) Learning Rate of 0.005 (d) Learning Rate of 0.001

Figure 2: The policy, experiance, and relative value of the action 'step' over best for a binary agents with a memory size of two bits and varying learning rates. The most recent timestep is the least significant bit of the memory. The action 'best' is represented by a '1' and 'step' by a '0'.

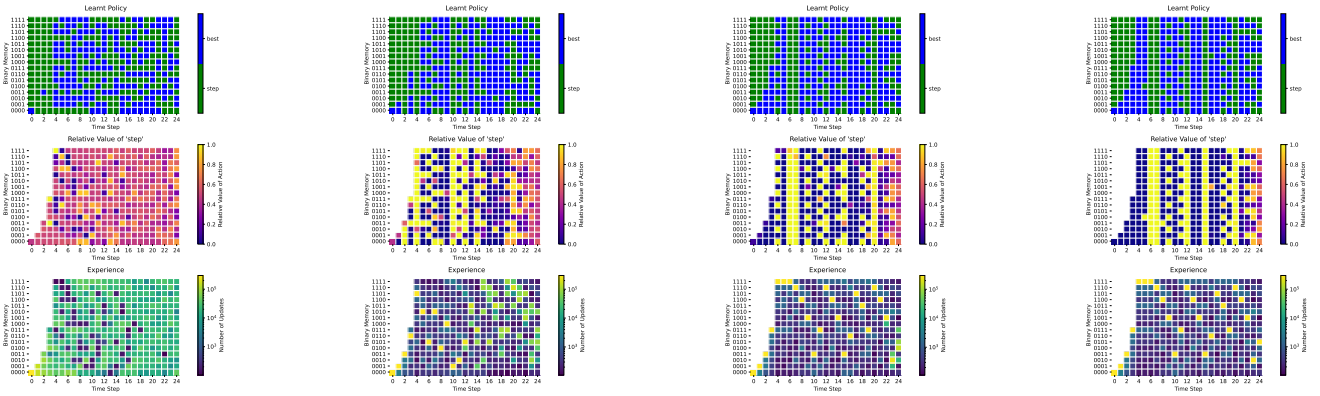
Second Batch

The second batch of runs are illustrated in Figures 5 and 6. They explore a higher learning rate for a memory size of 2 bits.



(a) Learning Rate of 0.05 (b) Learning Rate of 0.01 (c) Learning Rate of 0.005 (d) Learning Rate of 0.001

Figure 3: The policy, experiance, and relative value of the action 'step' over best for a binary agents with a memory size of three bits and varying learning rates. The most recent timestep is the least significant bit of the memory. The action 'best' is represented by a '1' and 'step' by a '0'.



(a) Learning Rate of 0.05 (b) Learning Rate of 0.01 (c) Learning Rate of 0.005 (d) Learning Rate of 0.001

Figure 4: The policy, experiance, and relative value of the action 'step' over best for a binary agents with a memory size of four bits and varying learning rates. The most recent timestep is the least significant bit of the memory. The action 'best' is represented by a '1' and 'step' by a '0'.

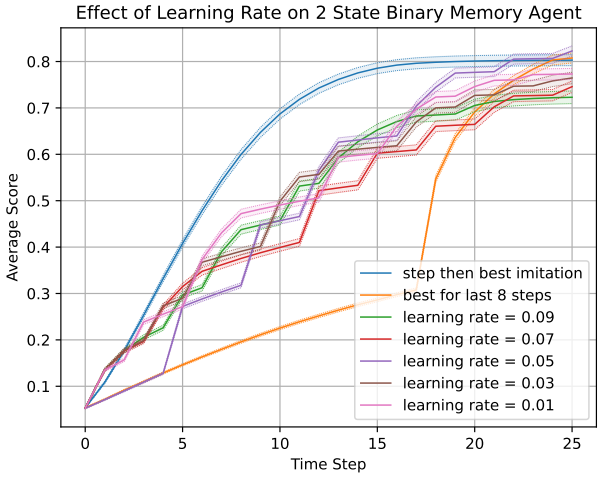
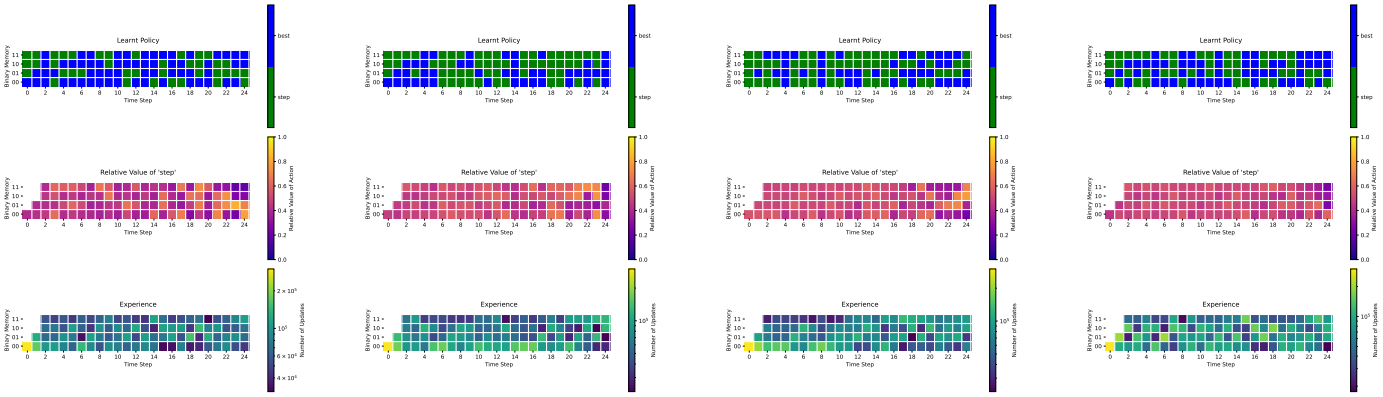


Figure 5: The Average and 95% confidence of the Average Node Score at each time step.



(a) Learning Rate of 0.09 (b) Learning Rate of 0.07 (c) Learning Rate of 0.05 (d) Learning Rate of 0.03

Figure 6: The policy, experiance, and relative value of the action 'step' over best for a binary agents with a memory size of two bits and varying learning rates. The most recent timestep is the least significant bit of the memory. The action 'best' is represented by a '1' and 'step' by a '0'.