Koç University

COMP341

Introduction to Artificial Intelligence

Assignment 4

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64045

Written Q1:

In question 3, we update our beliefs based on the knowledge about ghosts. Probability of next position of ghost is not related to old position, we don’t change any value. Therefore, probabilities settle even though the ghost is moving.

Written Q2:

To find the newest probability we multiply old beliefs and new probability. I found new probability by using getObservationProb method which give me probability which is not dependent on positions. So, in one trial we know position and the second one we don’t know the positions.

Written Q3:

When we first run the tests, we can observe that all grid squares are likely to have ghosts. However, as time passes and we update our beliefs with our observations, the probability in the grid squares drops to zero and then we initialization the particles. It runs slower than before when I change the particle count, but initialization have not changed.

Written Q4:

In approximate inference, we cannot know the next positions of the ghost. But the probabilities of the ghost's subsequent positions are more known in exact inference. However, finding probabilities in approximate inference is much faster than exact inference.

We can conclude that the more particles we have, the more precise the approximate inference will be.

Written Q5:

In initialization part, I used the permutation of legal positions and used it as particles. In observe update part, I used a DiscreateDistribution. Re-initialization part did not changed. In elapse time part, I used new particles by using old particles.