

## Project #3

In this assignment you will have to use Unity to implement/reproduce "Bust the Ghost" game.

Use Unity to create a 8x 20 grid

Have the ghost be placed in one of the cells according to a prior distribution of Ghost over location  $P(\text{Ghost})$ . Use a uniform distribution to start with.

when clicking a cell, the user/player gets a color red/green/orange/yellow depending on how the far is the ghost is from the clicked cell.

On the ghost: red

1 or 2 cells away: orange

3 or 4 cells away: yellow

5+ cells away: green

For this, define and use a conditional probability distribution  $P(\text{Color}/\text{Distance from Ghost})$ . Use this probability to decide on the color to display.

After each click "t" the Posterior Probability of the Ghost  $P(\text{Ghost}/\text{Color})$  should be updated and displayed on the cells using Bayesian inference

$P(\text{Ghost}_t) = P(\text{Ghost}/\text{Color}_t) = P(\text{Ghost}_{t-1}) * P(\text{Color}/\text{Distance from Ghost})$ .

$P(\text{Ghost}_0) = P(\text{Ghost}/\text{Color}_0) = P(\text{Ghost})$  the prior probability.

Do not forget to Normalize! Yes you have to.

User can decide to "bust" a cell if ghost is in the cell; the player wins otherwise he/she loses.

### **Deliverables:**

- Working demo posted on Youtube
- Corresponding code posted on Github with a small report focusing on probabilistic inferencing