



Assignment 3: Bust The Ghost

Mohammed Khalil Ghali: 76368
Nouredine Amraoui : 81051

Dr. Tajjeeddine Rachidi

Link to my GitHub Repository:

<https://github.com/khalil-ghali/Bust-The-ghost>

In this project, we play a game in which we click a cell on the grid and a color appears (red may indicate the position of the ghost, orange one or two cells away, yellow three or four cells away, green five or more cells away) that will take us to the ghost's location and bust it to win the game.

In this game we will use 5 C# scripts: Game.cs which will contain all the functions necessary to run the program, Tile.cs containing the grid variables, WinLose.cs which contains the rules to win or lose a game, ProbabilityText.cs as a text displaying function and Gameoverscreen.cs to generate the game over image.

The script Game.cs contains a function to place the ghost at a random location, a function to take a color and a distance as inputs and returns a probability, a function that places all the colors in accordance with the joint probability function, a function that checks the last clicked cell and changes all probabilities using the provided Bayesian equation $P(\text{ghost}) = \frac{\text{JointProbability}(\text{color}, \text{distance}) * P(\text{ghost}|\text{click})}{P(\text{color})}$ with $P(\text{color}) = \frac{\text{Numberofcoloredcells}}{160}$ and $P(\text{ghost})$ defined from the joint probability table. With 160 as the multiplication of our $x:20$ and $y:8$ so when we are close the probabilities gets higher as we can see in the following screenshots.

The win or lose is determined by getting the last checked position and comparing it to the ghost position.

Bust the Ghost

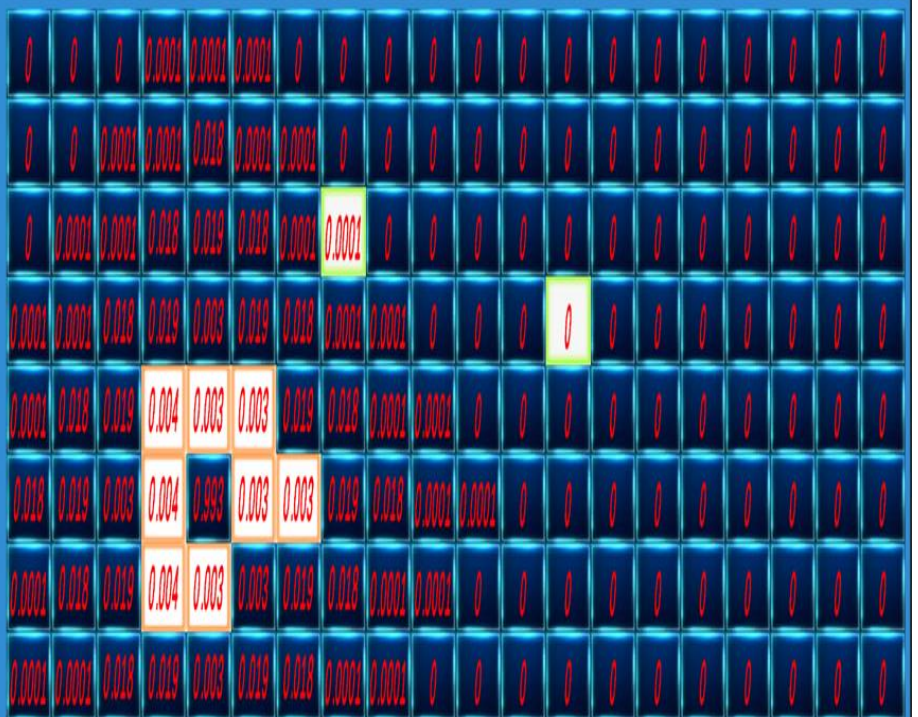


Figure1: distribution of probabilities across the grid.

Bust the Ghost



0.0003	0.0004	0.0004	0.0005	0.0001	0.0005	0.0004	0.0004	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
0.0004	0.0004	0.0005	0.0006	0.018	0.0006	0.0005	0.0004	0.0004	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
0.0004	0.0005	0.0006	0.0008	0.019	0.0008	0.0006	0.0005	0.0004	0.0004	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
0.0005	0.0006	0.0008	0.001	0.003	0.001	0.0008	0.0006	0.0005	0.0004	0.0004	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002
0.0006	0.0008	0.001	0.0016	0.003	0.0016	0.001	0.0008	0.0006	0.0005	0.0004	0.0004	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002
0.018	0.019	0.003	0.003	WIN!	0.001	0.003	0.019	0.018	0.0001	0.0001	0	0	0	0	0	0	0	0	0
0.0031	0.0031	0.0031	0.0031	0.0417	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031
0.0016	0.0016	0.0016	0.0016	0.003	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016

Figure 2: Busting the ghost when we see the highest probability

Bust the Ghost

GAME
OVER

0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0005	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0005	0.001	0.0005	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0005	0.001	0.001	0.001	0.0005	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002
0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0005	0.001	0.001	LOSS	0.001	0.001	0.0005	0.0005	0.0002	0.0002	0.0002	0.0002
0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0005	0.001	0.001	0.001	0.0005	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

! You busted the wrong cell ! GAME OVER !

Figure 3: game over when busting the wrong cell.