

AI / A* Toolbox

Duncan Hall



Figure 1

Figure 1 shows h values for each space on the board (that is, the number of orthogonal moves from the cake, ignoring impassable terrain). Notice that all squares are ranked in an even gradient sloping from north-west to south-east, even those inside the dead-end of lava.

Figure 2 shows the g values for each space (the minimum number of moves required to get to that space from the start space). Notice how the highlighted square displays $g = 6$ because of the lava to the west.

Figure 3 shows the sum of g and h for each space (the f value). The fastest path from Paul to the cake is along the path with the lowest values.



Figure 2



Figure 3

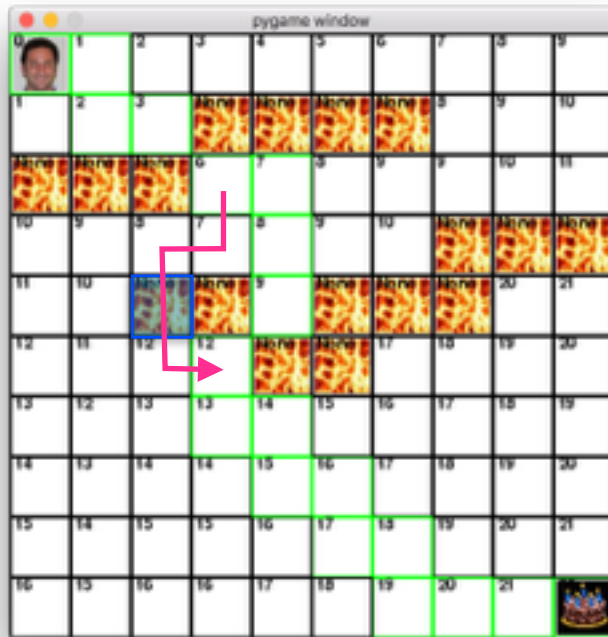


Figure 4

Figure 4 shows Paul's newfound diagonal pathing skillz, evaluating the sacrifice of energy to move in that way to save energy on the whole. Removing the highlighted lava makes the second diagonal movement wasteful, as he can travel the route designated by the pink arrow and reach the point where it merges with the green plotted path and save one point of energy.

In Figure 5, Paul learns to jump across a patch of lava for the cost of 8 energy, which is the only way for him to traverse the barrier which runs east-west in the middle of the map. He opts to use his diagonal dance moves to get past the first arm of lava though.

Figure 6 shows Paul navigating a swamp as well (costs 3 energy just to enter)! If the highlighted lava is removed, he instead opts to navigate around on the pink path, again saving one energy.



Figure 5

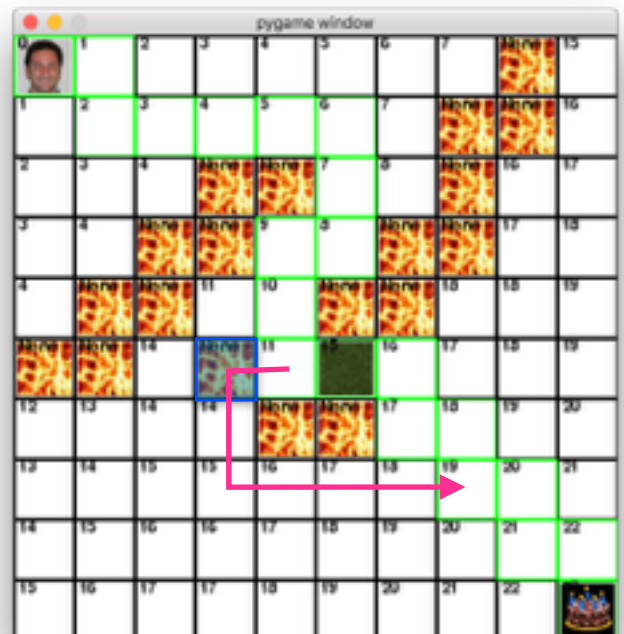


Figure 6