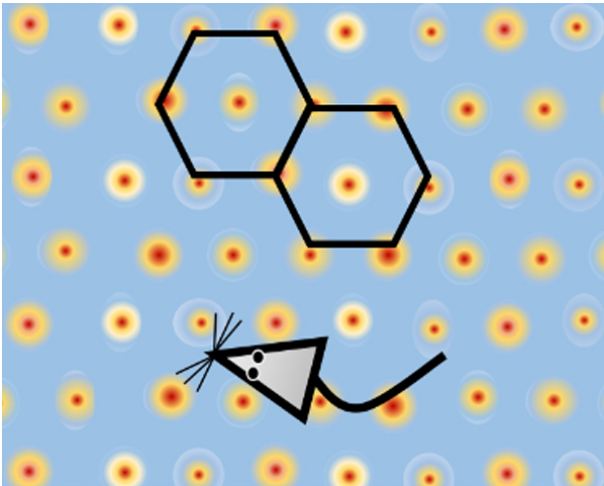


## Towards a human-like approach to path finding

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Path finding for autonomous agents has been traditionally driven by finding optimal paths, typically by using  $A^*$  search or any of its variants. When it comes to simulating virtual humanoids, traditional approaches rarely consider aspects of human memory or orientation. In this work, we propose a new path finding algorithm, inspired by current research regarding how the brain learns and builds cognitive maps. Our method represents the space as a hexagonal grid with counters, based on brain research that has investigated how memory cells are fired. Our path finder then combines a method for exploring unknown environments

while building such a cognitive map, with an  $A^*$  search using a modified heuristic that takes into account the cognitive map. The resulting paths show how as the agent learns the environment, the paths become shorter and more consistent with the optimal  $A^*$  search. Moreover, we run a perceptual study to demonstrate that the viewers could successfully identify the intended level of knowledge of the simulated agents. This line of research could enhance the believability of autonomous agents' path finding in video games and other VR applications.