

Updating Cozmo's Environment Exploration Algorithm

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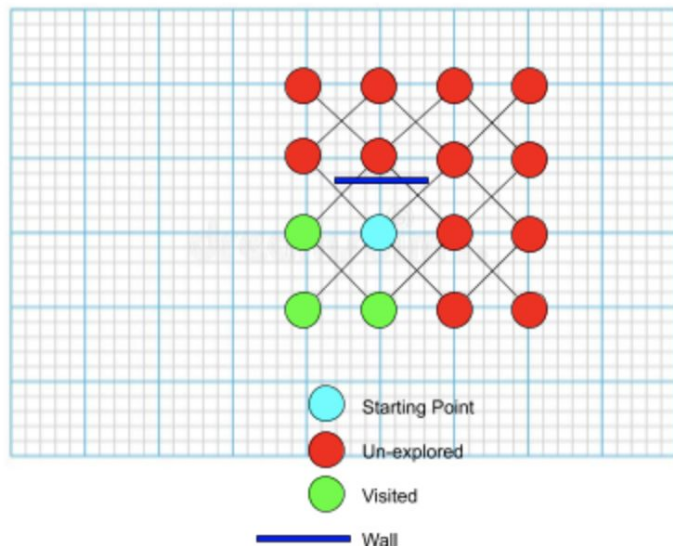
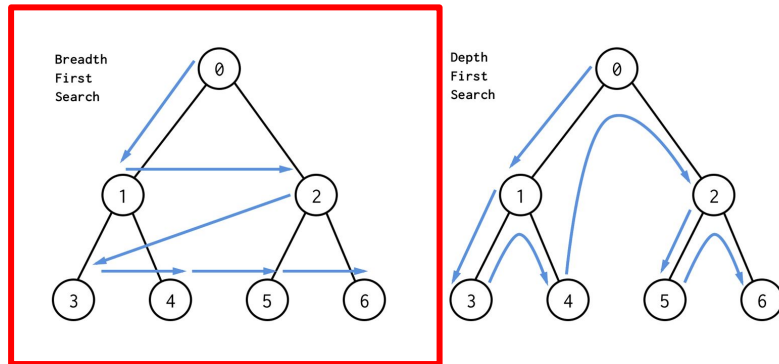
Our Problem

- Cozmo's current environment exploration algorithm is highly inefficient
- We worked to create an environment exploration system that efficiently reduced Cozmo's uncertainty about his environment



Our Solution

- Turn the environment into a graph
- Program Cozmo to follow a basic graph traversal algorithm
 - Looked at DFS and **BFS**
- Add heuristics for searching behind obstacles



Video Demo: Exploring an Empty Space



Video Demo: Dealing with Obstacles



Moving Forward

We hope to implement the following functionalities moving forward:

- Deal with scenarios where cozmo cannot access a node
- Work on cozmo's avoidance of obstacles without Aruco markers
- Graph visualizer
- Further optimize the exploration
 - Increased speed
 - Less doubling back

