Dijkstra's Algorithm

Dijkstra's algorithm is a graph based algorithm that finds the shortest distance between two nodes as a shortest path tree. The world is stored a graph made on nodes with connections between some them weighted by a heuristic like distance .

Algorithm

All the nodes of the graph are initally assigned a weight of infinity except the starting node with a weight of zero and added to a priority queue sorted form shortest to longest path distance.The algorithm starts at the starting node. For every node in the queue, it finds the nodes it is connected to and calculates the distance to the node through the current node. If the distance throught the current node is lower than the distance already assigned to it, the node is updated. Once all the connected nodes distances have been computed, the current node is marked as visited so as to prevent the algorithm from getting stuck in loops. The algorithm then proceeds to the next node from the priority queue until the algorithm reaches the end node as the current node at which point it has the found the shortest tree path or it runs out of unvisited nodes in which case there is no possible path.

Drawbacks

Dijkstra's algorithm lacks a high level heuristic of direction and can waste computation cycles if the nodes in the near proximity that form the shortest path tree are weighted higher as compared to those that don't.