Assignment 3 report

Jesper Wingren

[Jw223rn@student.lnu.se](mailto:Jw223rn@student.lnu.se)

1dt907

# Shortest path results

The shortest path problem is tested by two different algorithms, Dijkstra, and Bellman-Ford. Using my timeit class I test the time for different number of vertices and edges to see how each algorithm performs.

As seen from the results below the Dijkstra becomes faster with more vertices for the same number of edges which can see to be wrong but because it uses a priority queue dense graphs make the algorithm slower. Why Dijkstra’s gets slower when having a dense graph is because the priority queue can have a time complexity of O(V2) because it is repeating itself. Although because it uses a priority queue, and the Bellman-Ford doesn’t it is still much faster and the more edges and vertices the bigger the difference because of Bellman-Ford using a sort of brute force to solve the problem. The negative thing with Dijkstra is that it can’t handle negative graphs hence Bellman-Ford even if it’s slow can be useful in some special cases.

En bild som visar text, skärmbild, Teckensnitt, dokument

Automatiskt genererad beskrivning

## En bild som visar text, skärmbild, Teckensnitt, meny Automatiskt genererad beskrivning