Abdoul-Nourou Yigo

Special Studies

Dijkstra and Bi-Directional Dijkstra Shortest Paths Stimulation

The purpose of these tests is to perform some simulations such that we could evaluate the effectiveness of the Dijkstra and Bi-directional Dijkstra algorithms. From the results we got from our evaluation, we could observe that the Bi-directional Dijkstra algorithm outperforms the Dijkstra algorithm. The data used for the simulations could be found here: dataset.

Dijkstra Shortest Path

Cities / Regions	Average Time (s)	Number of Edges	Average Relaxed Edges
New York	0.639283	264346	153074
Colorado	1.08567	1057066	233857
California	4.51329	1890815	1027632
East	8.40382	3598623	1840309
NorthWest	2.70091	1207945	599395
West	15.5439	6262104	3379104
Central	36.0393	14081816	7050196
USA	63.254	23947347	12865636

Bi-Directional Dijkstra Shortest Path

Cities / Regions	Average Time (s)	Number of Edges	Average Relaxed Edges
New York	0.594644	264346	101960
Colorado	1.018666	1057066	160852
California	4.99819	1890815	898566
East	9.01328	3598623	1463160
NorthWest	2.6099	1207945	402074
West	15.505	6262104	2419398
Central	38.0035	14081816	5313059
USA	59.092	23947347	8016826