SHORTEST PATH FINDING ALGORITHM TO PREVENT STREET HARASSMENT

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Presentation of the team

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https://github.com/sneusar/ST0245-002

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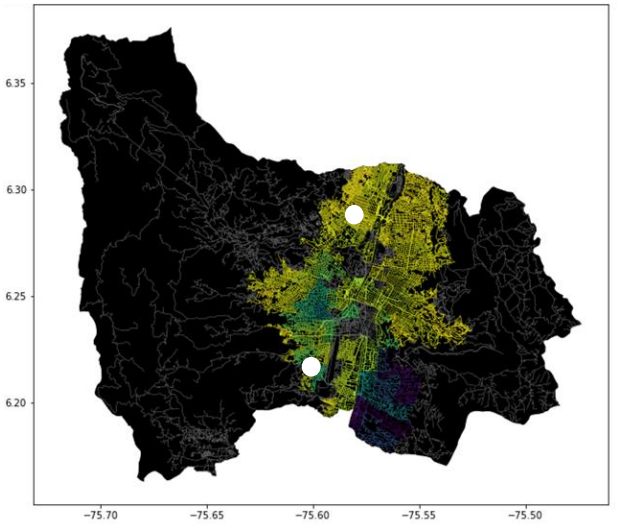
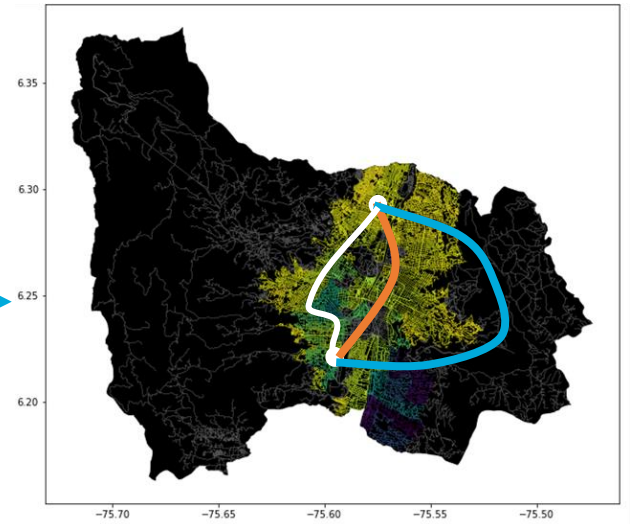
Problem Statement



Shortest path algorithm



Streets of Medellín, Origin and Destination

Three paths that reduce both the risk of harassment and distance

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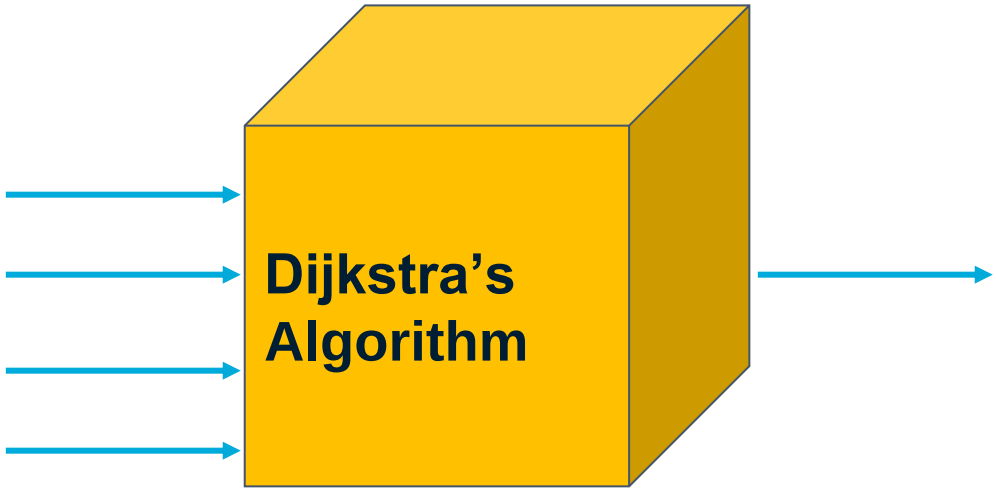
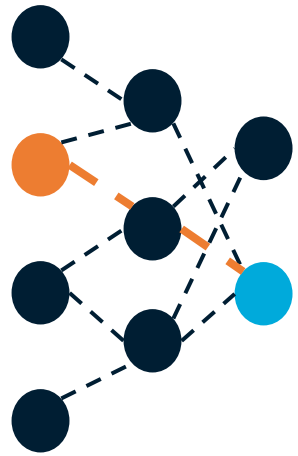
Solution Algorithm

Streets of Medellín, Origin and Destination

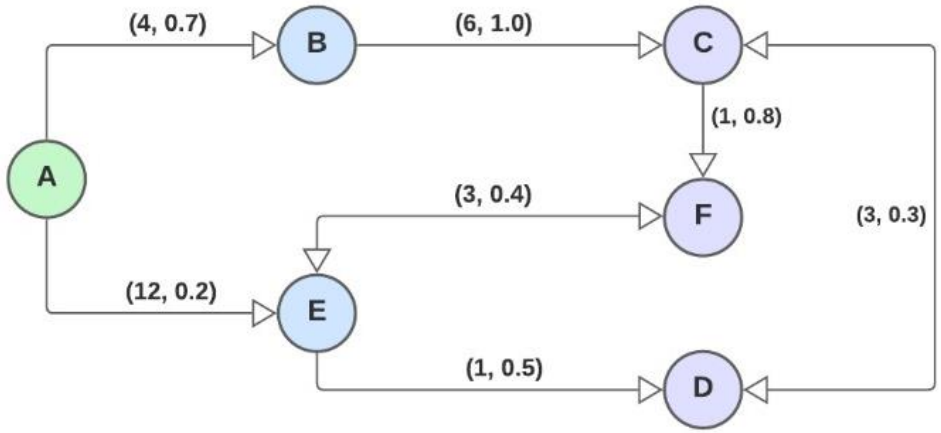




A path that reduces both distance and harassment

Explanation of the algorithm

Example execution: Origin: A, Destination: D



This dijkstra algorithm works with the average of length and harrasment risk.

As the algorithm stores the predecessor of the vertex, in other function we recollect all the predecessors to build the path, giving as result that the final path is: A -> E -> D.

The priority queue stores some values to choose the best posibility to traverse the graph. Those that remain are useless because we already found all posible routes in the graph, but as we push them after end that information will stay there.

Dictionaries

Vertex	Path	Cost
A	None	0
B	A	2.35
C	C	5.85
D	E	6.85
E	A	6.1
F	C	6.75

Priority queue

Information	1°	2°
From:	C	E
To:	D	F
Cost:	6.85	7.8

Dijkstra’s Algorithm to reduce both harassment risk and distance

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