

Presentation of the team





Alejandro
Rios
Leader of the
project



Marcela
Londoño
Designer and
programmer



Alejandro
Osorno
Designer and
programmer



Andrea
Serna
Literature review



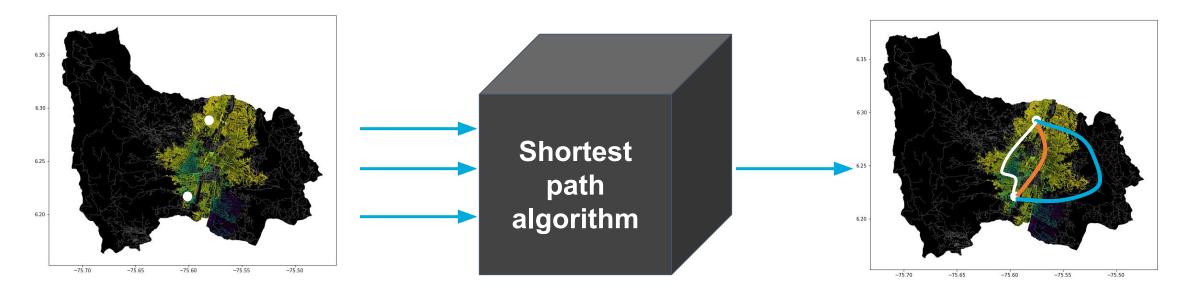
Mauricio
Toro
Data preparation





Problem Statement





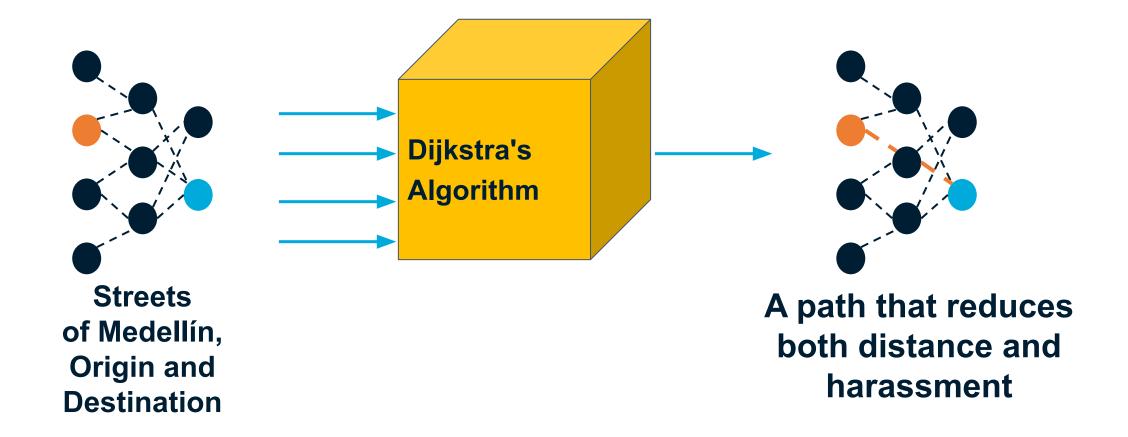
Streets of Medellín, Origin and Destination

Three paths that reduce both the risk of harassment and distance



Solution Algorithm

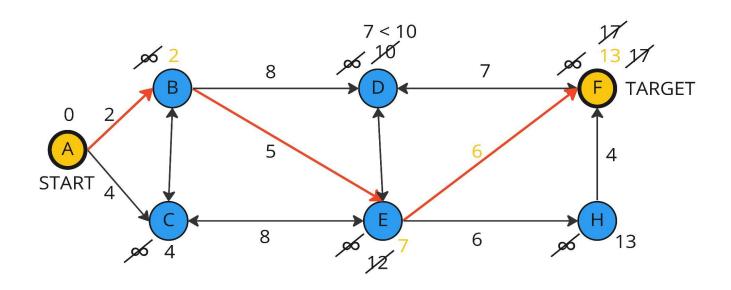






Explanation of the algorithm







Dijkstra Algorithm

The algorithm receives the origin and destination, it runs through all the weight graph (through the adjacent streets in the map) trying to not pass through a visited vertex and changing it values from infinity to the distance value, and it finishes when all the vertices are visited, then the algorithm returns the shortest and safest path from the starting point to the destination.



Complexity of the algorithm



	Time complexity	Complexity of memory
Dijkstra's algorithm	O(V+E log V)	O(V)

Time and memory complexity of the Dijkstra's algorithm. V is the number of nodes (represents the intersections) and E is the number of edges (represents the streets).





First path minimizing v = 30d + 500r



Origin	Destination	Distance (meters)	Risk of harassment (between 0 and 1)
EAFIT University	National University	8165.85 m	0.62

Distance and risk of harassment for the path that minimizes v = 30d + 500r. Execution time of 0.712 seconds.



Second path minimizing v = dr



Origin	Destination	Distance (meters)	Risk of harassment (between 0 and 1)
EAFIT University	National University	13513.44 m	0.34

Distance and risk of harassment for the path that minimizes v = dr. Execution time of 0.753 seconds.



Third path minimizing $v = d^{10r}$



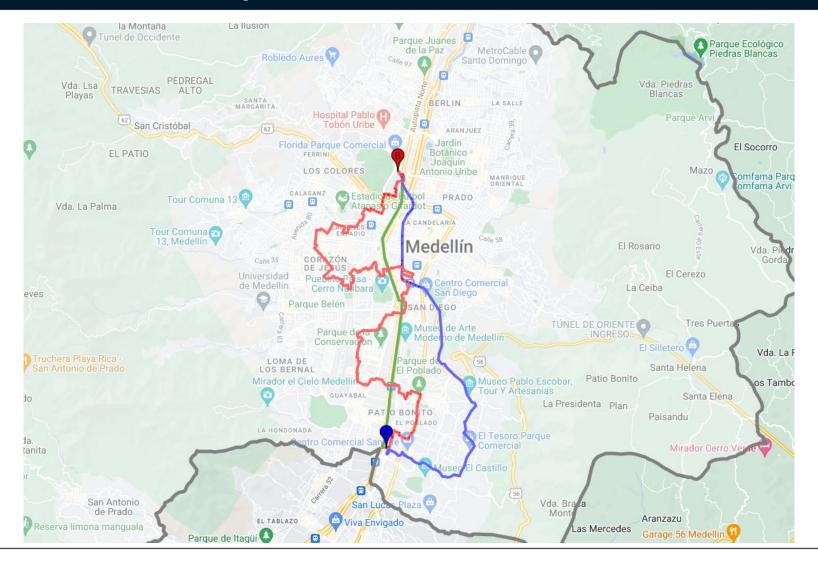
Origin	Destination	Distance (meters)	Risk of harassment (between 0 and 1)
EAFIT University	National University	22153.3 m	0.73

Distance and risk of harassment for the path that minimizes $v = d^{10r}$. Execution time of 0.901 seconds.



Visual comparison of the three paths

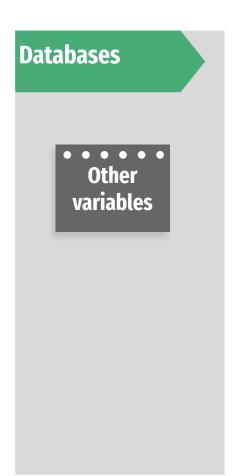




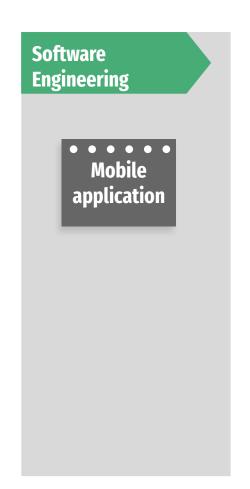


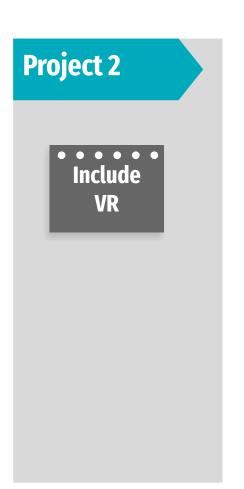
Future work directions













Report accepted in OSF.IO



Muñoz, A. R., León, M. L., Osorno, J. A., Toro, M., & Serna, A. (2022, November RESEARCH OF AN ALGORITHM ABLE TO PREVENT THE STREET HARASSMENT IN MEDELLIN. Retrieved from osf.io/wxe4v



our solution to the problem explained in section 1.1. The

reason for this selection is that we find the execution and

implementation of this algorithm better and more useful to

function with Medellin's map, the algorithm also receives

the origin and destination, it runs through all the weight

graph (through the adjacent streets in the map) trying to not

pass through a visited vertex, and it finishes when all the

vertices are visited, then the algorithm returns the shortest

and safest path from the starting point to the destination. In section 4.2.1 is a more extended version of the

implementation for our solution, and in section 3.2.2 how

experienced of sexual harassment, make them take a certain

behaviour to prevent walking and passing by those places

they're more likely to be abuse, which affect their life

opportunities and freedoms of mobility. Due to this, in order

to make women feel more safe, this project and research is

about using an algorithm that is able to calculate different

paths depending on the distance and the sexual harassment

Shortest route, street sexual harassment, identification

of Medellin streets

Key words



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