Project for the creation of fast and safe routes avoiding sexual harassment and violence

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Presentation of the team

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Research, coding.

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Research, coding.

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Literature review

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Data preparation

https://github.com/gutim1011/ST0245-001

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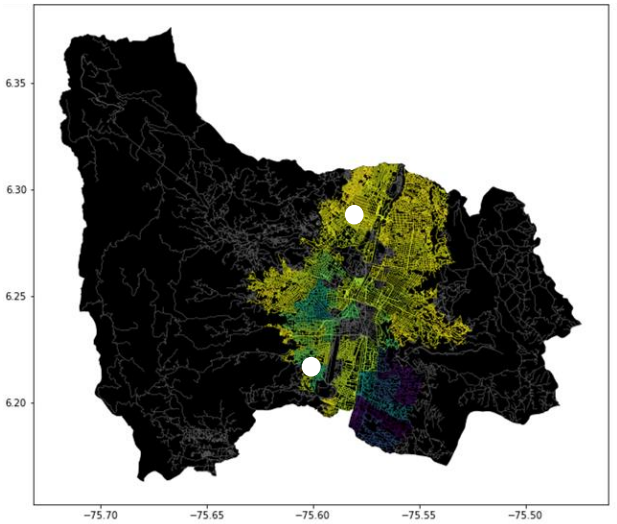
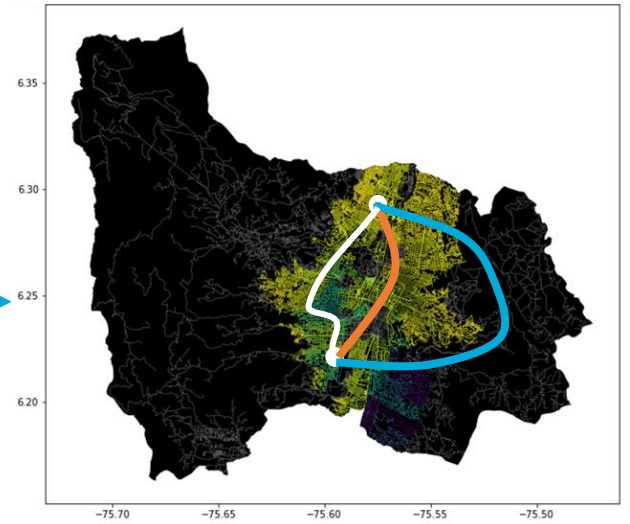
Problem Statement



Shortest path algorithm



Streets of Medellín, Origin and Destination

Three paths that reduce both the risk of harassment and distance

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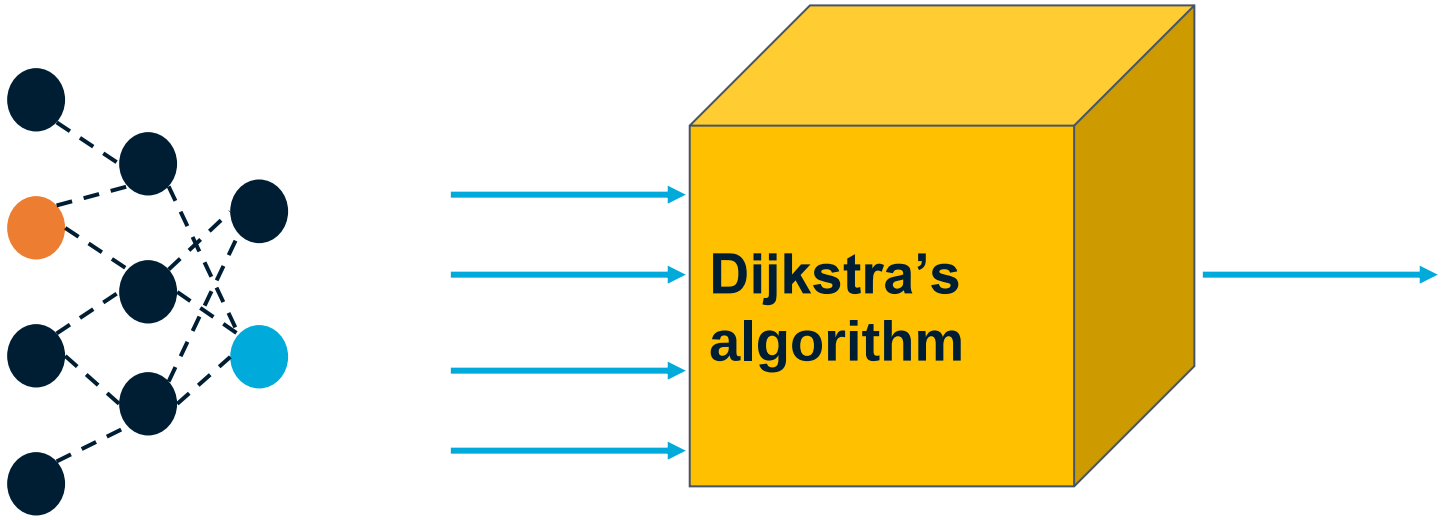
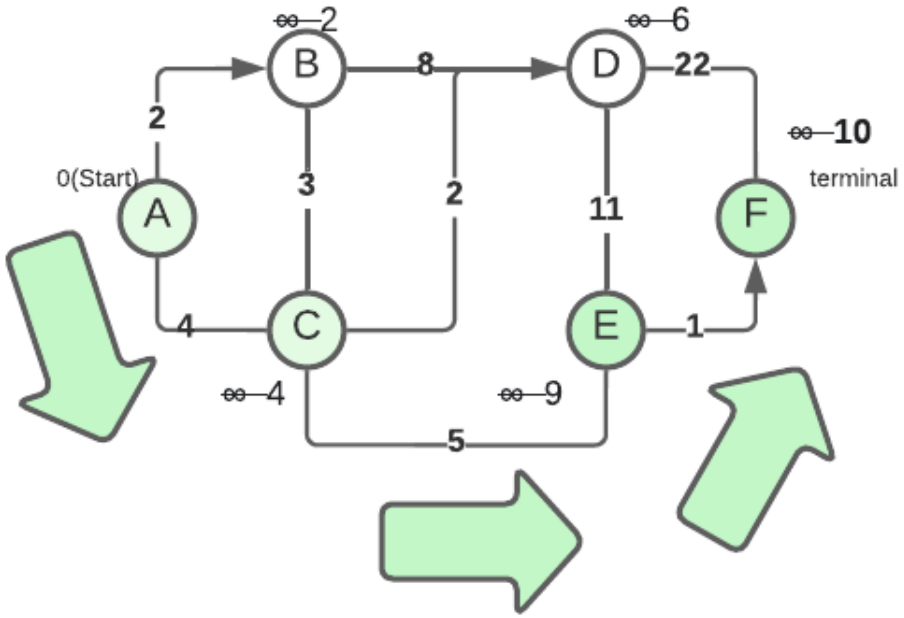
Solution Algorithm



Streets of Medellín, Origin and Destination

A path that reduces both distance and harassment

Explanation of the algorithm



Dijkstra’s algorithm

for the weight of each edge we decided to make an average between both values

Complexity of the algorithm

	Time complexity	Complexity of memory
Algorithm name	O((|E|+|V|) log |V|)	O(V2)

Time and memory complexity of the algorithm name. V is the vertex and E is the edges

First path minimizing d = sexual harassment

Origin	Destination	Distance (meters)	Risk of harassment (between 0 and 1)
EAFIT University	National University	18.439 m	0.38

Distance and risk of harassment for the path that minimizes d = risk. Execution time of 0.29 seconds, this path will be the longest but the safest option from the three.

Second path minimizing d = ???

Origin	Destination	Distance (meters)	Risk of harassment (between 0 and 1)
EAFIT University	National University	9.407 m	0.70

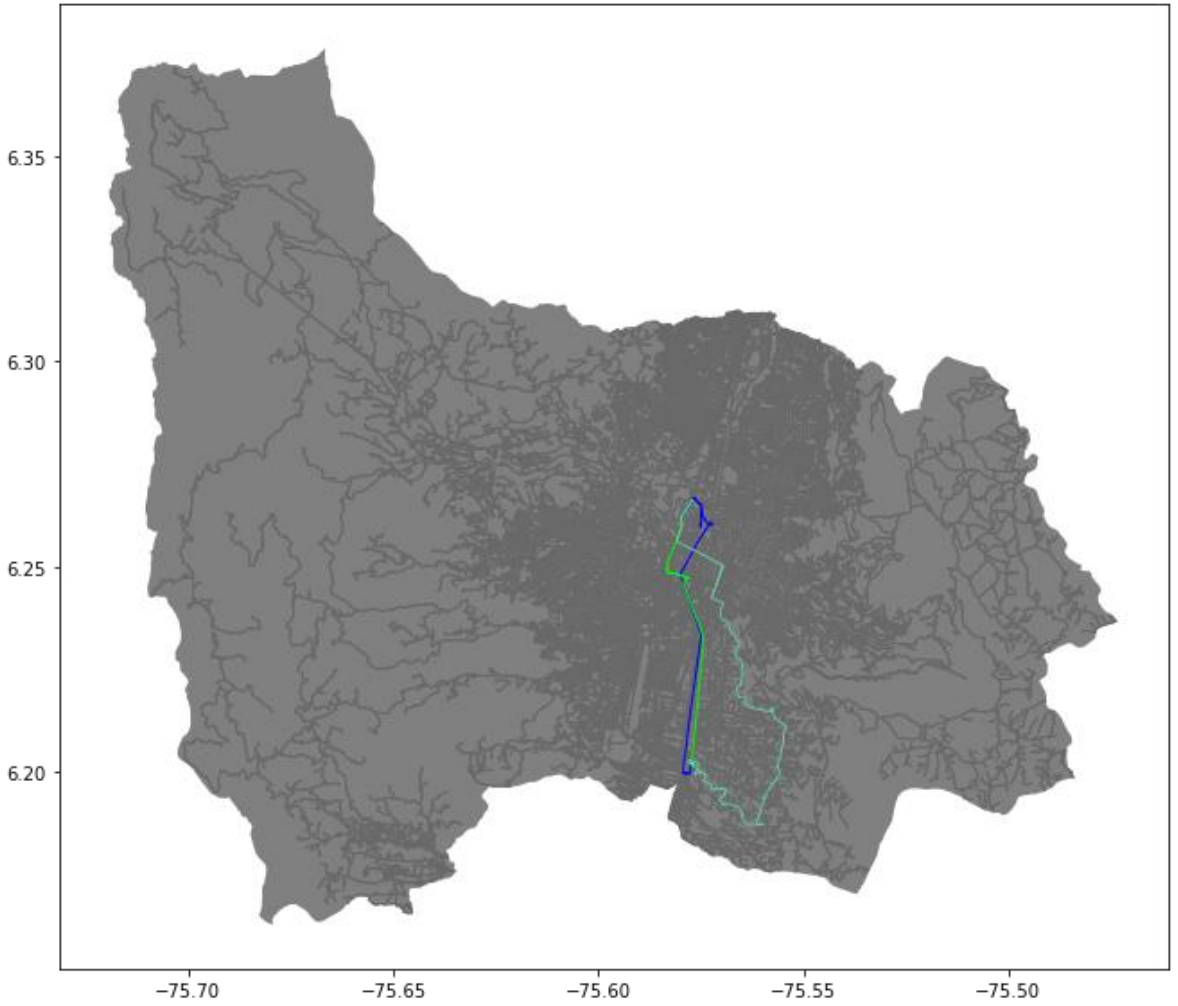
Distance and risk of harassment for the path that minimizes d = distance. Execution time of 0.28 seconds, this is the fastest path but will most likely not be the safest option.

Third path minimizing d = ???

Origin	Destination	Distance (meters)	Risk of harassment (between 0 and 1)
EAFIT University	National University	12.464 m	0.69

Distance and risk of harassment for the path that minimizes d = both the risk and the distance. Execution time of 0.25 seconds, this one will get you to your destination as fast as possible while taking into consideration the risk.

Visual comparison of the three paths



Future work directions

Databases

- Types of crime
- Relevant locations
- Safe places

Project 1

- Web application
- Graphic interface

Software Engineering

- Mobile application

Project 2

- Machine learning
- Updatable database

THANK YOU!

With the support of

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