A vintage globe with a wooden frame, showing a map of North America. The map is detailed with state and provincial boundaries, major cities, and geographical features like the Great Lakes and the Gulf of Mexico. A semi-transparent white rectangular box is overlaid on the right side of the globe, containing the text.

The best way to reach
your destination safely and
quickly using area index

Presentation of the team



Victor Villadiego
Data Analysis



Julián Agudelo
Data Analysis



Andrea Serna
Literature review

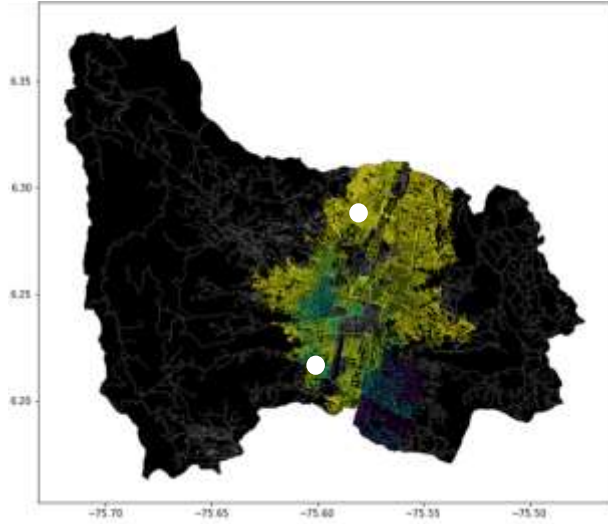


Mauricio Toro
Data preparation

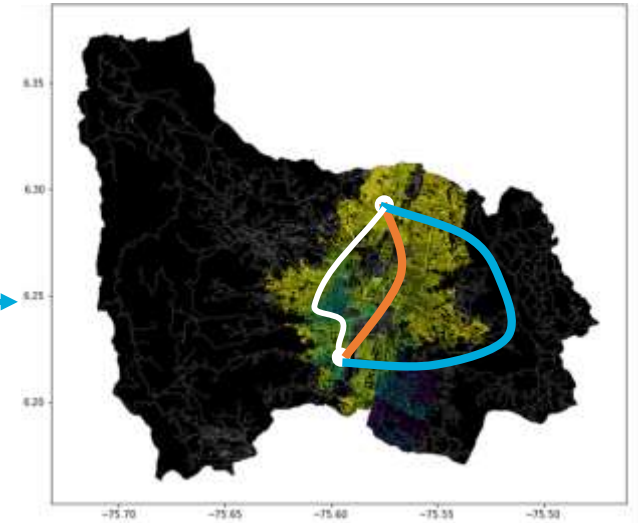
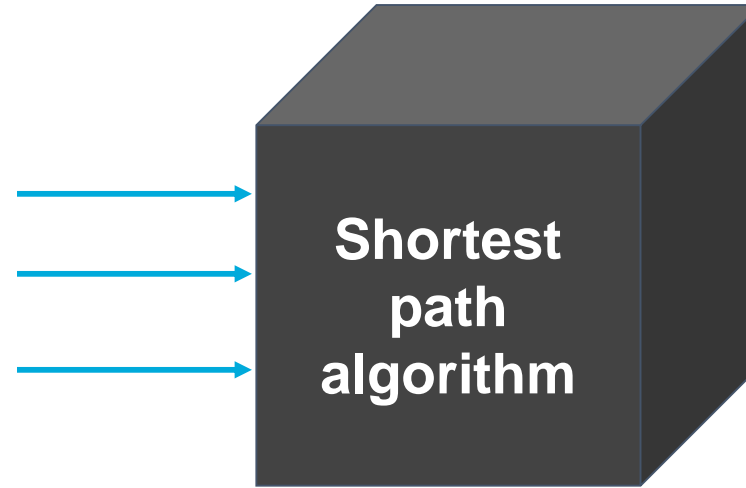


<https://github.com/jac123desu/Project/upload>

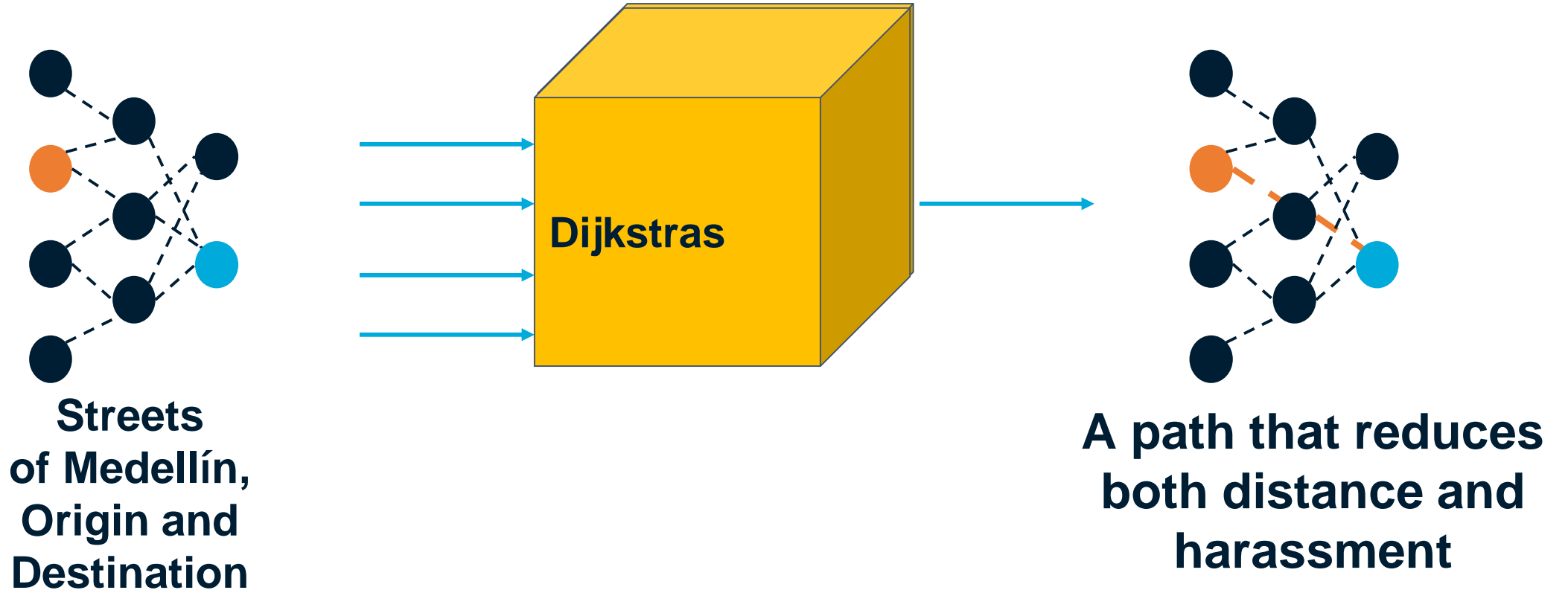
Problem Statement



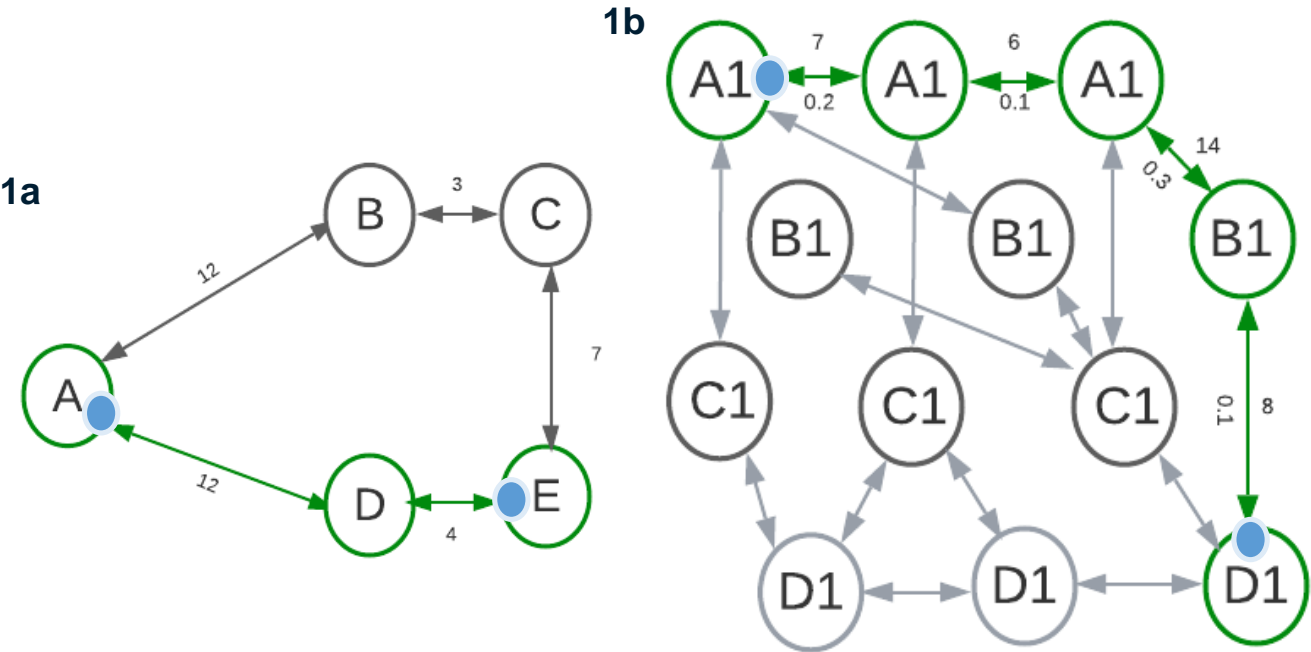
**Streets
of Medellín,
Origin and
Destination**



**Three paths that reduce
both the risk of harassment
and distance**



Explanation of the algorithm



Dijkstras

The images show in a simple way through the use of graphs the shortest and safest route in green to take the user from point A to point B.

Complexity of the algorithm



	Time complexity	Complexity of memory
Dijkstra	$O((V+E)\log V)$	$O(V^2)$

The Dijkstra algorithm is a graph algorithm for finding the shortest path from a certain node to all other nodes in the graph, in the complexity the e is the number of edge in the graph and the V is the number of the vertice in the graph



First path minimizing $d = \text{risk} \times 100 + \text{distance}$



Origin	Destination	Distance (meters)	Risk of harassment (between 0 and 1)
EAFIT University	National University	9506.034	0.27035201568749867

Distance and risk of harassment for the path that minimizes d . Execution time of 50 seconds.

Second path minimizing $d = \text{Risk}$



Origin	Destination	Distance (meters)	Risk of harassment (between 0 and 1)
EAFIT University	National University	18716.287	0.07675550660399022

Distance and risk of harassment for the path that minimizes d . Execution time of 55 seconds.

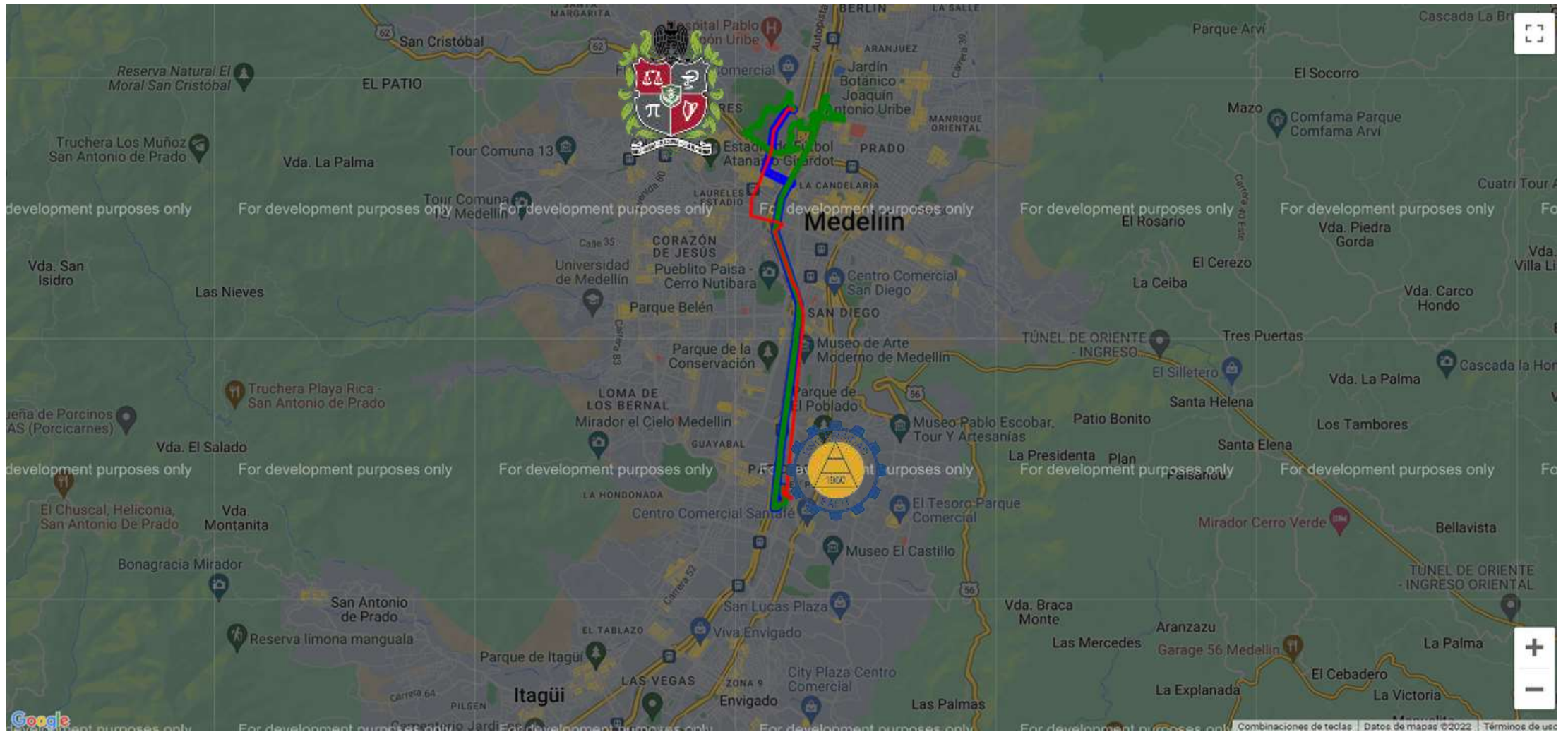
Third path minimizing $d = \text{Length}$



Origin	Destination	Distance (meters)	Risk of harassment (between 0 and 1)
EAFIT University	National University	9322.85	0.42386030025503574

Distance and risk of harassment for the path that minimizes d Execution time of 47 seconds.

Visual comparison of the three paths



Future work directions



Databases

• • Data • •
manageme
nt

Project 1

• • Web • •
applicati
on

Software Engineering

• • • • •
Investigati
on

Project 2

• Use of •
algorithms
to search
paths



THANK YOU!

With the support of

The Teacher Jaime and all the tutors for the support in all the course, thanks too Icetex for the scholarship Generation E, thanks to the teacher Mauricio and Andrea Serna for the templates, and for last thanks to the EAFIT University.