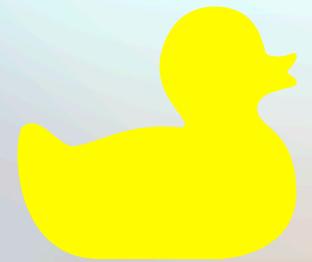


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Proyecto

Detectar objetos del entorno para que un vehículo pueda moverse de manera eficiente y segura.

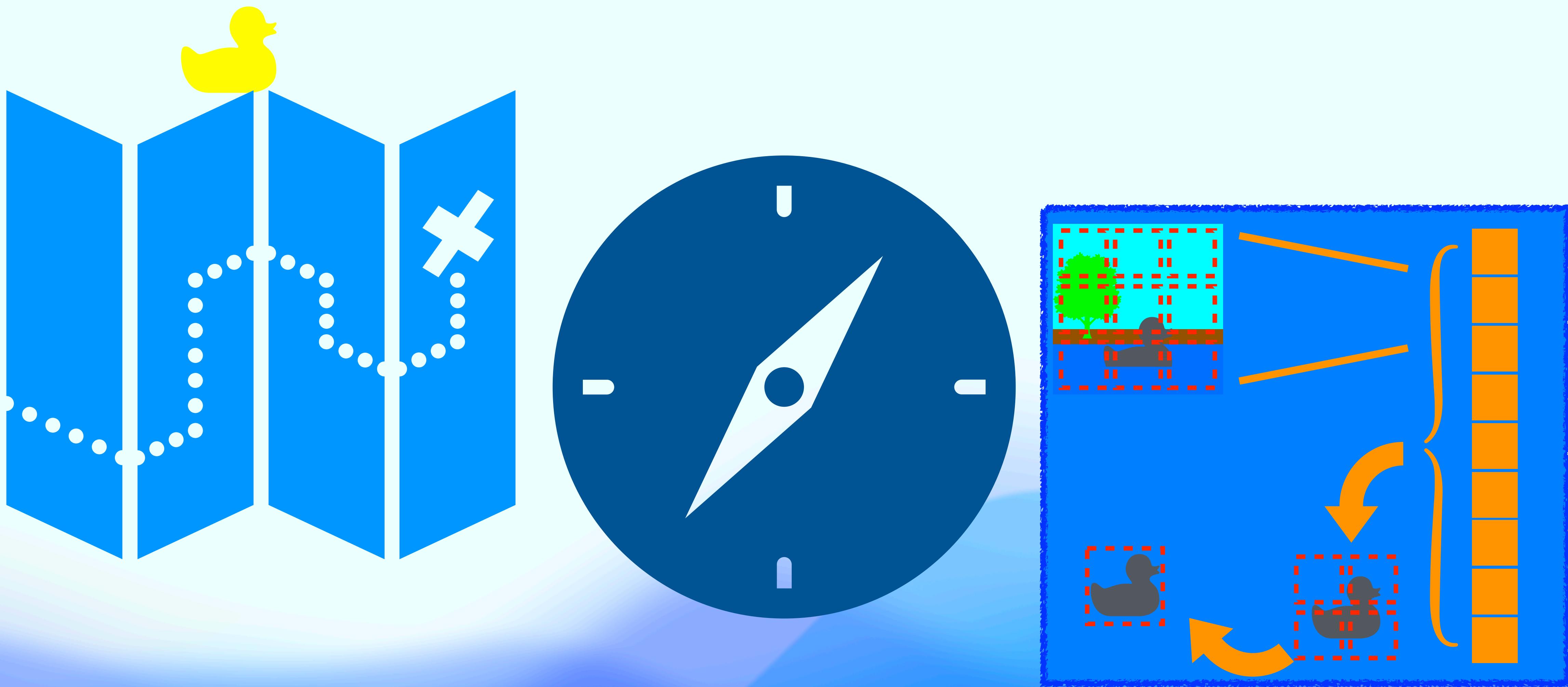


Proyecto

Detectar objetos del entorno para que un vehículo pueda moverse de manera eficiente y segura.

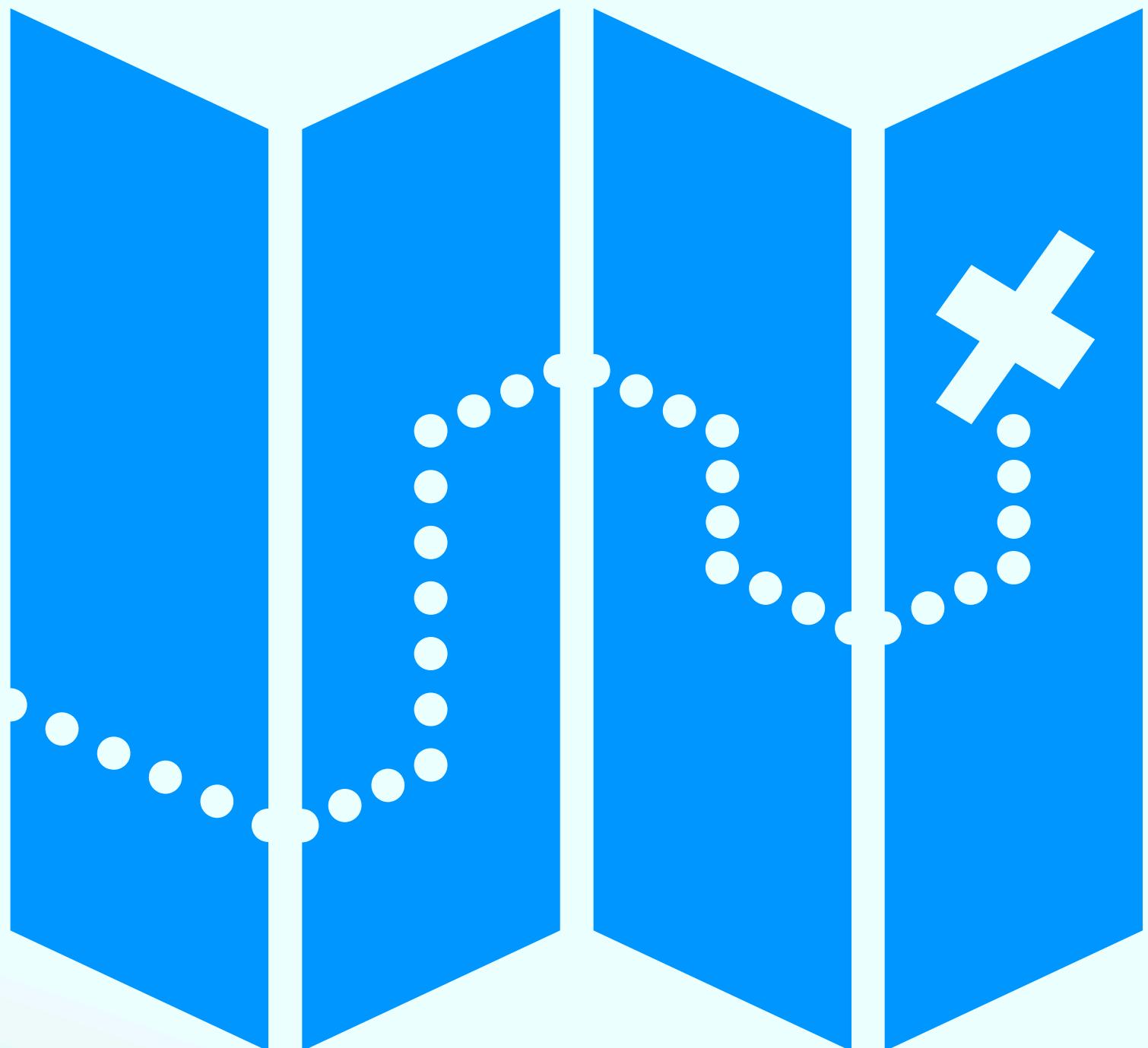


Objetivos



Objetivos

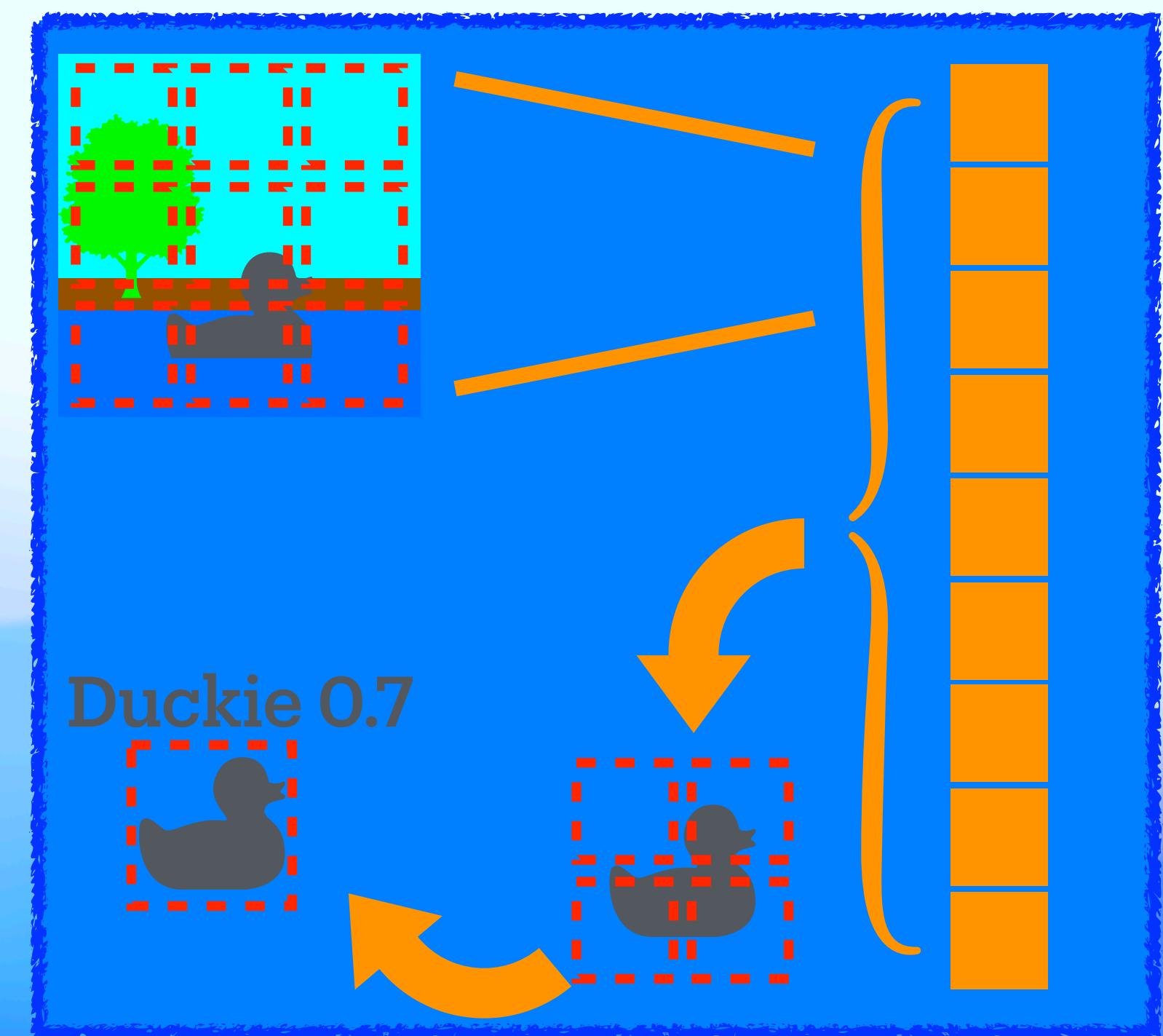
Path Planning



Motion Planning

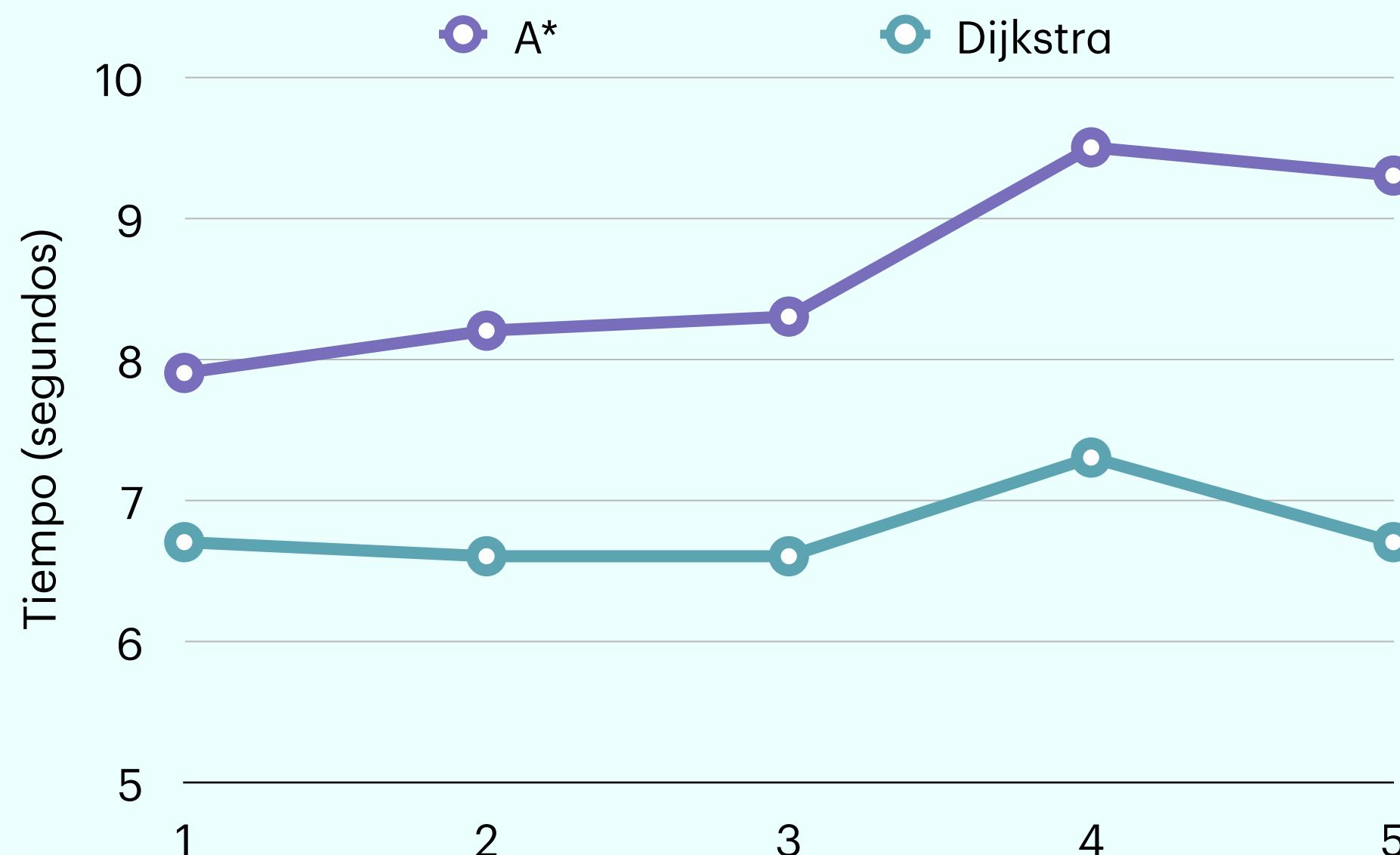


Detector de Objetos

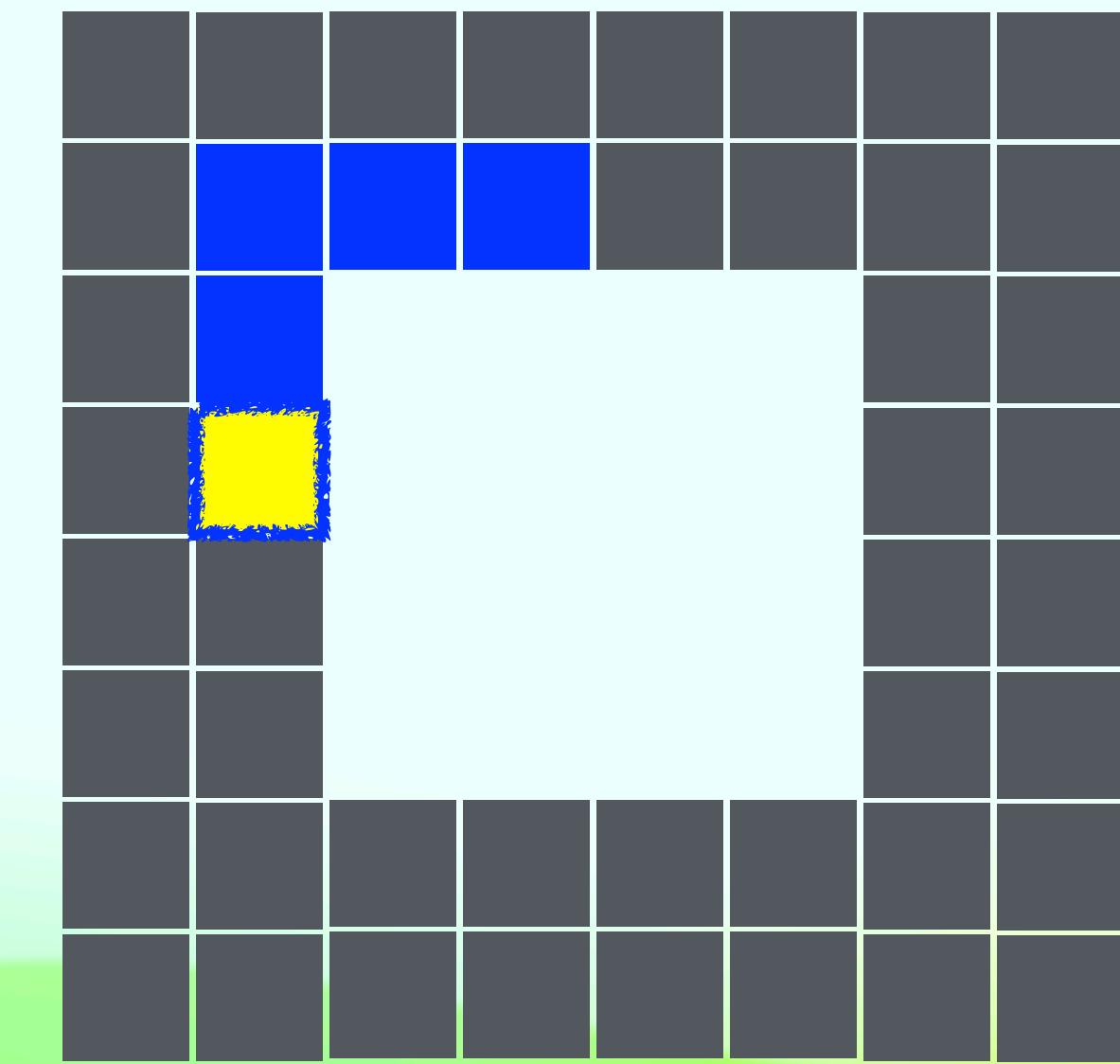
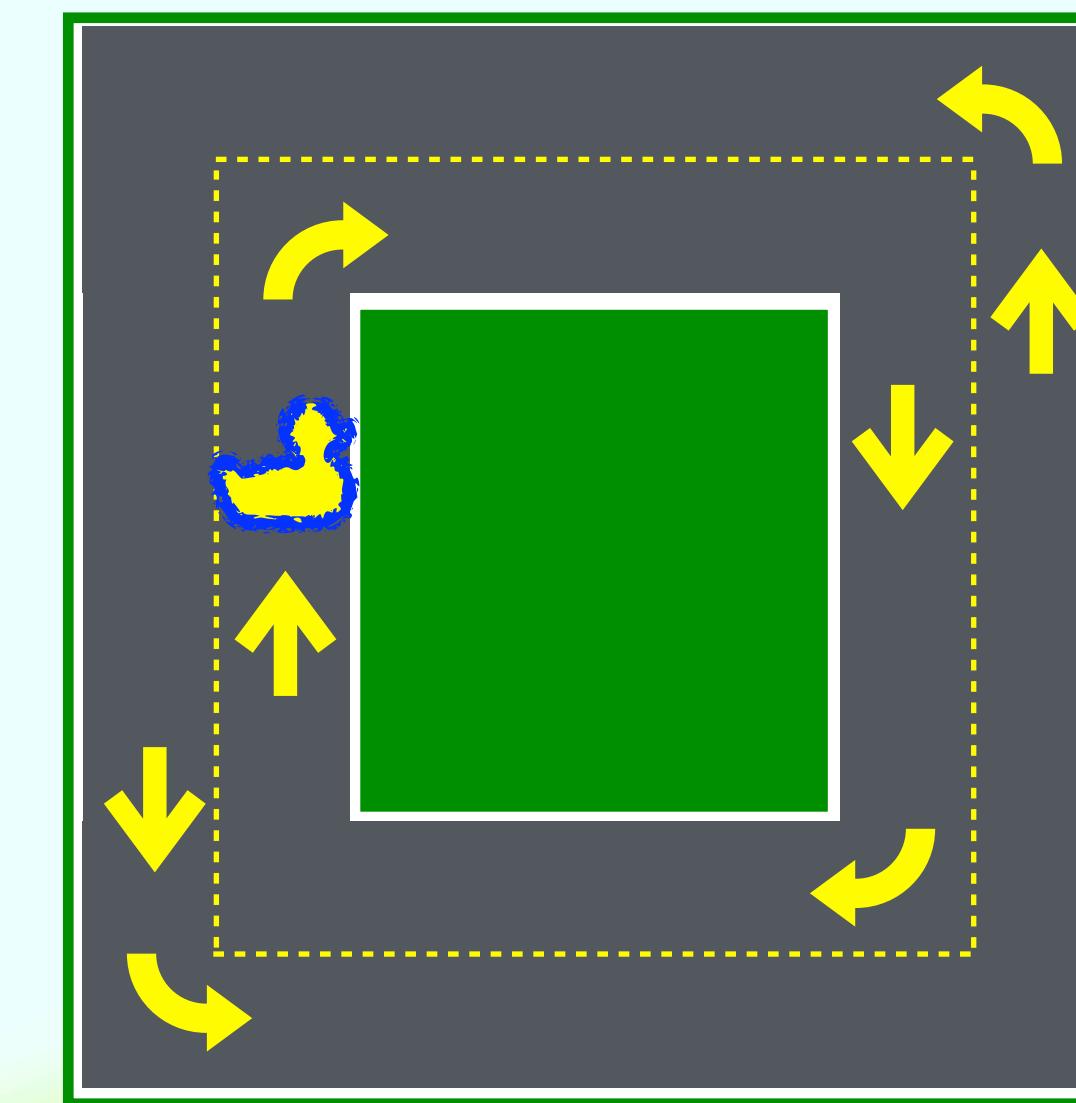


Path Planning

Dijkstra

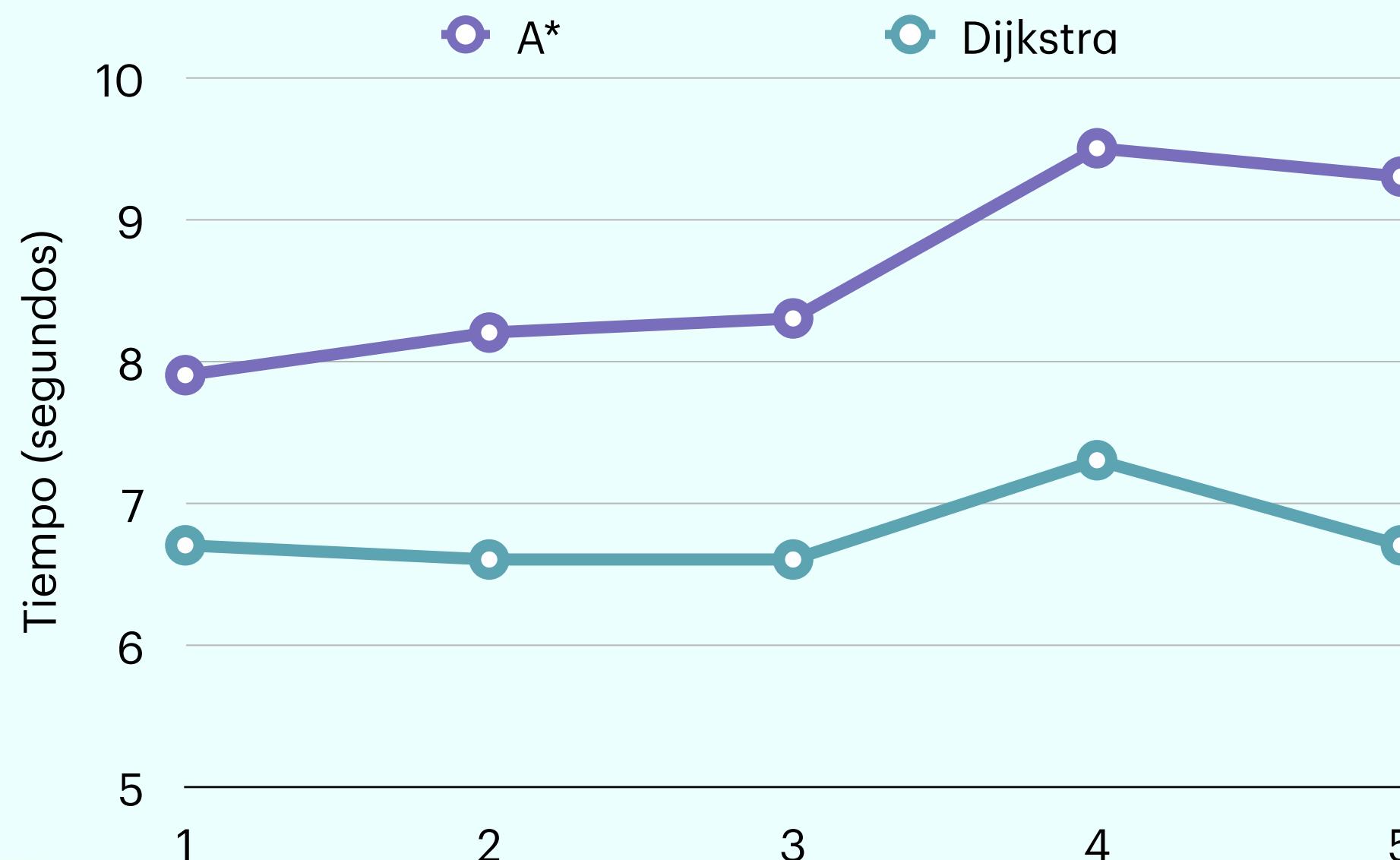


Representación del mundo

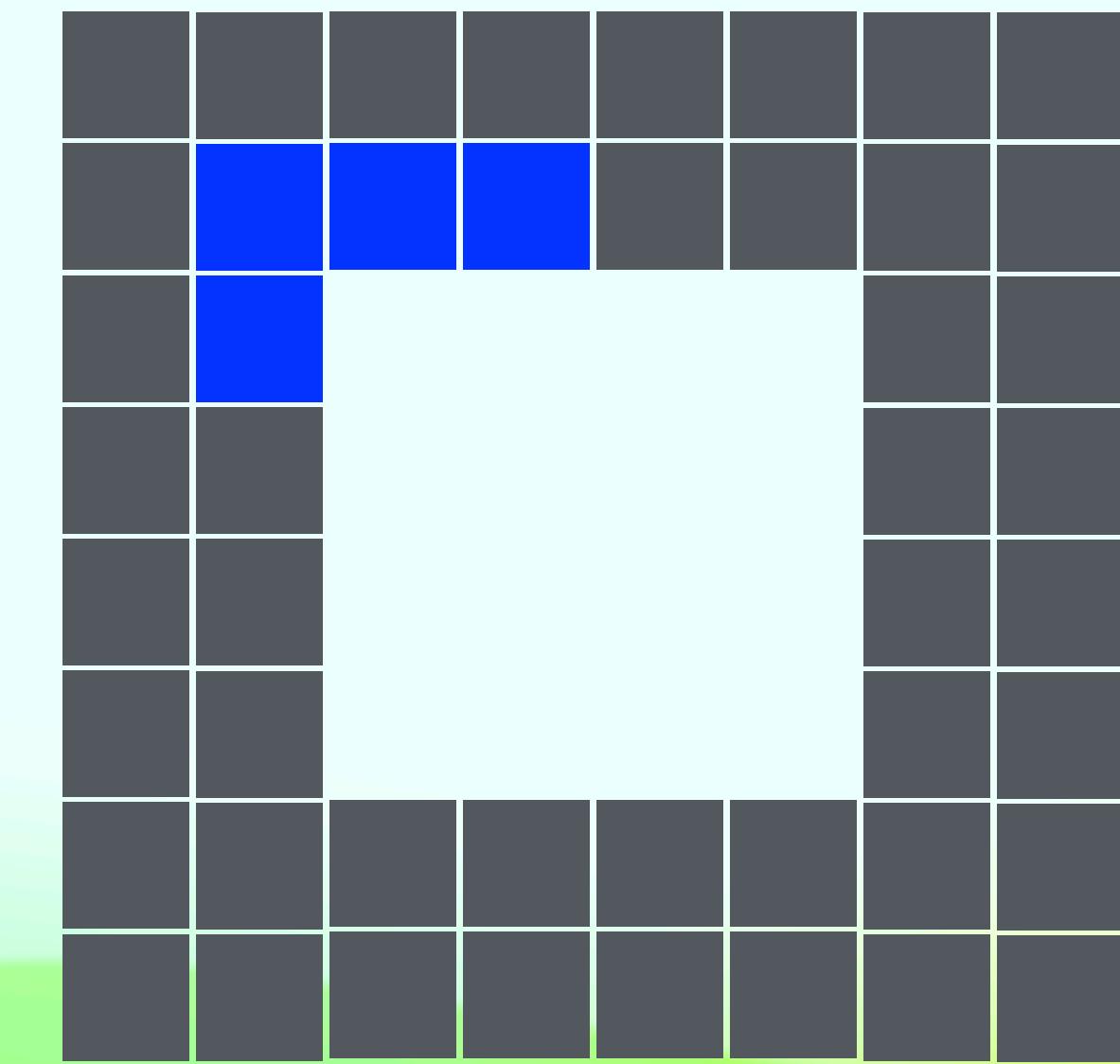
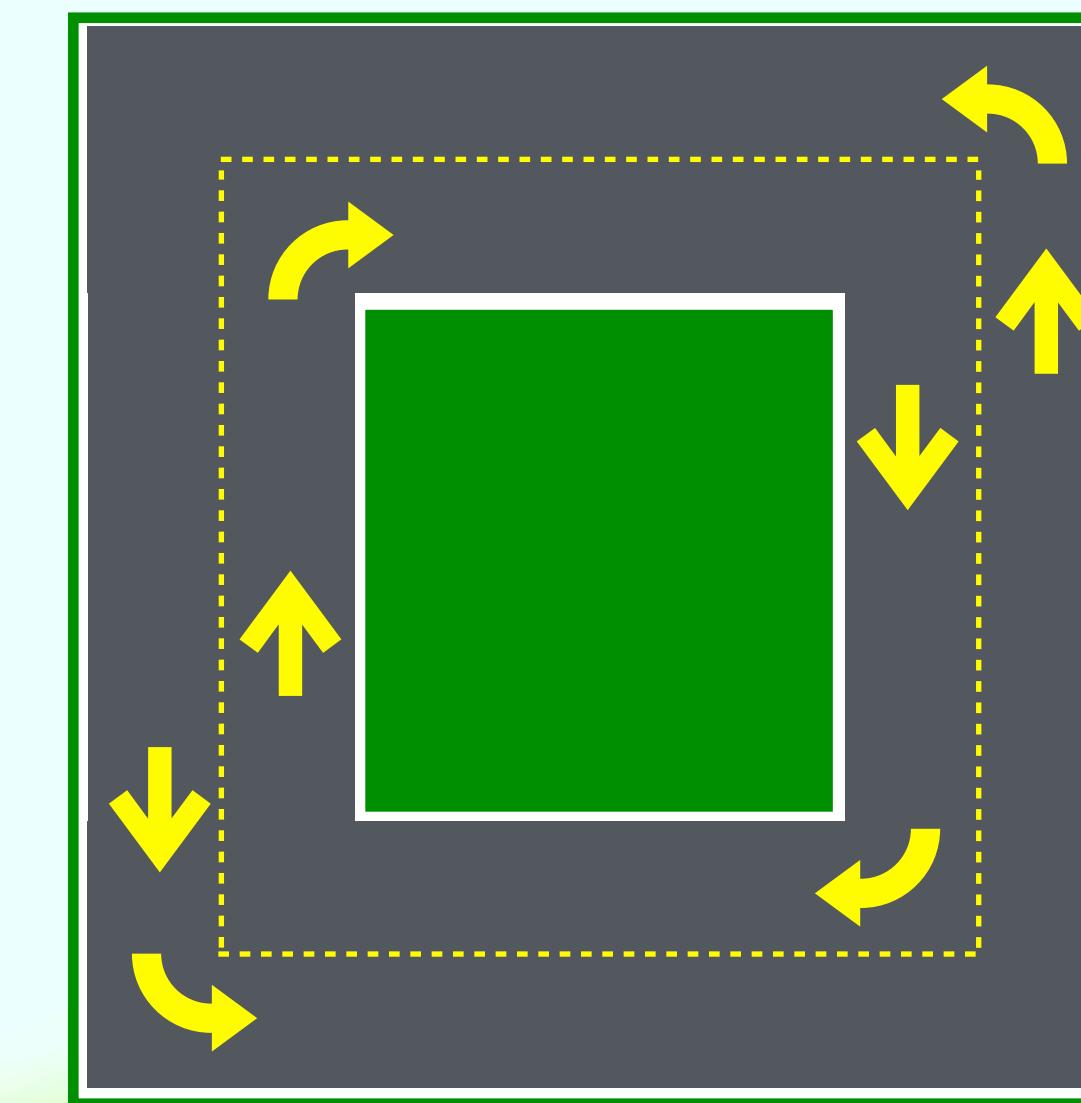


Path Planning

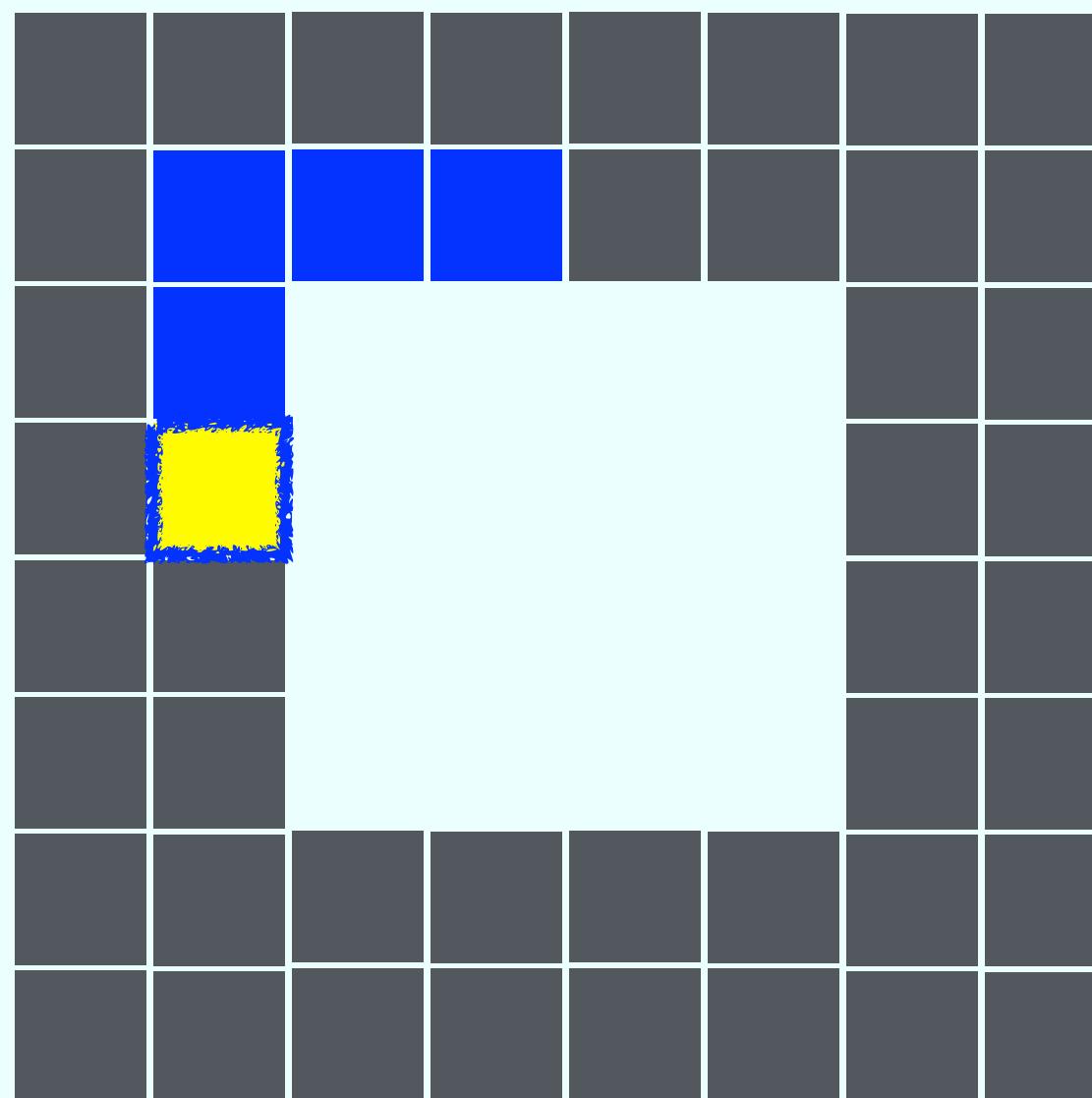
Dijkstra



Representación del mundo



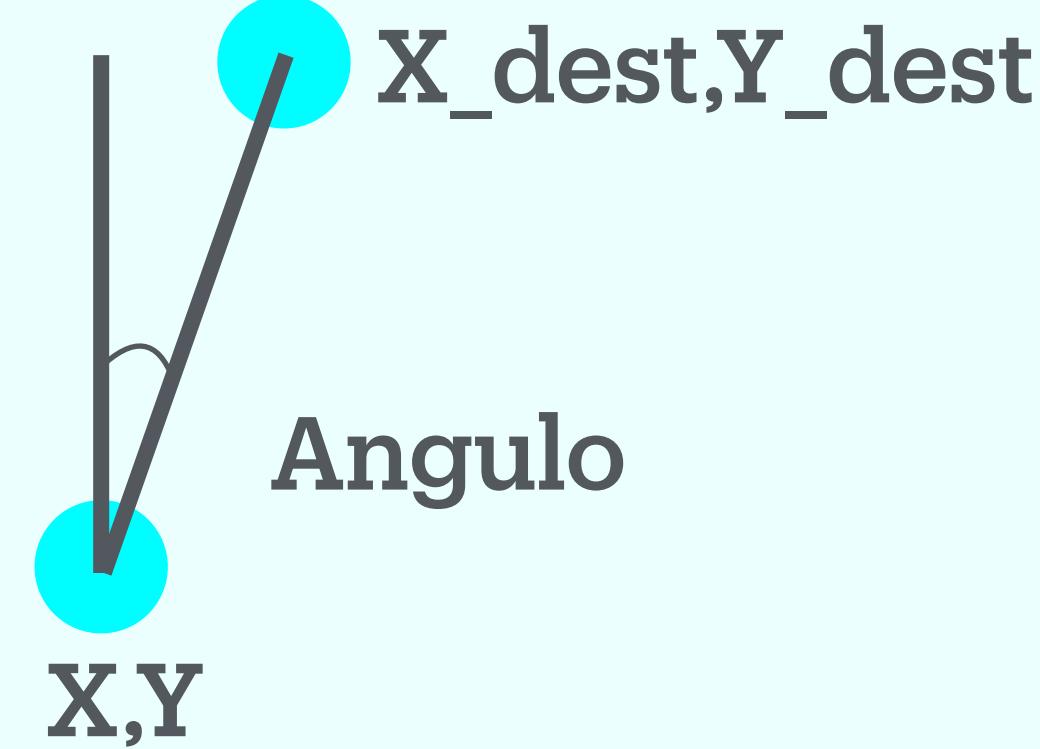
Motion Planning



Buffer

`[(1,2),(1,1),(2,1)]
[(1,1),(2,1),(3,1)]
[(2,1),(3,1)]
[(3,1)]
[]`

Angulo



PID

`PID Angular
PID Velocidad`

CNN Eficiente

You
Only
Look
Once
Real
Time
Detection
Transformer

YOLO

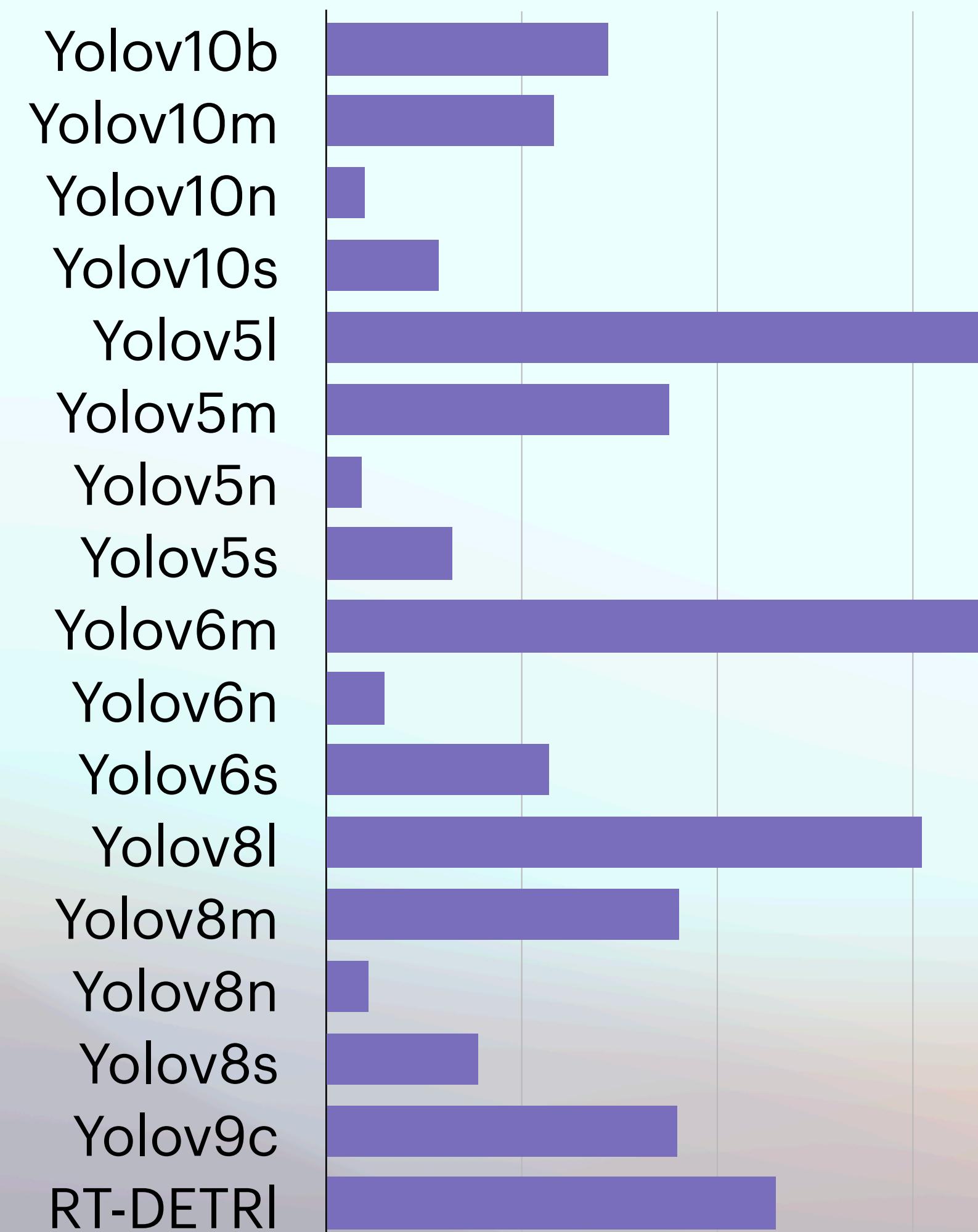
RT-DETR

Dataset
train-> 543 imágenes
val. -> 132 imágenes

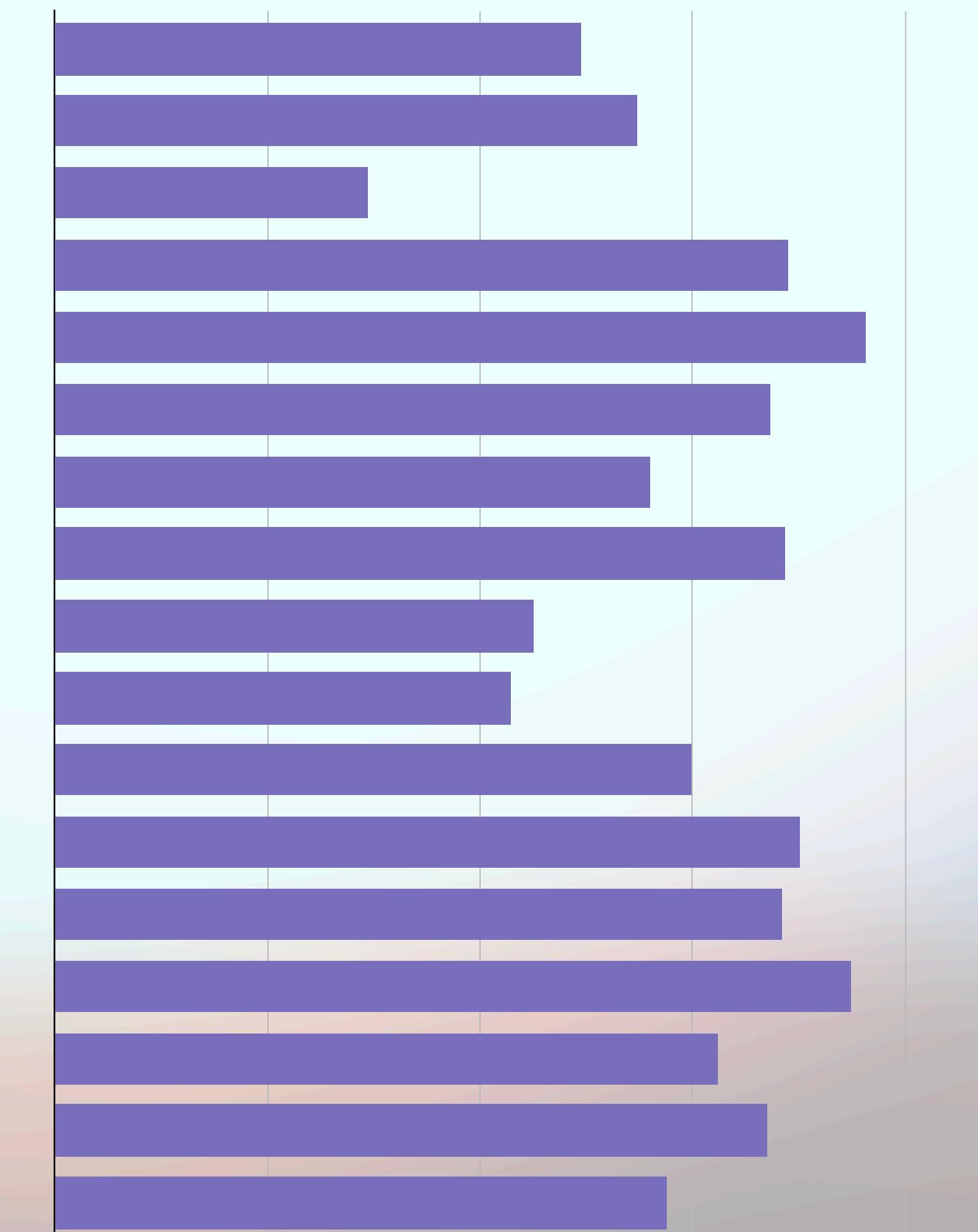
0 : Duckies
1 : Vehículo

CNN Eficiente

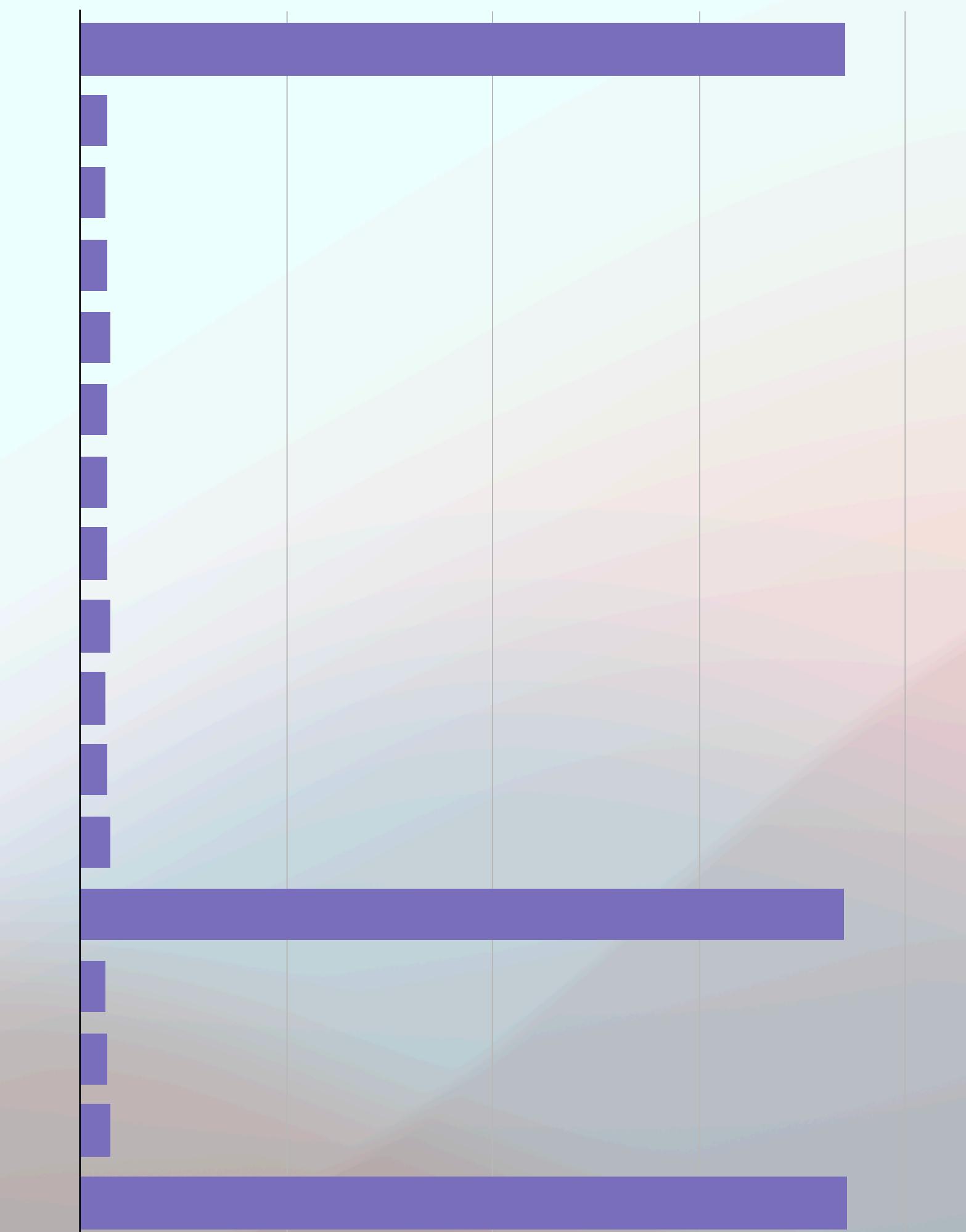
Costo Computacional



Precision (map50)



Tiempo de Respuesta segundos



CNN Eficiente

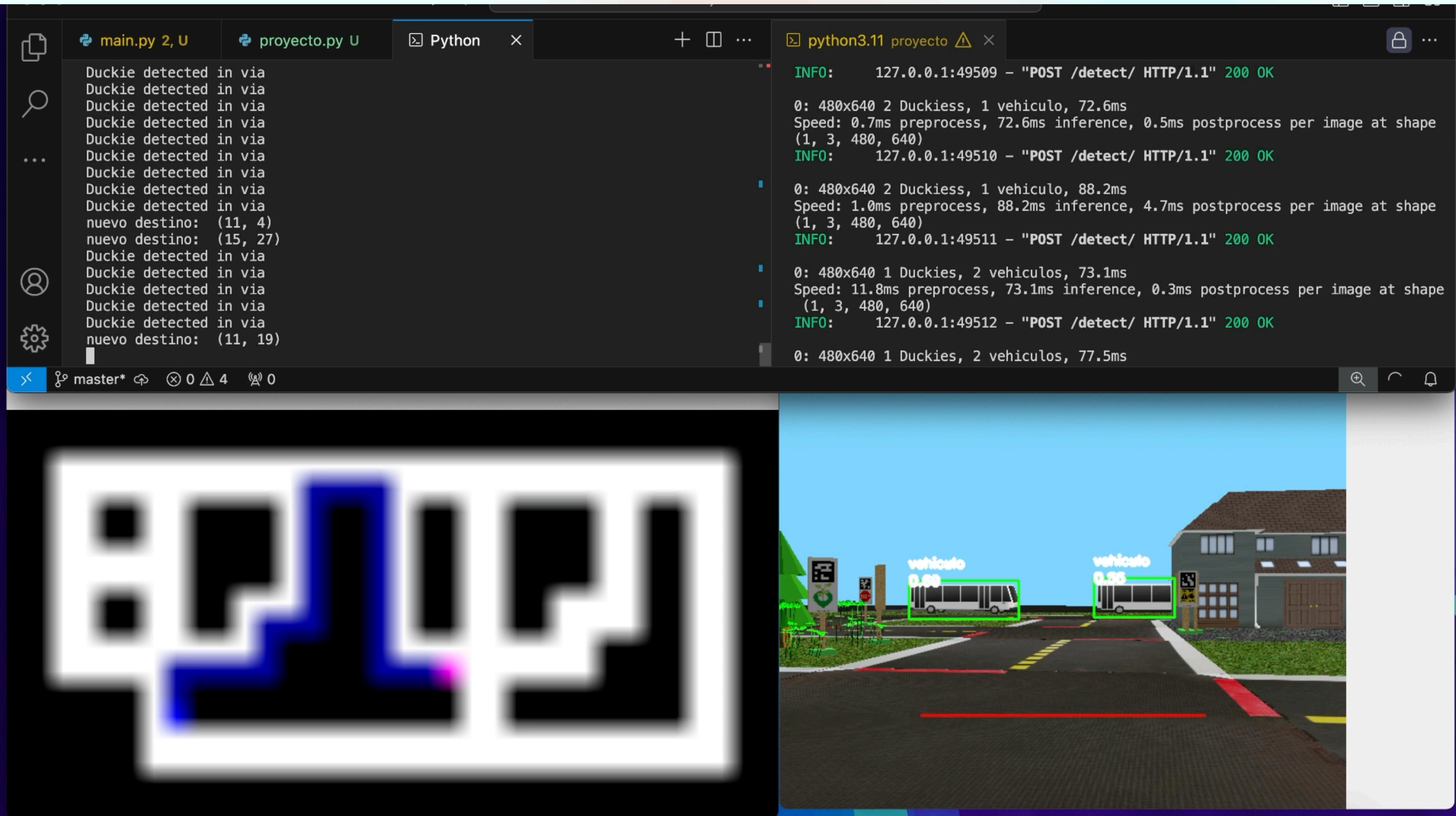
YOLOv8n

Costo Computacional	5,97 mb
Precision	93.7%
Tiempo de Respuesta	5,53 s



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The screenshot shows a Python development environment with two code files: `main.py` and `proyecto.py`. The terminal window displays real-time logs from a vehicle detection API, showing detections of Duckies and vehicles. Below the terminal is a video feed from a simulation environment showing two vehicles on a road, with bounding boxes and confidence scores (0.68 and 0.55) overlaid.

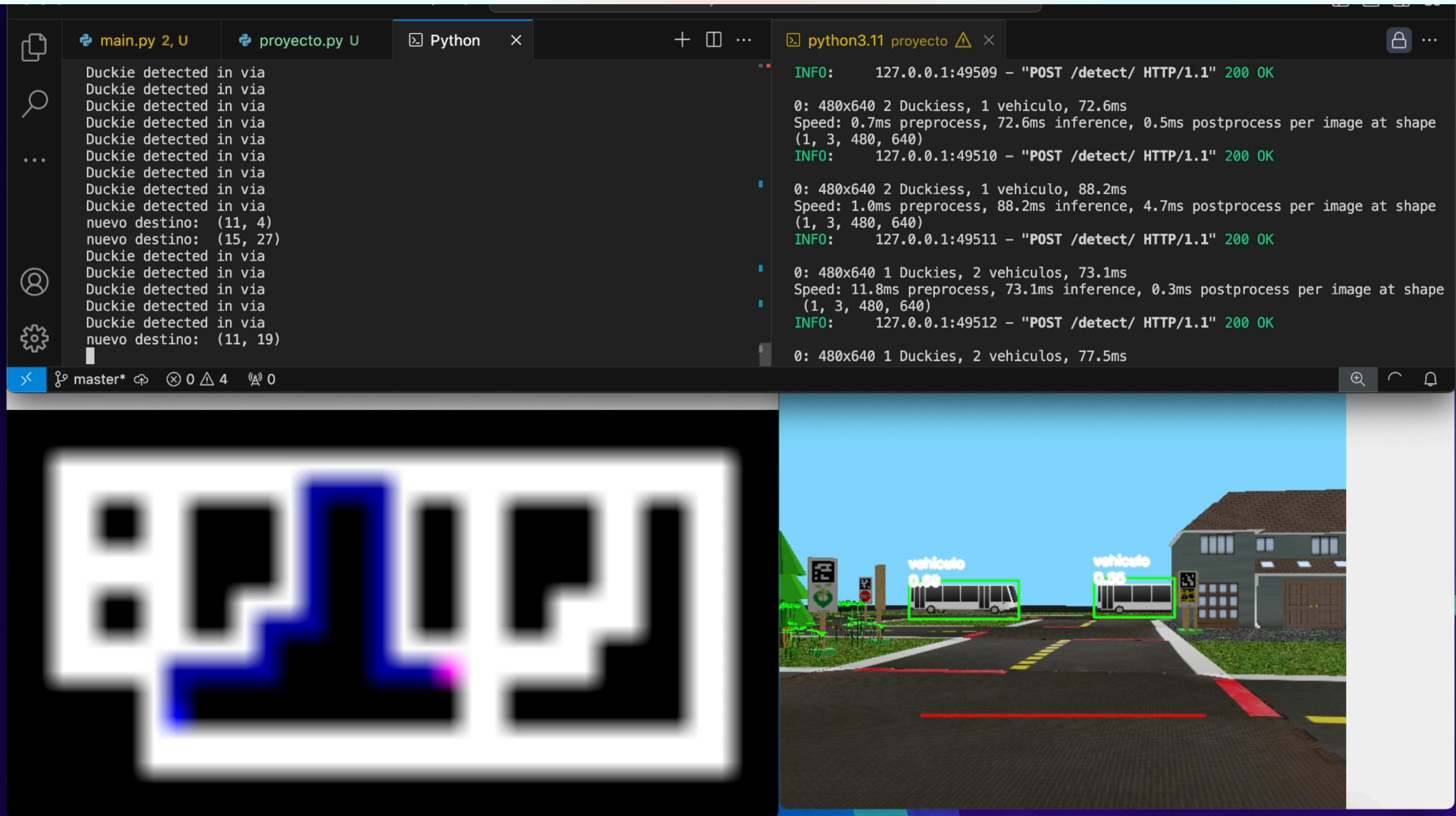
```
main.py 2, U proyecto.py U Python + ⌂ ... python3.11 proyecto ▲ X
INFO: 127.0.0.1:49509 - "POST /detect/ HTTP/1.1" 200 OK
0: 480x640 2 Duckies, 1 vehiculo, 72.6ms
Speed: 0.7ms preprocess, 72.6ms inference, 0.5ms postprocess per image at shape
(1, 3, 480, 640)
INFO: 127.0.0.1:49510 - "POST /detect/ HTTP/1.1" 200 OK
0: 480x640 2 Duckies, 1 vehiculo, 88.2ms
Speed: 1.0ms preprocess, 88.2ms inference, 4.7ms postprocess per image at shape
(1, 3, 480, 640)
INFO: 127.0.0.1:49511 - "POST /detect/ HTTP/1.1" 200 OK
0: 480x640 1 Duckies, 2 vehiculos, 73.1ms
Speed: 11.8ms preprocess, 73.1ms inference, 0.3ms postprocess per image at shape
(1, 3, 480, 640)
INFO: 127.0.0.1:49512 - "POST /detect/ HTTP/1.1" 200 OK
0: 480x640 1 Duckies, 2 vehiculos, 77.5ms
```



Yerko Sepulveda Rojas

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GitHub



The screenshot shows a Python development environment with two code files: `main.py` and `proyecto.py`. The terminal window displays real-time logs from a vehicle detection API, showing detections of Duckies and vehicles. Below the terminal is a video feed from a simulation environment showing two vehicles on a road, with bounding boxes and confidence scores (e.g., 0.99, 0.95) overlaid on the image.

```
main.py 2, U proyecto.py U Python + ⌂ ... python3.11 proyecto ▾ X
INFO: 127.0.0.1:49509 - "POST /detect/ HTTP/1.1" 200 OK
0: 480x640 2 Duckies, 1 vehiculo, 72.6ms
Speed: 0.7ms preprocess, 72.6ms inference, 0.5ms postprocess per image at shape
(1, 3, 480, 640)
INFO: 127.0.0.1:49510 - "POST /detect/ HTTP/1.1" 200 OK
0: 480x640 2 Duckies, 1 vehiculo, 88.2ms
Speed: 1.0ms preprocess, 88.2ms inference, 4.7ms postprocess per image at shape
(1, 3, 480, 640)
INFO: 127.0.0.1:49511 - "POST /detect/ HTTP/1.1" 200 OK
0: 480x640 1 Duckies, 2 vehiculos, 73.1ms
Speed: 11.8ms preprocess, 73.1ms inference, 0.3ms postprocess per image at shape
(1, 3, 480, 640)
INFO: 127.0.0.1:49512 - "POST /detect/ HTTP/1.1" 200 OK
0: 480x640 1 Duckies, 2 vehiculos, 77.5ms
```



Yerko Sepulveda Rojas