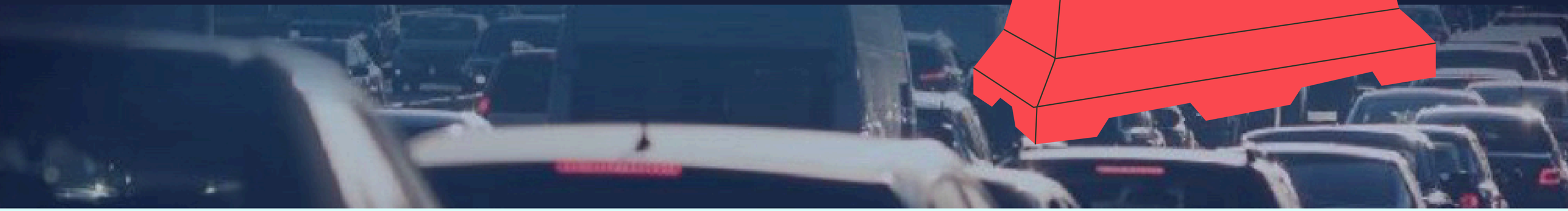
Traffic sign detection

week 4 project

Traffic Sign Detection

Our project involves developing a way for object detection in our case (traffic sign) . .
using pretrained deep learning model

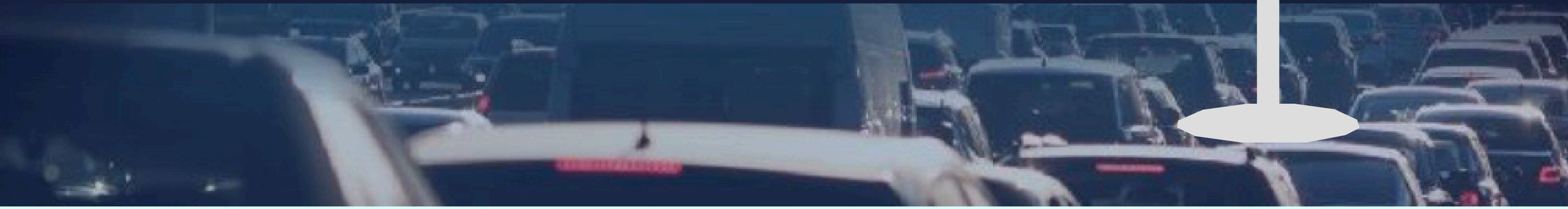


project objectives:

• Improves road safety by adding more to the autonomous car field .

• Enhances traffic flow efficiency

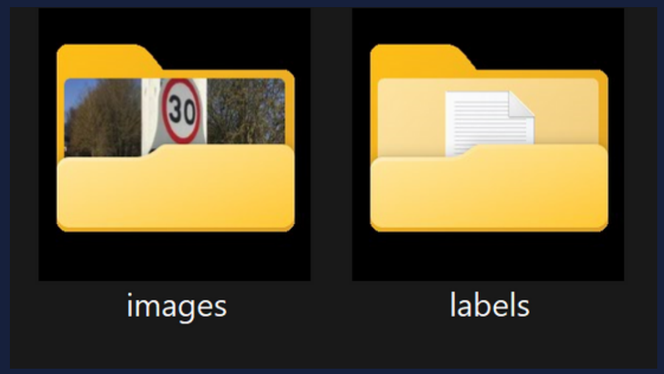
•Reduces human error using DL & AI technologies .

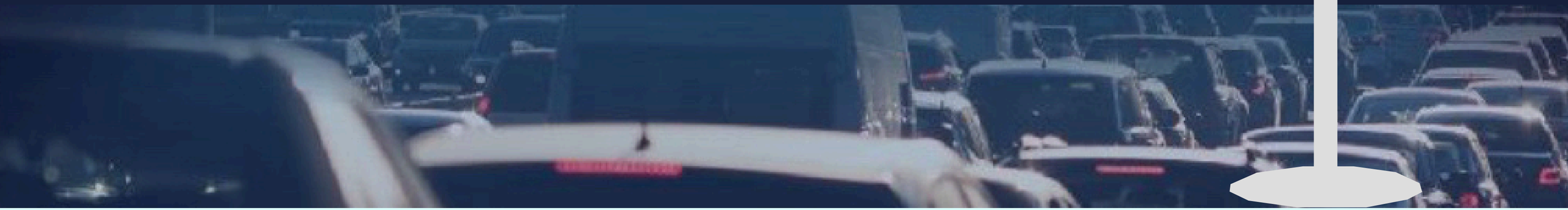


Task 1: Project Idea Selection and Dataset Collection

The project idea was chosen based on the camp's main focus to improve traffic management field .

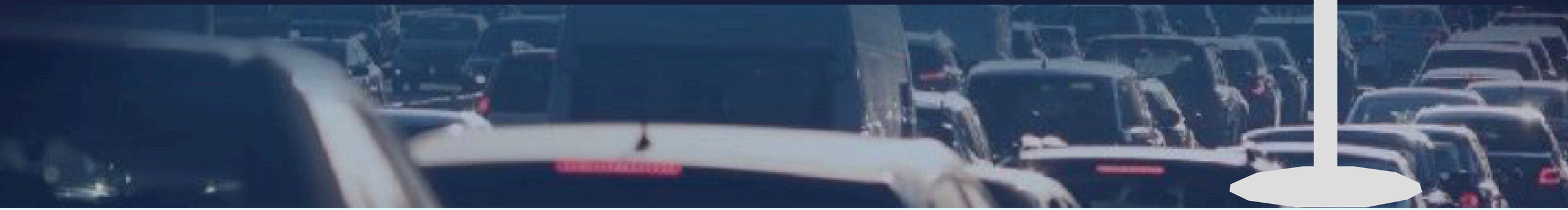
The dataset open sourced mainly from Kaggle consist of .JPG and labels of txt type .





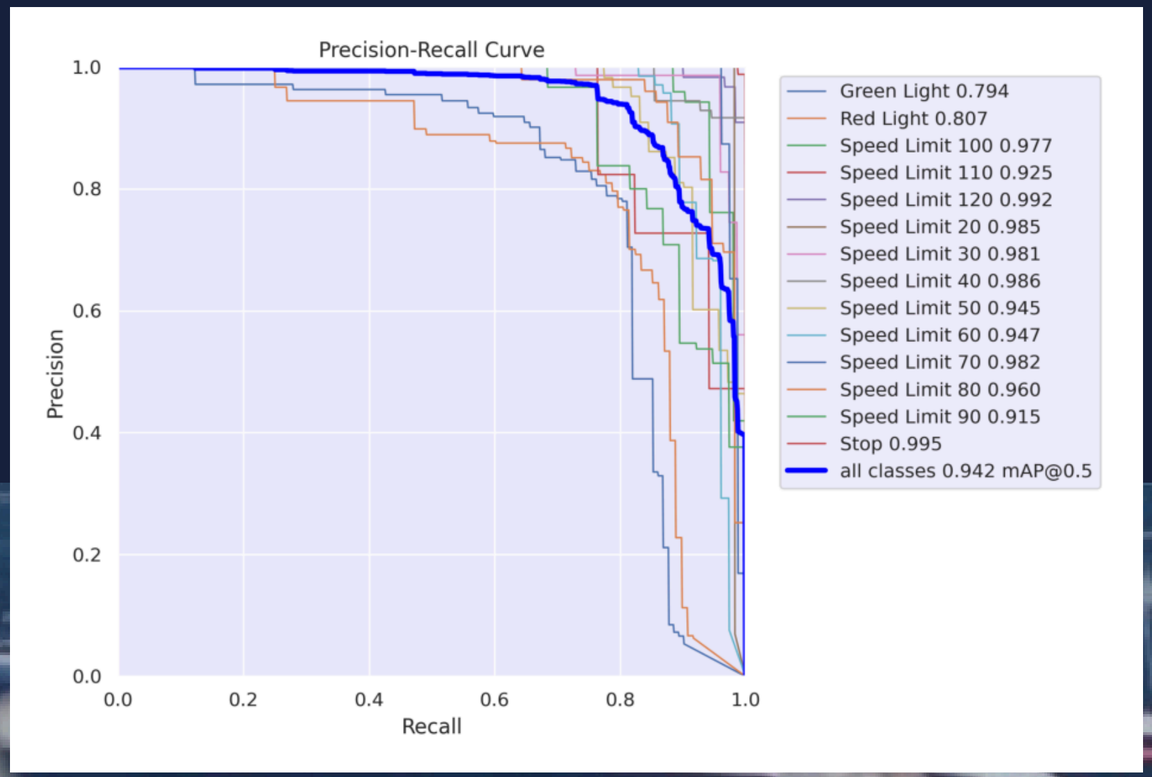
Task 2: Model Selection and Implementation

we selected YOLO. A DL pretrained based on the CNN model. which is allows for fast and accurate detection of traffic signs، making it effective in object detection & classifying similar cases.



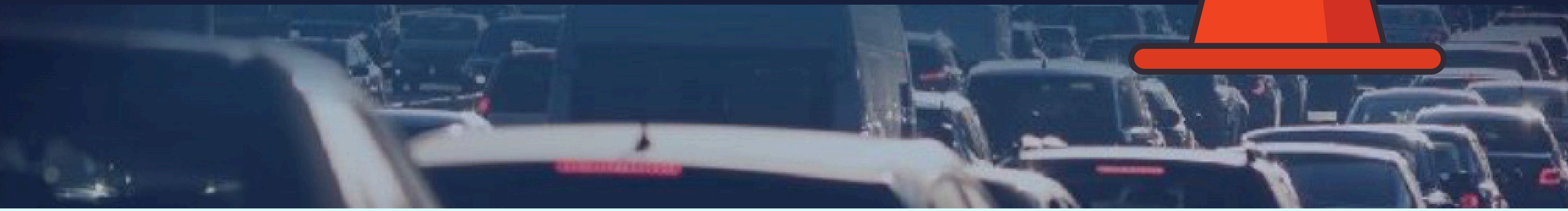
Task 3: Model Evaluation and Reporting

by using pretrained model we achieved good results



Challenges Faced

- Large data volumes make the uploading step hard
- Limited time for collection data .
- Limited time to build and try different parameters for DL model



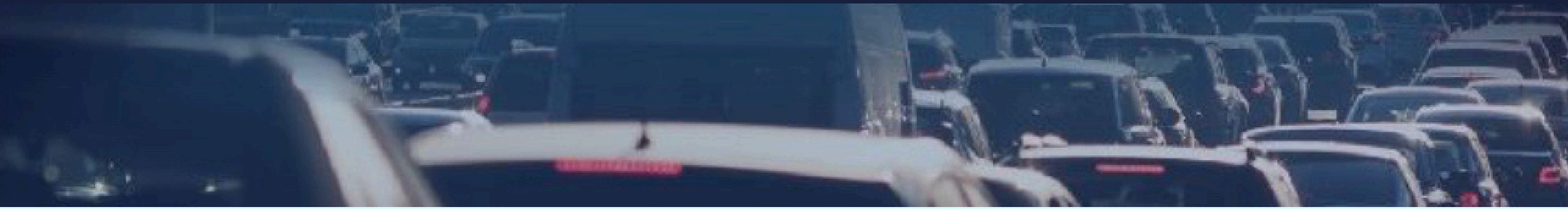
Choosing the Model Architecture

YOU ONLY LOOK ONCE（YOLO）

after good amount of search we decided to go with pretrained mdel for better result

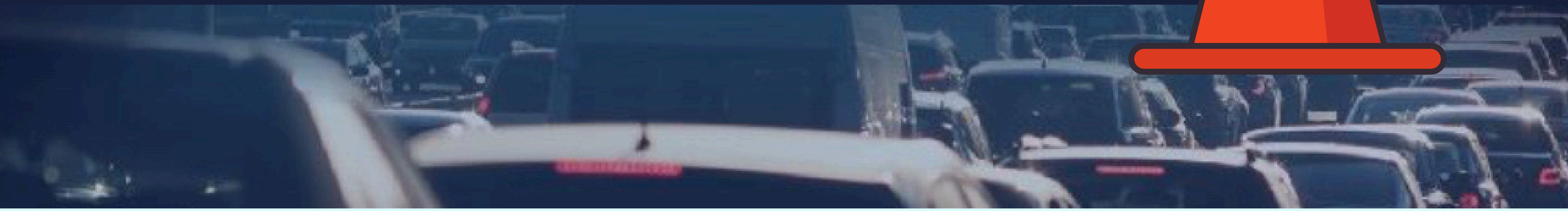
and YOLO performs effectively on Object Detection Task

ultralytics
YOLOv8



Model Performance Compared to Alternative Approaches

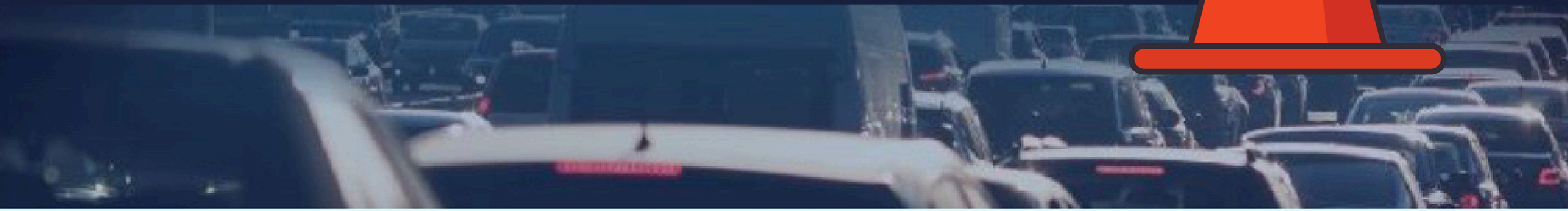
after various trials using Sequential Keras and pytorch we build
the training took too long compared to the same resources with the pretrained model performing poorly on the training data



Impact of Database Storage on Workflow

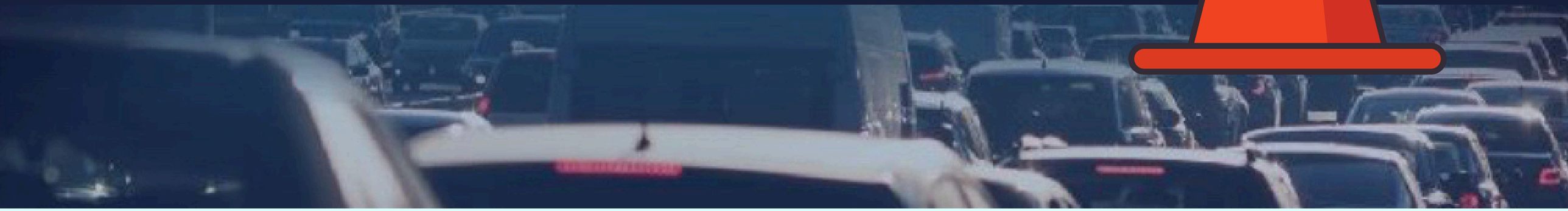
using colab and extracting the data directly from google drive make it easy to perform on

the difficulty appears mainly in uploading data on the drive itself showing since our data is coloured images

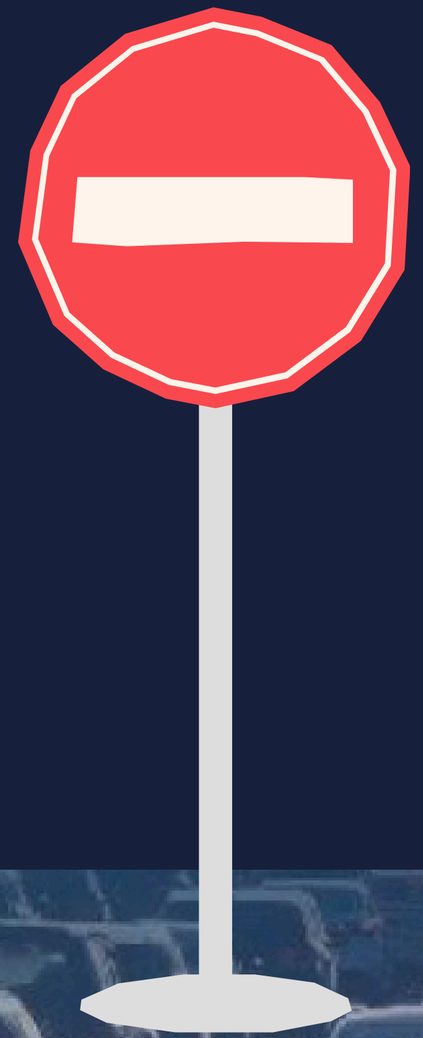


Future Extensions and Potential Improvements

Future improvements could be using the videos and not only the image for real time detection .



Thank you !



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