




# -Computer Vision- Aircraft and other Vehicles



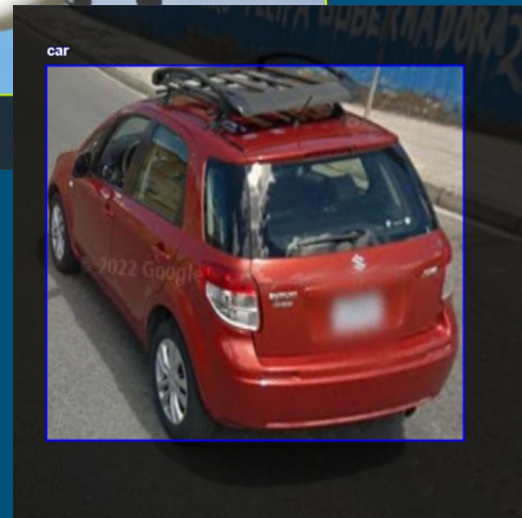
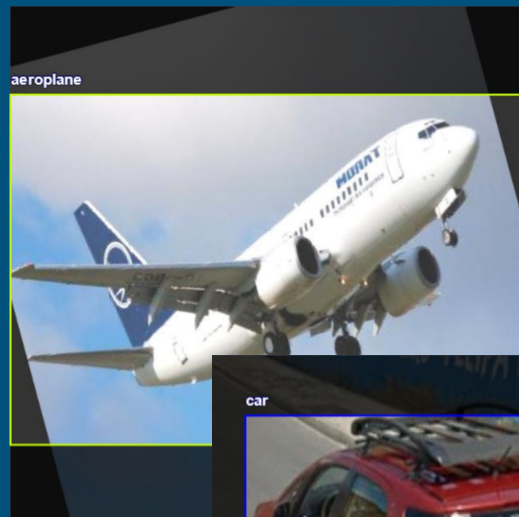
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# Objectives

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- Initial goal: Create an image classification program based on YOLO that attempts to locate airplanes in images
- Continuation: Build up on previous program by introducing other vehicles (cars, trucks, helicopters)



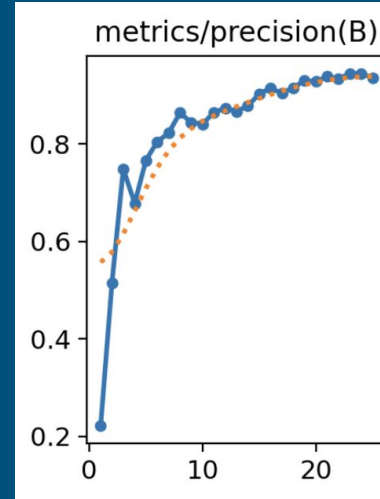
# Methodology

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1. Researched architecture best suited for our goal (YOLOv8, OpenCV)
2. Gathered various datasets to test and train the model with (Roboflow, Kaggle)
3. Compiled datasets onto our Roboflow workspace
4. Trained the YOLOv8 model on our datasets (via Google Colab)
5. Created a working GUI with a basic file viewer to apply the model to locally-saved images

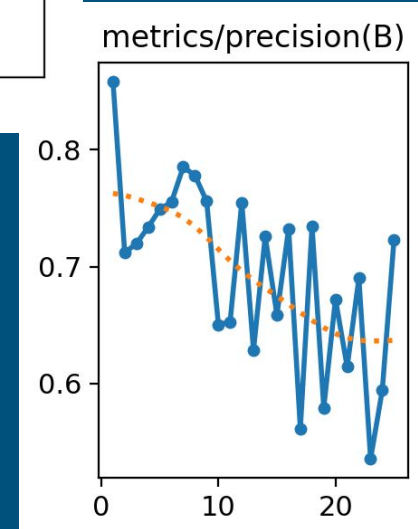
# Outcomes

- Aircraft Detection Model
  - Achieved ~93% precision
- Vehicles and Aircraft Detection Model
  - Achieved ~59% precision
- Extra features: functional GUI



<- precision  
graph for Plane  
Detection

precision graph ->  
for vehicle  
detection



# Model on Aircrafts





# Model on Multiple Vehicle Classes



# Examples for model output with GUI

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Image Folder: C:/Users/wizar.GW/Downloads Browse

```
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00000020 .jpg.rf.4a175811ebf401c900e8635a4e7
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```

aeroplane2 0.60

aeroplane2 0.66

aeroplane2 0.68

Swap Program

Exit Program

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Image Folder: C:/Users/wizar.GW/Downloads Browse

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aeroplane 0.72

Swap Program

Exit Program

CMSC421 Computer Vision // Final Project

Image Folder: C:/Users/wizar.GW/Downloads Browse

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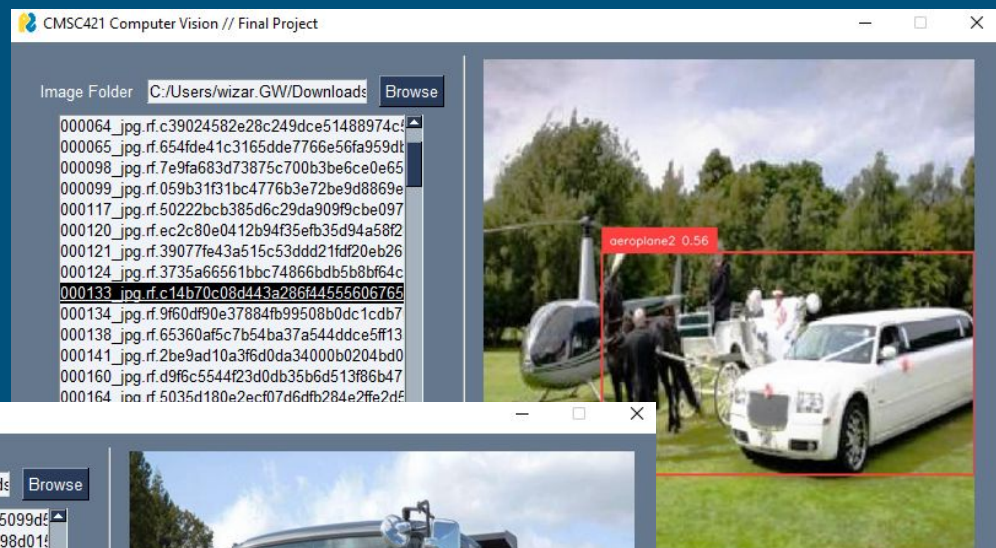
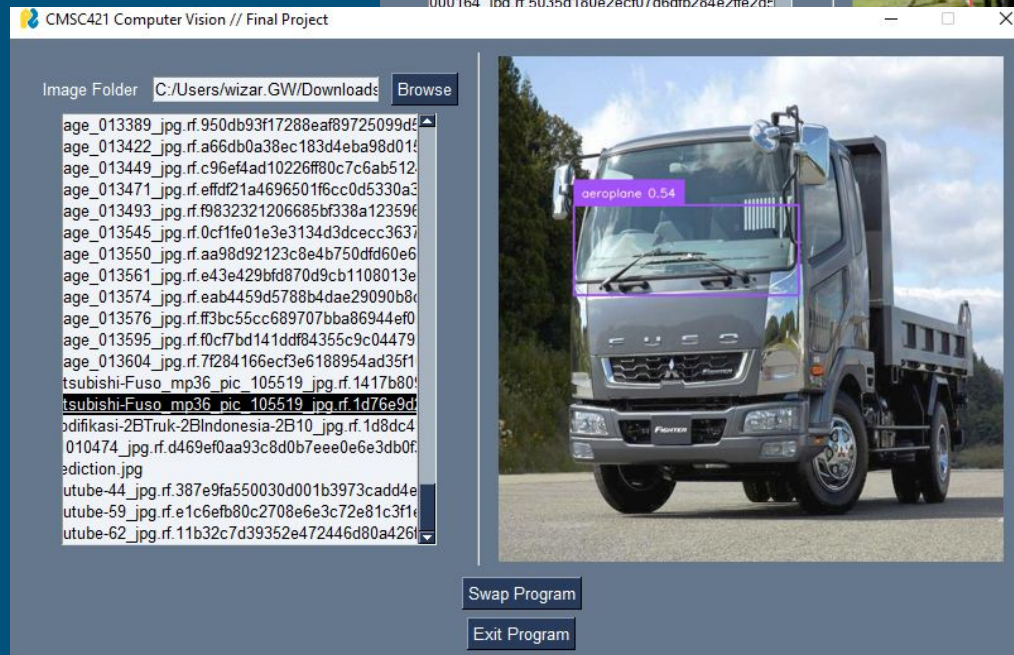
aeroplane 0.62

Swap Program

Exit Program



# For Fun: Model Messups!





# References

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Links to Online Deployment (Roboflow workspace):

- Plane detection/tracking: →  
<https://app.roboflow.com/cmssc421-final-project/plane-detection-eyzak/visualize/2>
- Vehicle detection/classification: →  
<https://app.roboflow.com/cmssc421-final-project/vehicle-detection-ansgq/visualize/1>

Example video link: (copy and paste link into model)

- [https://www.youtube.com/watch?v=1Lqjy25ZBDc&t=58s&ab\\_channel=AirshowWorld](https://www.youtube.com/watch?v=1Lqjy25ZBDc&t=58s&ab_channel=AirshowWorld)

