

River debris object detection

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Aim

-To develop a model that can correctly detect plastic(s),idol(s),flower(s),debris.

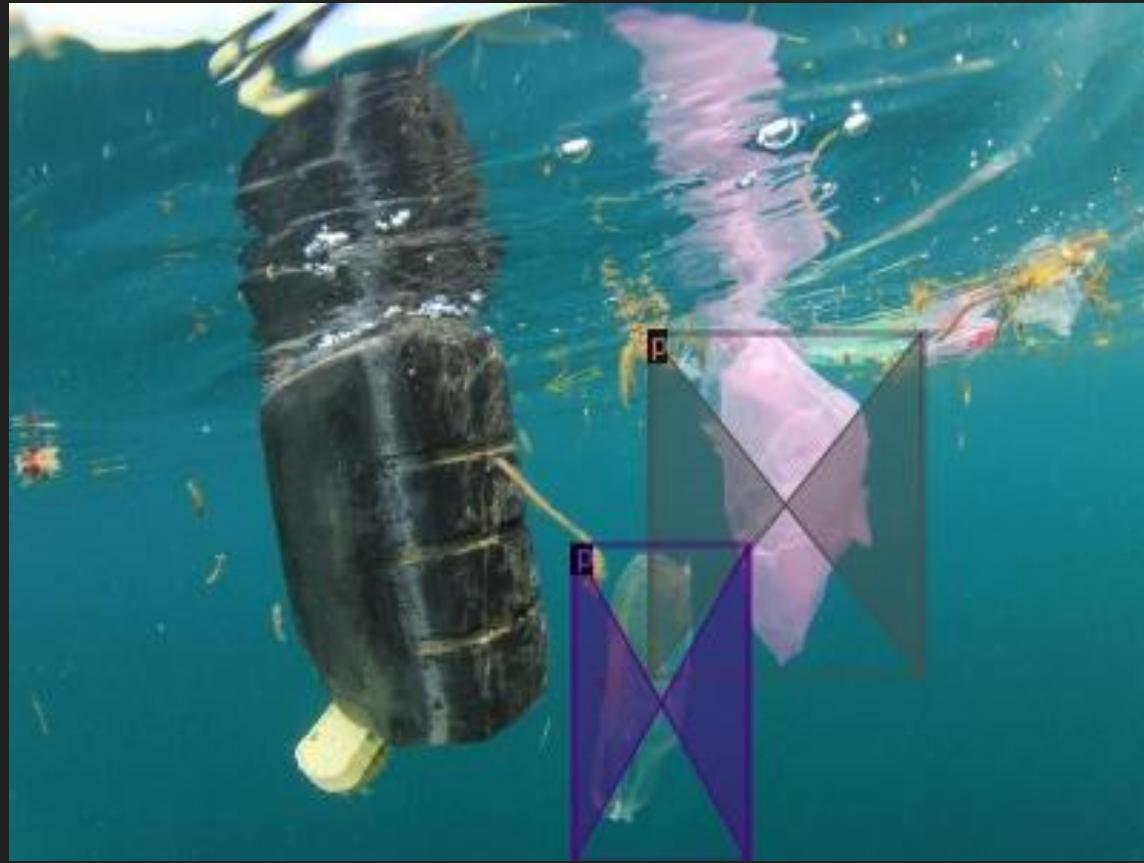
Data preparation

- Scraping using **google_images_download module.**

Labels

- Idol(s) - 'i'
- Plastic(s) - 'p'
- Flower(s) - 'f'
- Debris - 'd'

Sample images







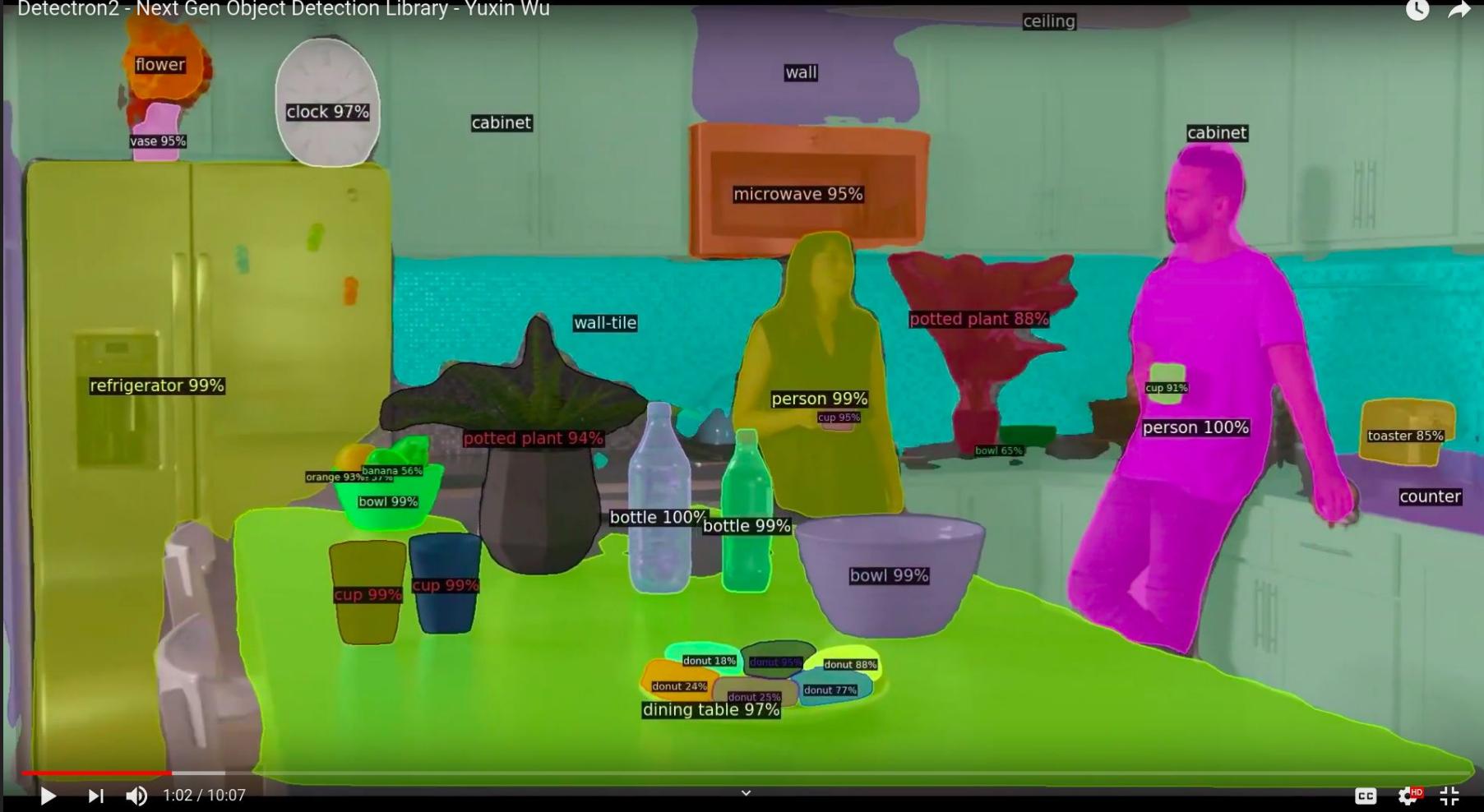
D



Training dataset size ~ 500 images with multiple images.

Algorithm and platform

Detectron v2 on **google colab** for high efficiency and accuracy.





Detectron



Detectron2



FASTER



ACCURATE



MODULAR



PYTORCH



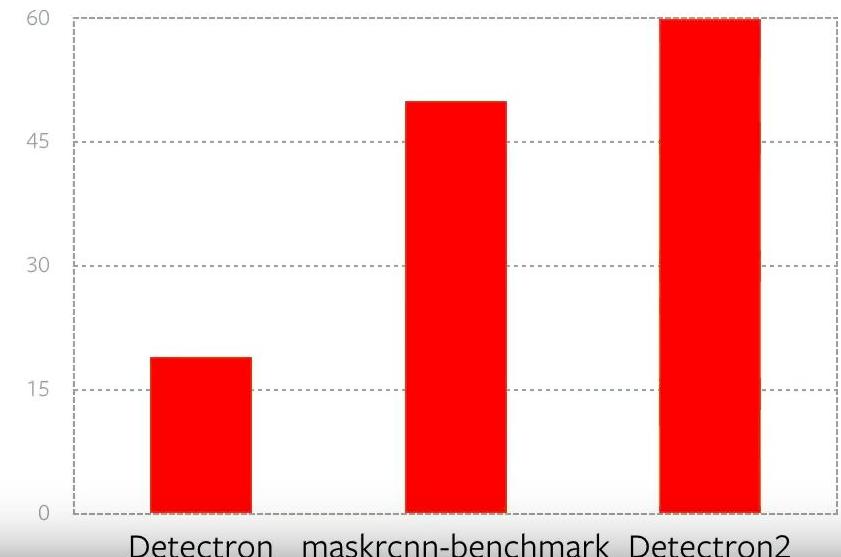
EFFICIENT TRAINING

2 - 3x faster than Detectron

Details at:

[detectron2.readthedocs.io/notes/benchmarks.html](https://detectron2.readthedocs.io/en/latest/notes/benchmarks.html)

Training Throughput of R50-FPN Mask R-CNN



Modification to default settings

Learning rate is decreased to learn more complex features.

No. of iteration increased to overfit on training data.

Results:

On Training data:





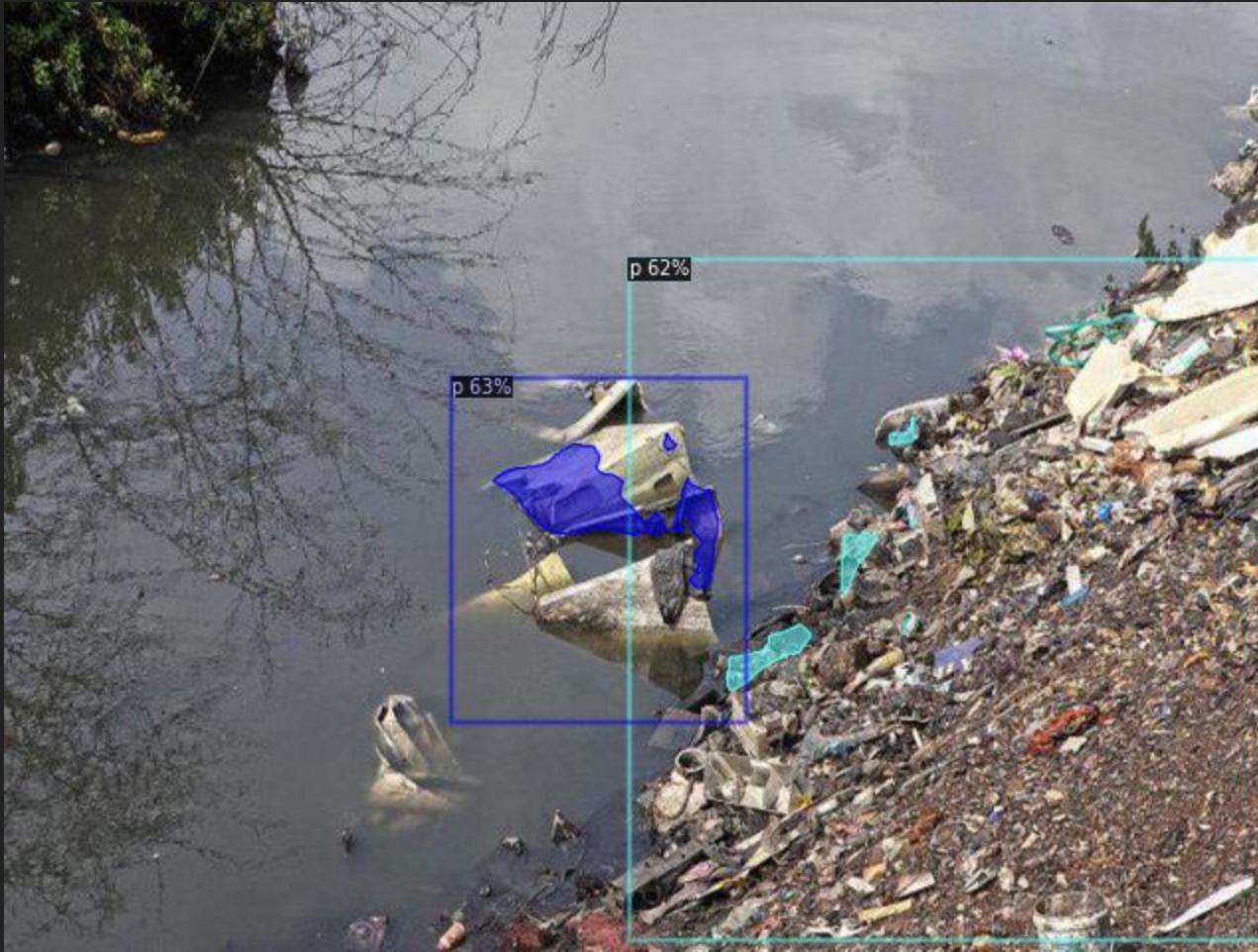




p 36%

p 57%

p 61%





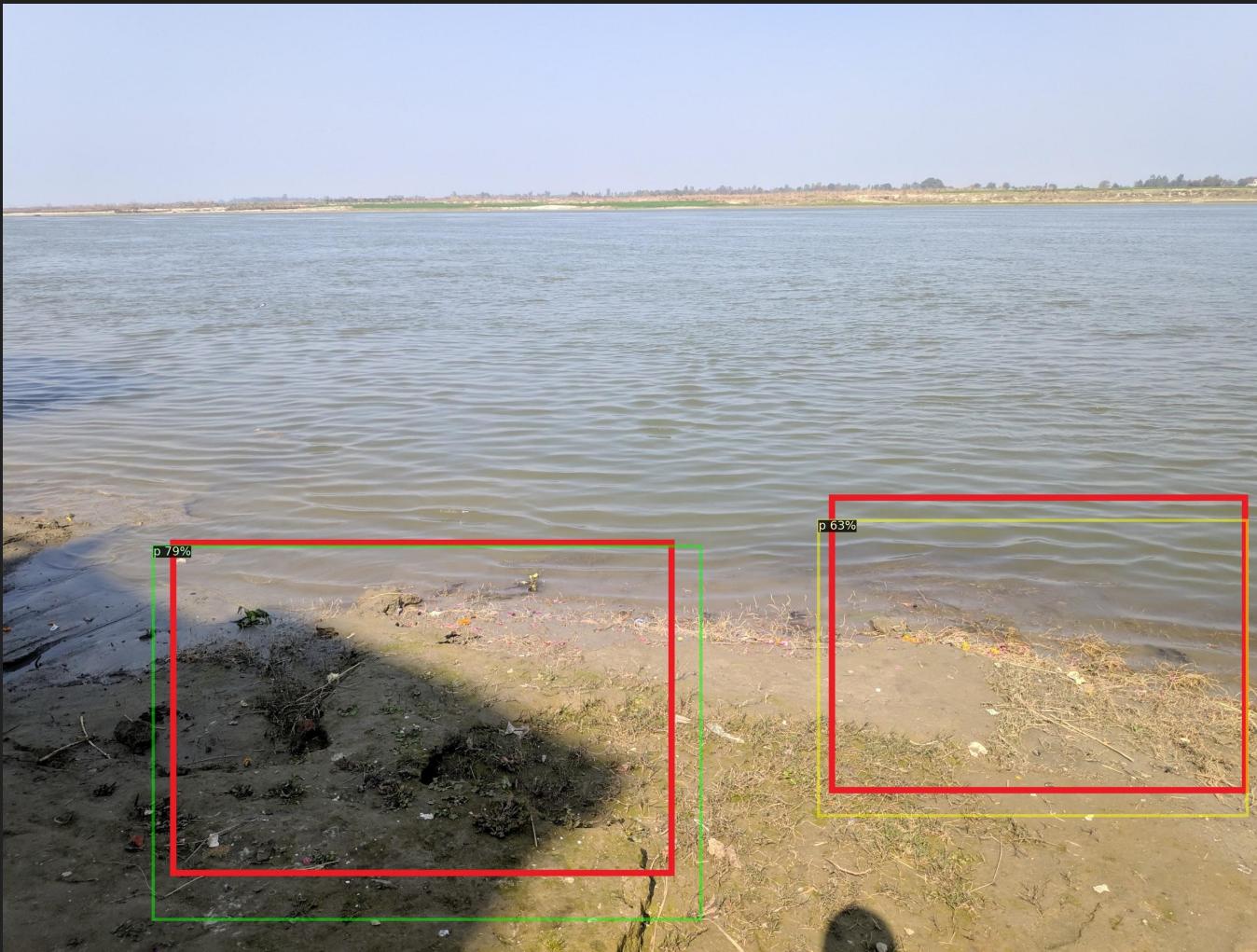


p 62%



p 99%

Results on test data











Results

	TP	FP	FN
Count	116	8	100
Threshold	0.5		
MAP	1.03571428571429		

Improvements that can be done

- 1- More data- by data augmentation
- 2- Better accuracy- by hyperparameter optimization

Thank you