

Projet 7

Développez une preuve de concept

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Problématique



Rapport de classification - Erreur de type 2



Race
French Bulldog



Race donnée
French Bulldog



Race prédite
Chihuahua

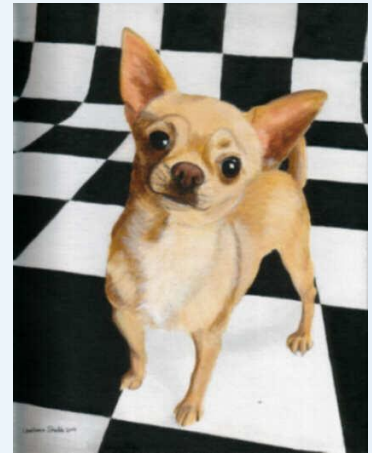
Photo recadrée

Race donnée ✓
French Bulldog

Race prédite ✓
French Bulldog



Race
Chihuahua



Rapport de classification - Erreur de type 2



Race
French Bulldog

✓ **Race donnée**
French Bulldog

✗ **Race prédite**
Chihuahua

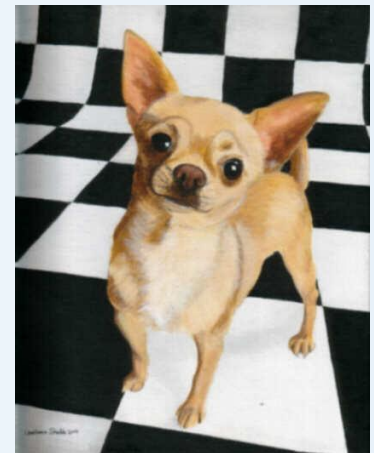
Photo recadrée

Race donnée ✓
French Bulldog

Race prédite ✓
French Bulldog



Race
Chihuahua



Sources bibliographiques



Paper with code



arXiv



Medium



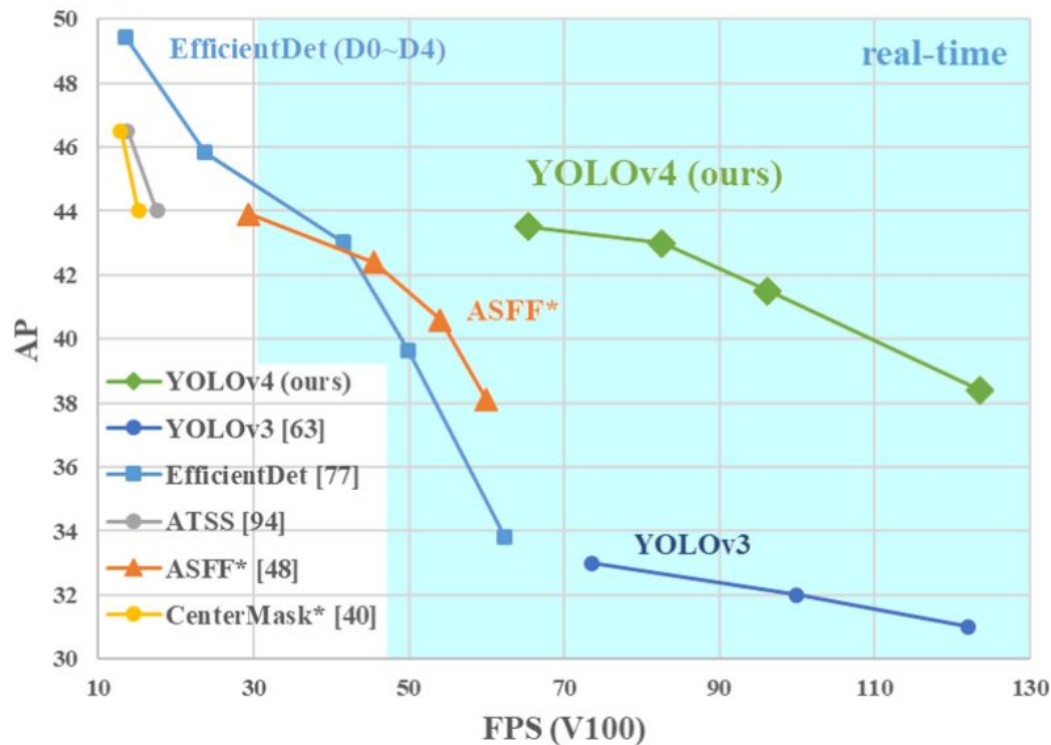
GitHub



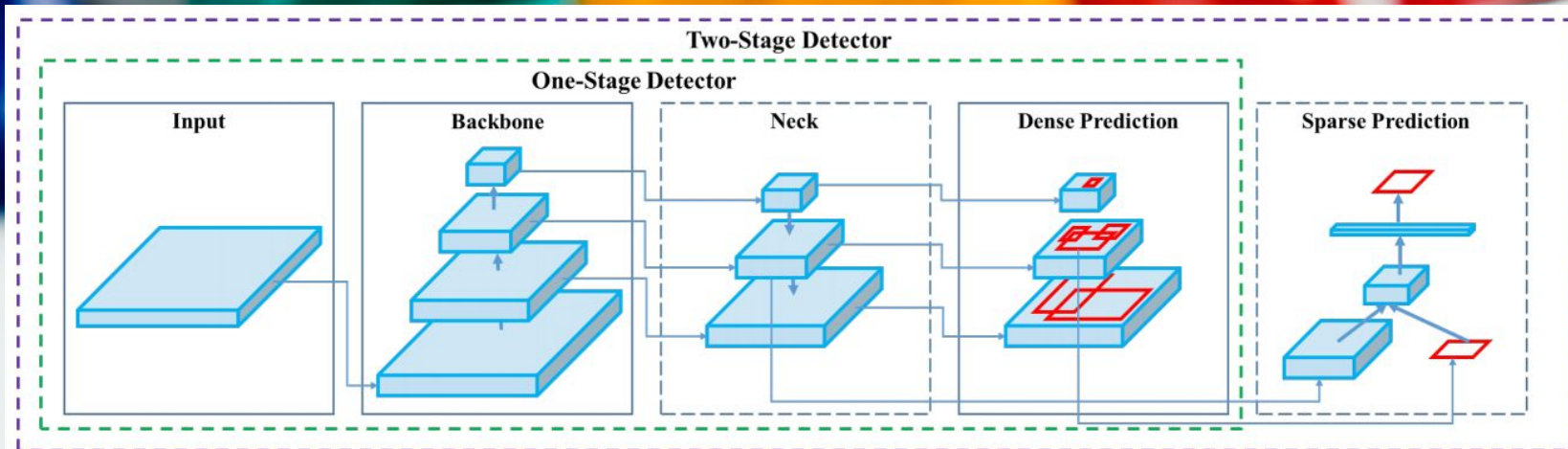
Colab

Etat de l'art

MS COCO Object Detection



YOLO (You Only Look Once) version 4



Input: { Image, Patches, Image Pyramid, ... }

Backbone: { VGG16 [68], ResNet-50 [26], ResNeXt-101 [86], Darknet53 [63], ... }

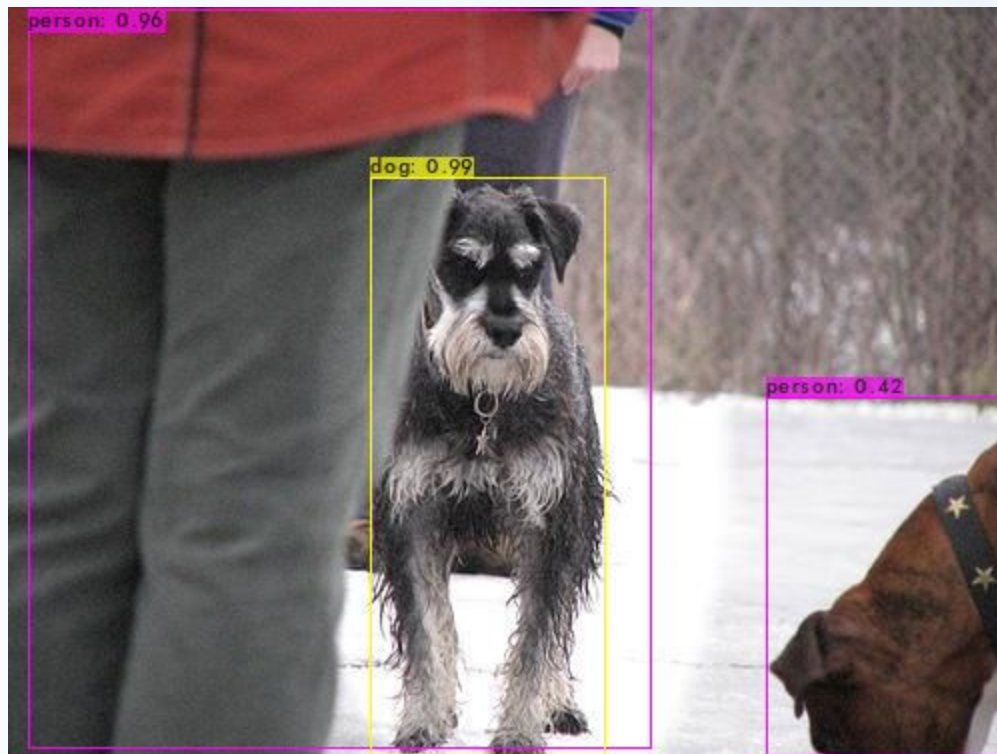
Neck: { FPN [44], PANet [49], Bi-FPN [77], ... }

Head:

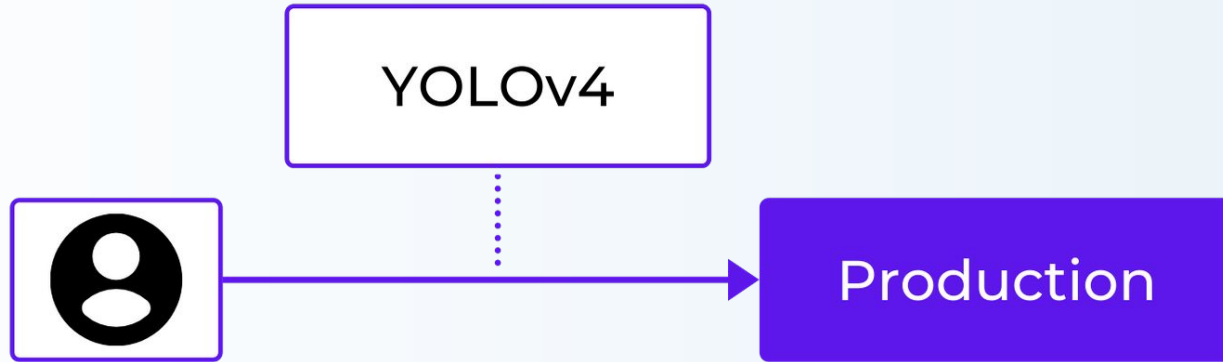
Dense Prediction: { RPN [64], YOLO [61, 62, 63], SSD [50], RetinaNet [45], FCOS [78], ... }

Sparse Prediction: { Faster R-CNN [64], R-FCN [9], ... }

Détection d'objets



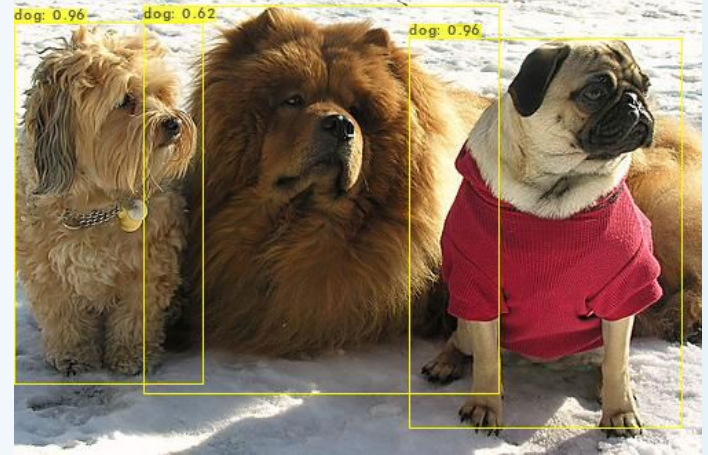
Phase 1 : Intégration en production



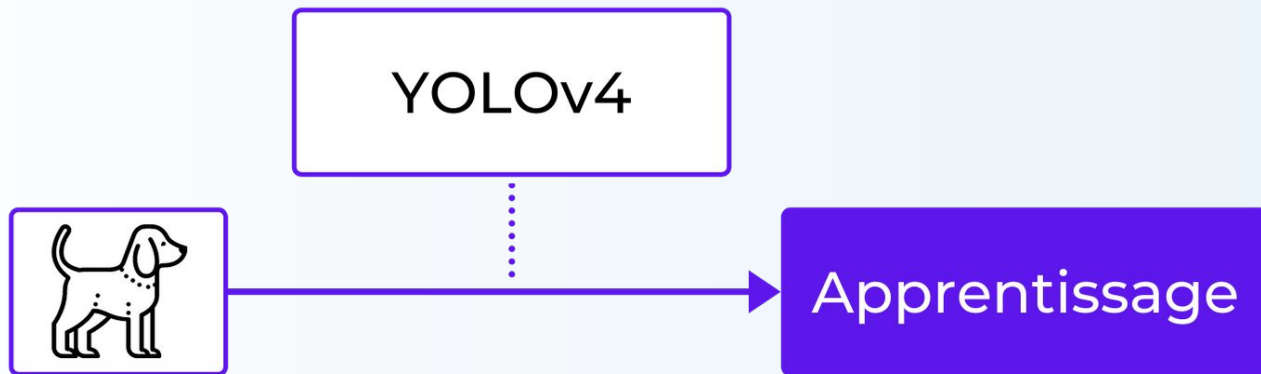
Erreurs induites : Cas n°1



Erreurs induites : Cas n°2



Phase 2 : Apprentissage d'un modèle



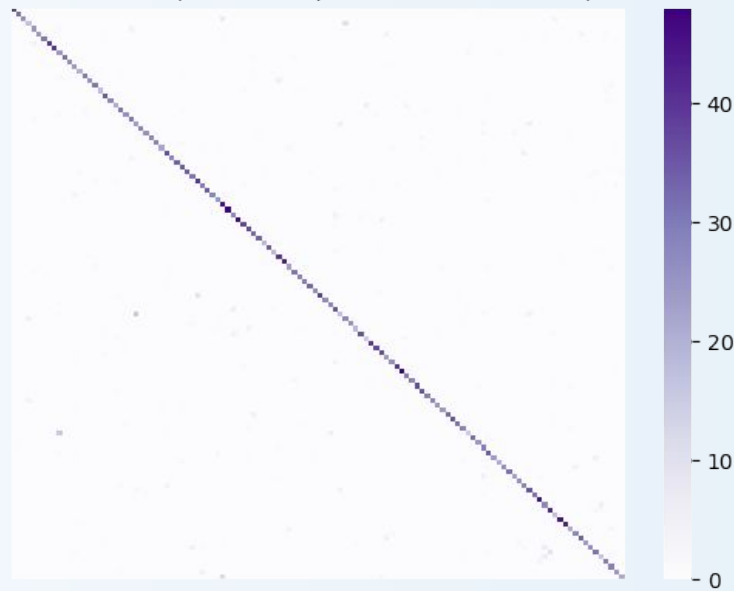
Résultat de l'apprentissage

Matrice de confusion | Xception | DataAugmentation | 120 breeds



Photos originales

Matrice de confusion | Xception | DataAugmentation | 120 breeds



Photos nettoyées

Confusion sur la race Eskimo dog

Eskimo dog ([American Kennel Club](#))


OVERVIEW

PUPPIES

BREED STANDARD

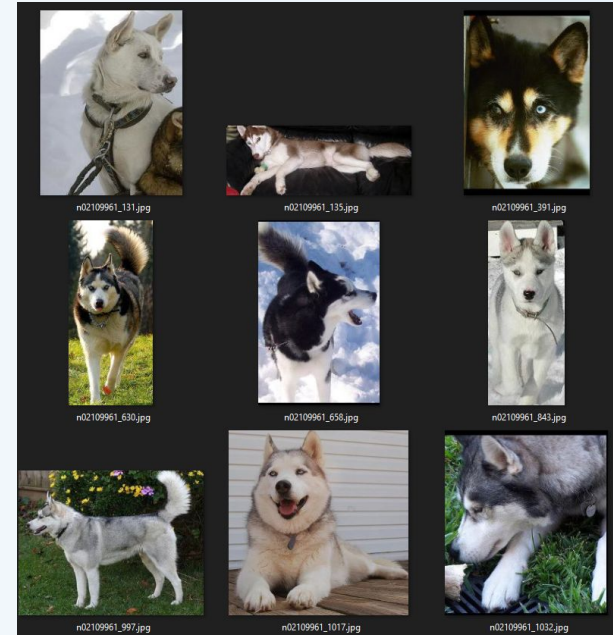
Temperament:
Playful, Perky, Smart

AKC Breed Popularity: Ranks 122 of 196
Height: 9-12 inches (toy), 12-15 inches (miniature), 15-19 inches (Standard)
Weight: 6-10 pounds (toy), 10-20 pounds (miniature), 25-35 pounds (standard)
Life Expectancy: 13-15 years
Group: [Non-Sporting Group](#)

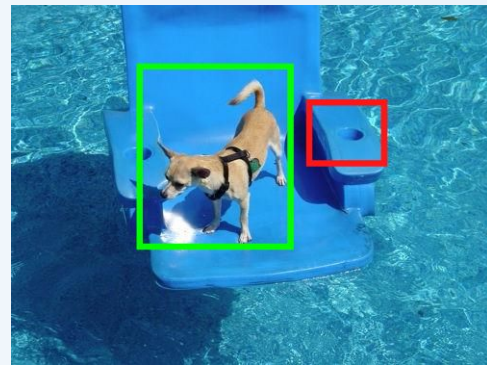
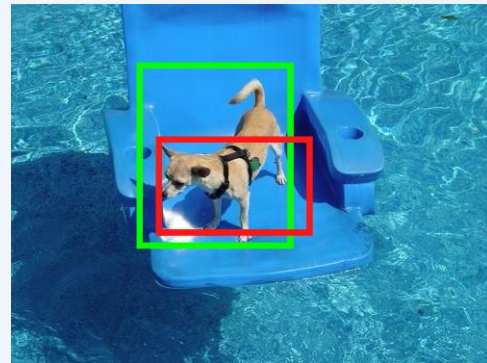
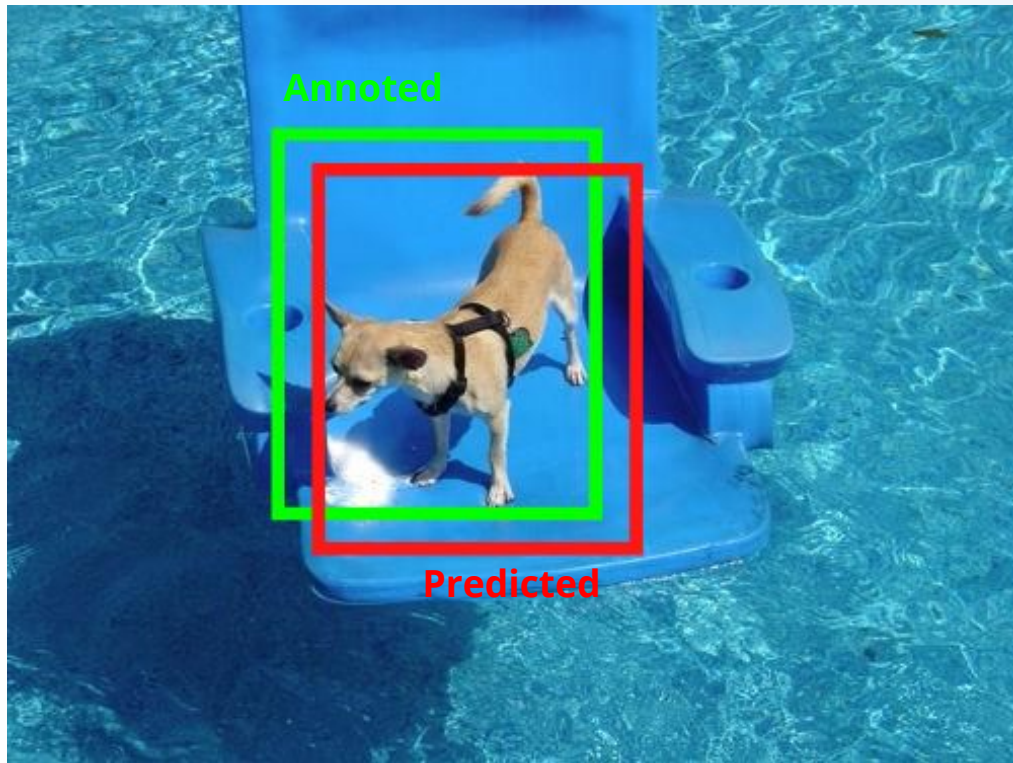


[blendshapes/Getty Images Plus via Getty Images](#)

Classe Eskimo dog (Stanford dogs dataset)



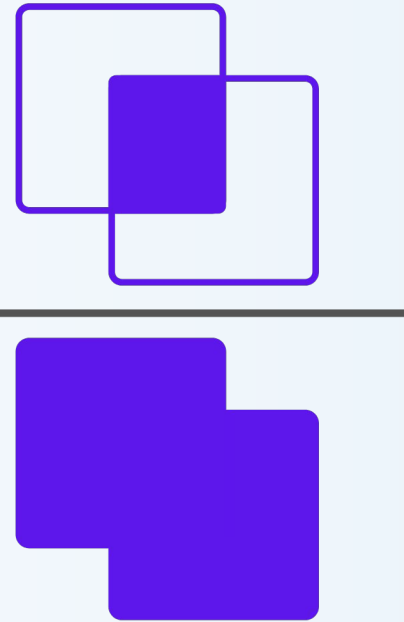
Principes d'évaluation d'un détecteur d'objet



Métriques custom : position et taille

| treshold | metric_center | metric_shape | metric_global |
|----------|---------------|--------------|---------------|
| 0.05 | 79.0 | 49.0 | 48.0 |
| 0.1 | 87.0 | 75.0 | 74.0 |
| 0.2 | 90.0 | 87.0 | 86.0 |
| 0.5 | 93.0 | 93.0 | 92.0 |
| 1.0 | 100.0 | 100.0 | 100.0 |

Métrique IoU - Intersection over Union

$$\text{IoU} = \frac{\text{Overlap}}{\text{Union}}$$


The diagram illustrates the components of the IoU formula. The numerator, 'Overlap', is shown as two overlapping squares where the intersection is shaded solid blue. The denominator, 'Union', is shown as the combined area of the two squares, also shaded solid blue.

Métrique IoU - Intersection over Union

| threshol | metric_iou |
|----------|------------|
| 0.05 | 12.0 |
| 0.1 | 46.0 |
| 0.2 | 79.0 |
| 0.5 | 89.0 |
| 1.0 | 97.0 |

