

# 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

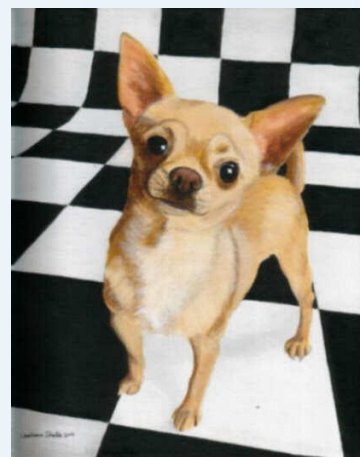
**Photo recadrée**

**Race donnée** ✓  
French Bulldog

**Race prédite** ✓  
French Bulldog



**Race**  
Chihuahua





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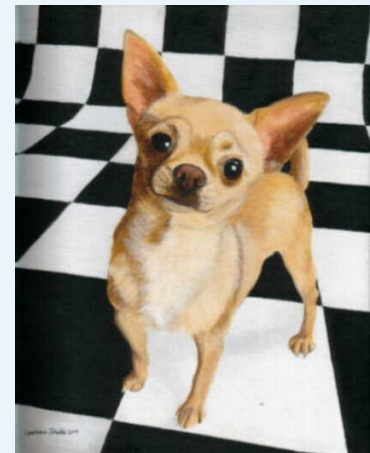
## Photo recadrée

**Race donnée** ✓  
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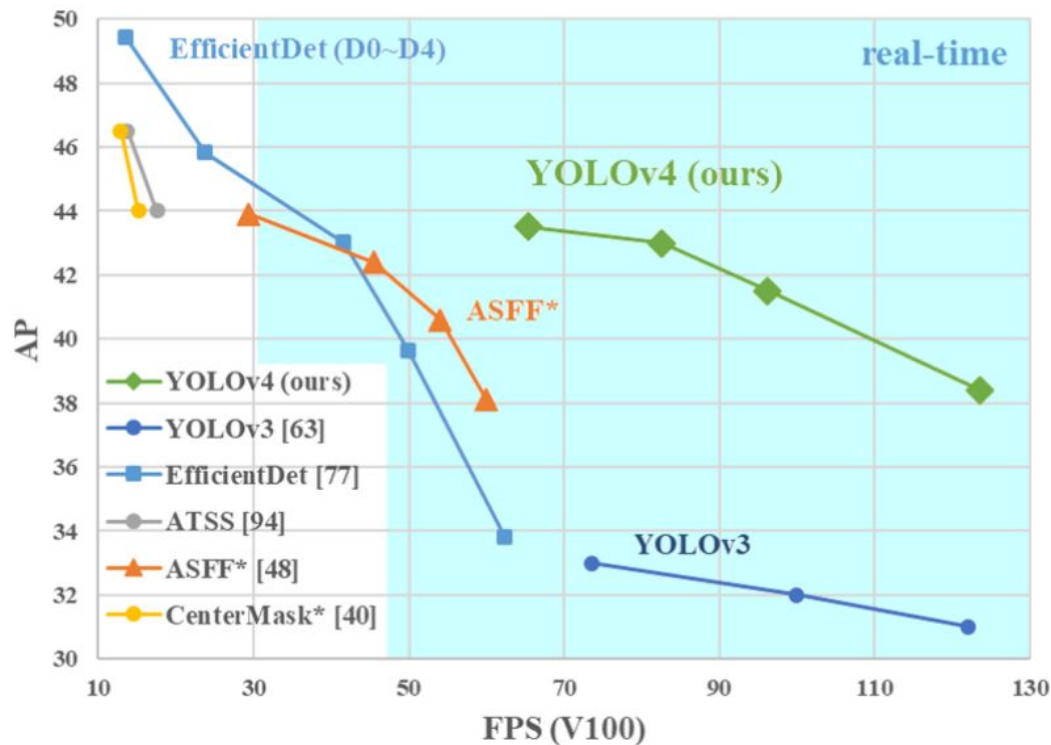


**Race**  
Chihuahua

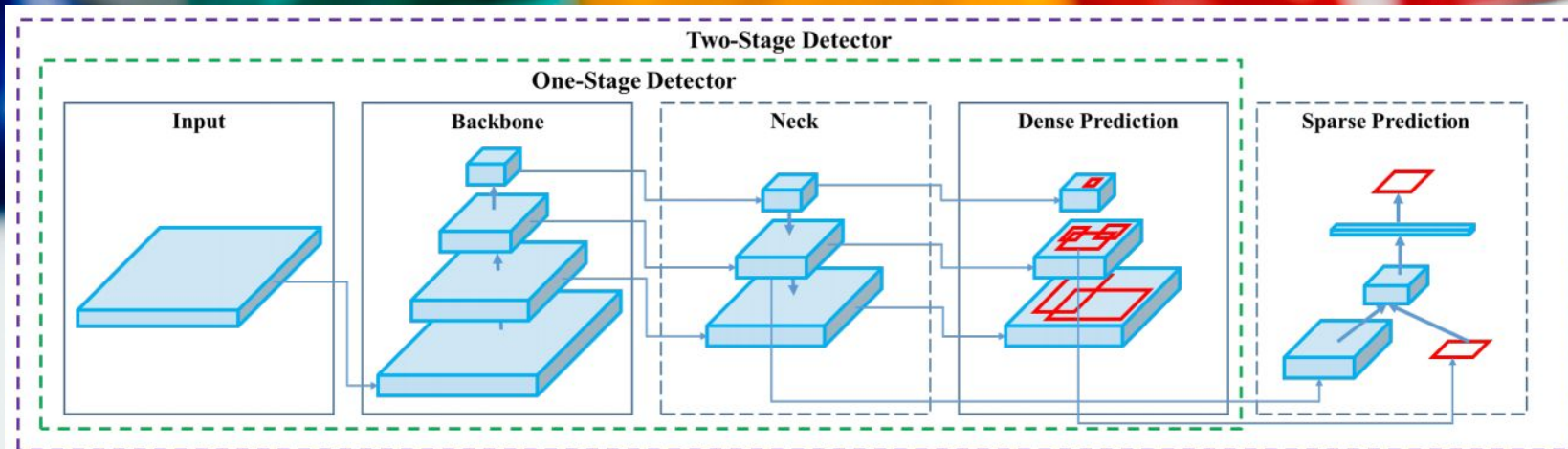


# Etat de l'art

## 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], ... }

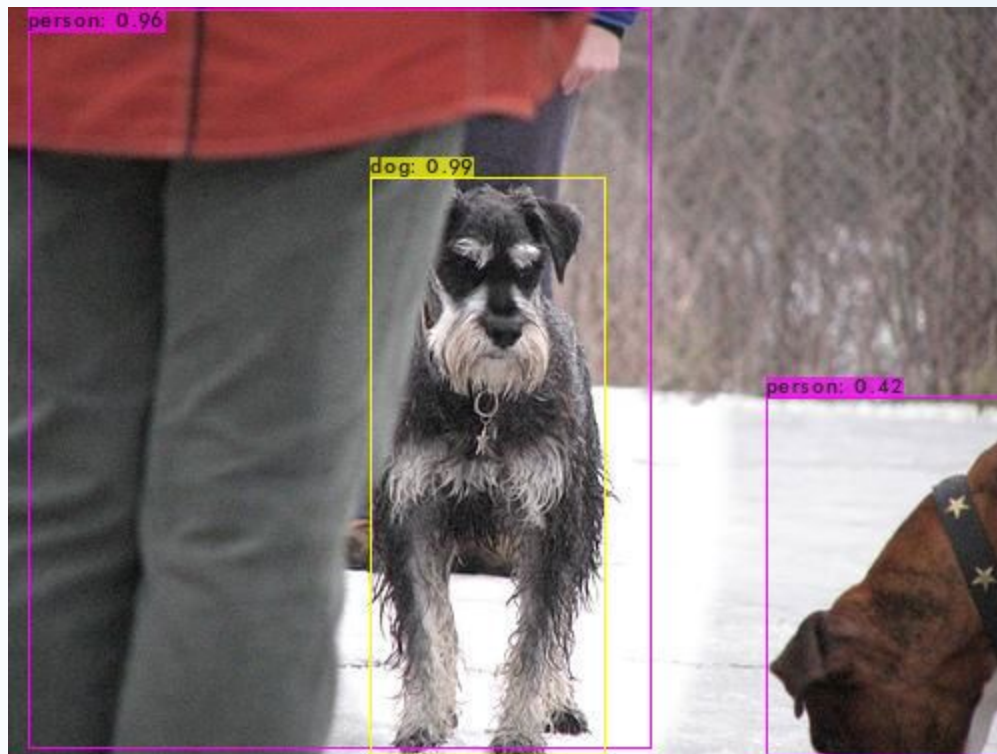
Neck: { FPN [44], PANet [49], Bi-FPN [77], ... }

Head:

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

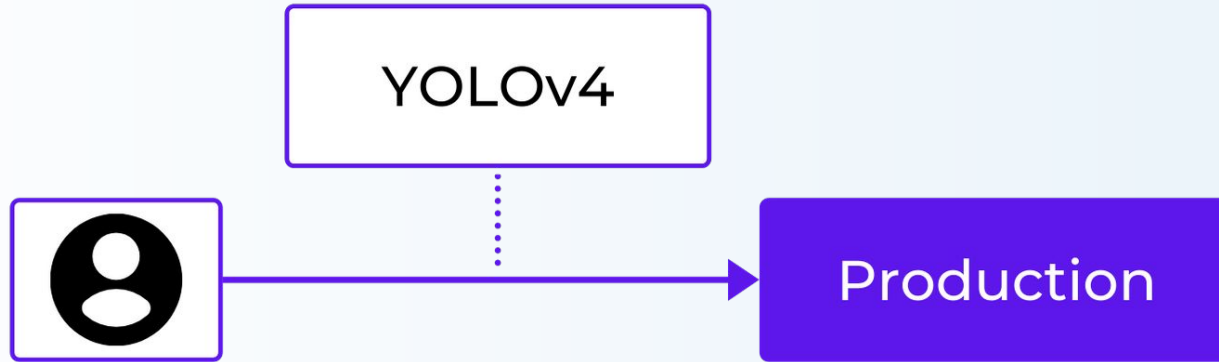
Sparse Prediction: { Faster R-CNN [64], R-FCN [9], ... }

# Détection d'objets





# Phase 1 : Intégration en production

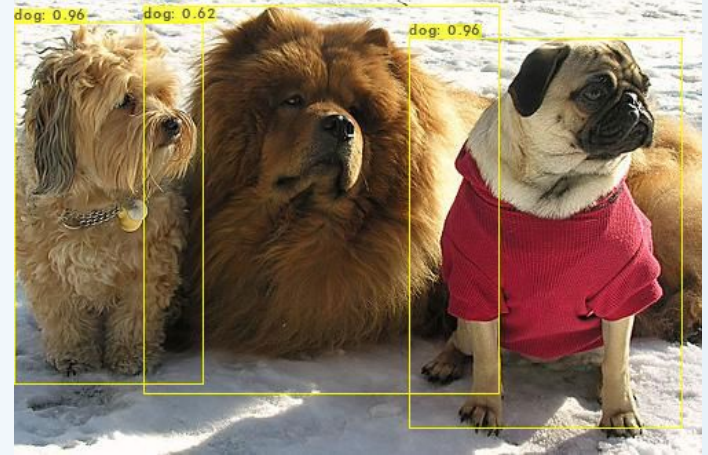




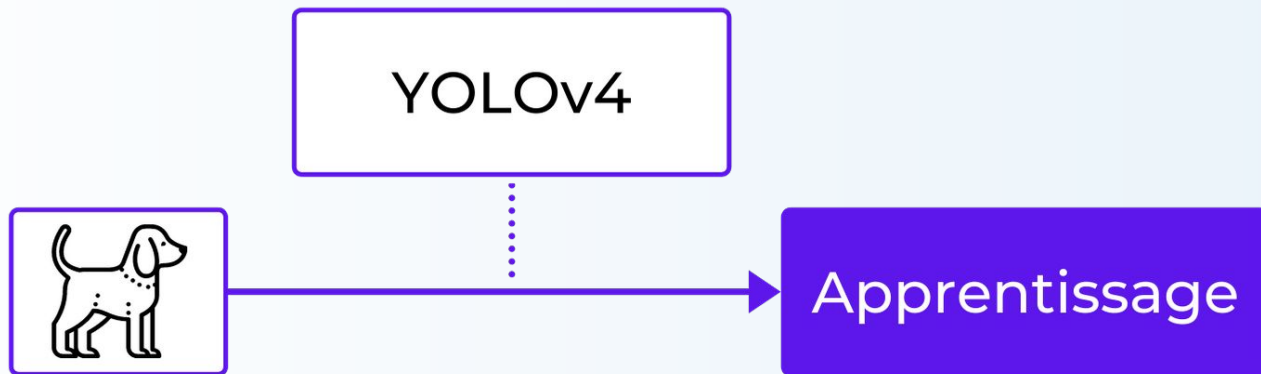
# Erreurs induites : Cas n°1



## Erreurs induites : Cas n°2



## Phase 2 : Apprentissage d'un modèle





# Confusion sur la race Eskimo dog

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


OVERVIEW

PUPPIES

BREED STANDARD

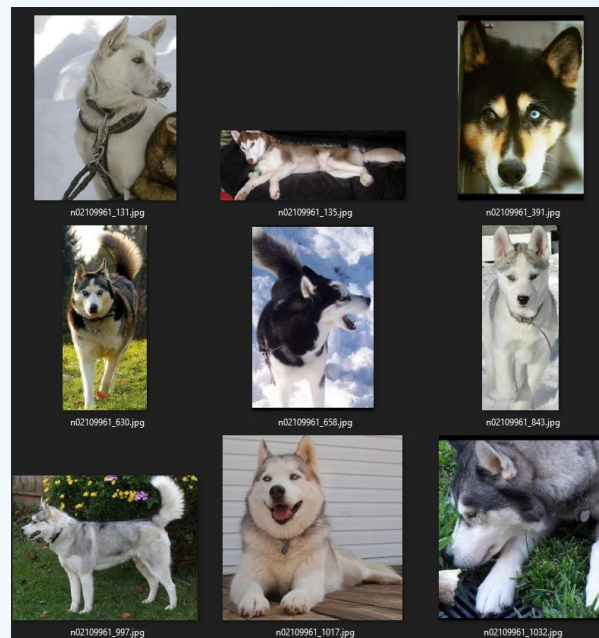
Temperament:  
**Playful, Perky, Smart**

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](#)

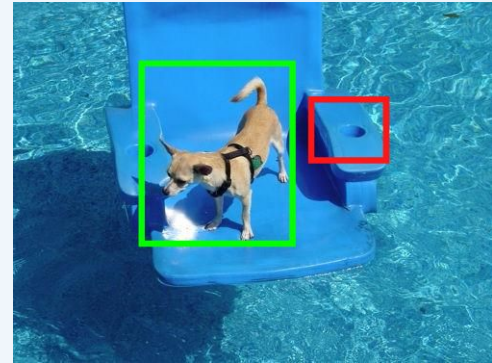
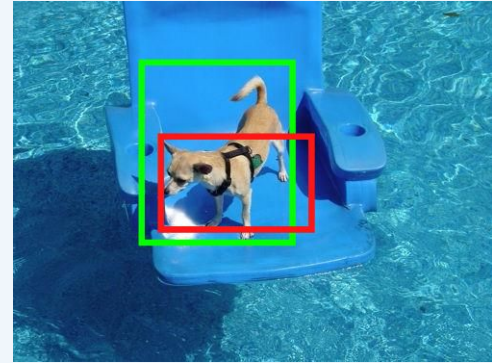
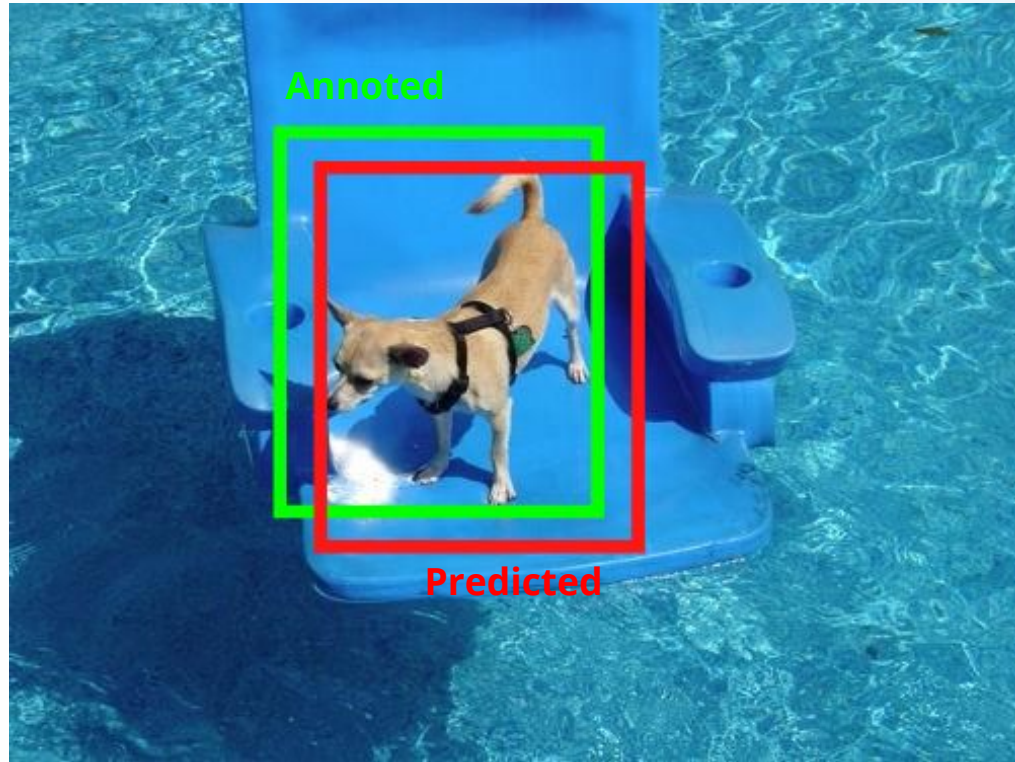


[blendshapes/Getty Images Plus via Getty Images](#)

## Classe Eskimo dog (Stanford dogs dataset)



# Principes d'évaluation d'un détecteur d'objet

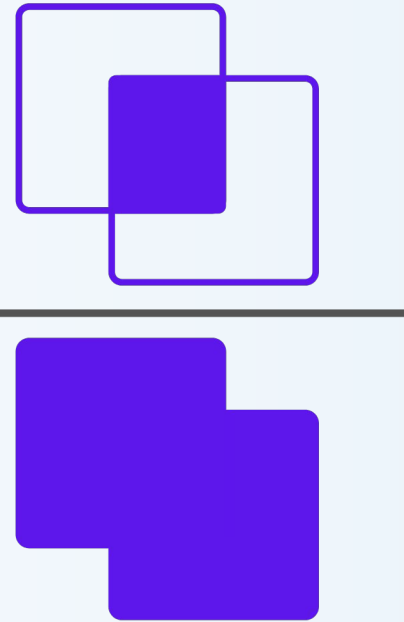


# Métriques custom : position et taille

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

treshold	metric_iou
0.05	12.0
0.1	46.0
0.2	79.0
0.5	89.0
1.0	97.0

