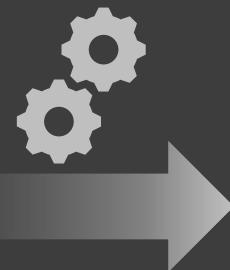
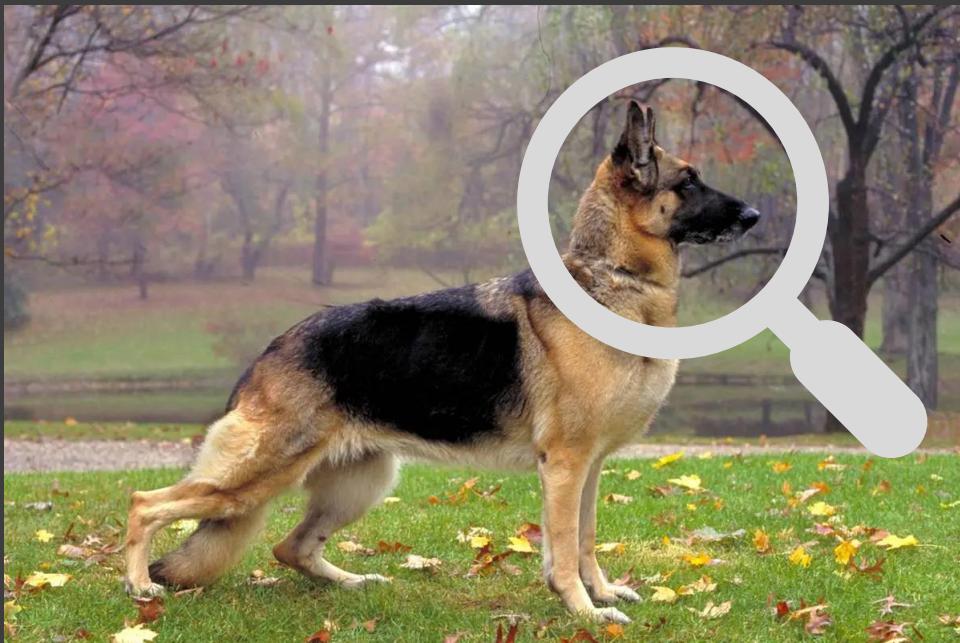


# Projet 6

Classer des images à l'aide d'algorithmes de Deep Learning

# Problématique

Classer  
des chiens



Berger Allemand

# Problématique

Classer  
des chiens

On va ne choisir que 10 races de chiens  
pour simplifier l'exécution

Shih-Tzu

Berger Allemand

Chihuahua

Boxer

Labrador

Golden

York

Beagle

Bouledogue français

Husky

# Problématique

Les  
Images

Siberian\_husky



Shih



Eric Linton Dogo Shih Tzu Rio  
April 1st 2007

# Problématique

Les  
Images

Chihuahua

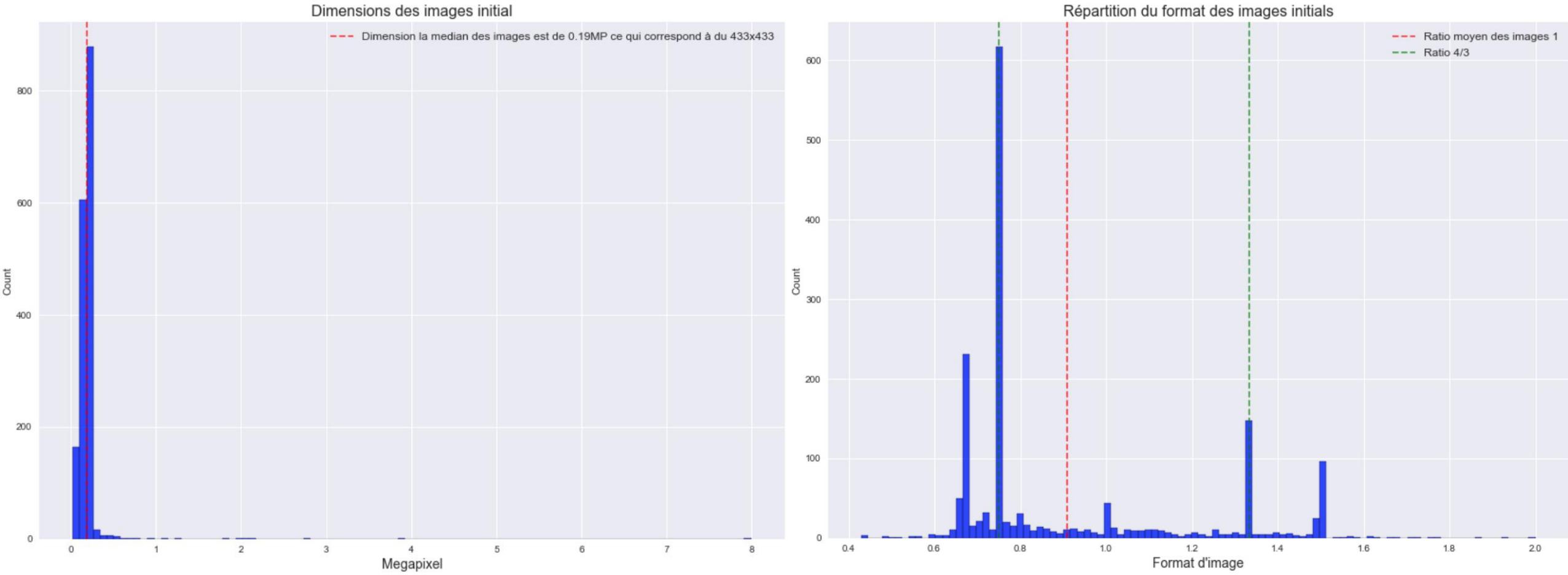


German\_shepherd



# Problématique

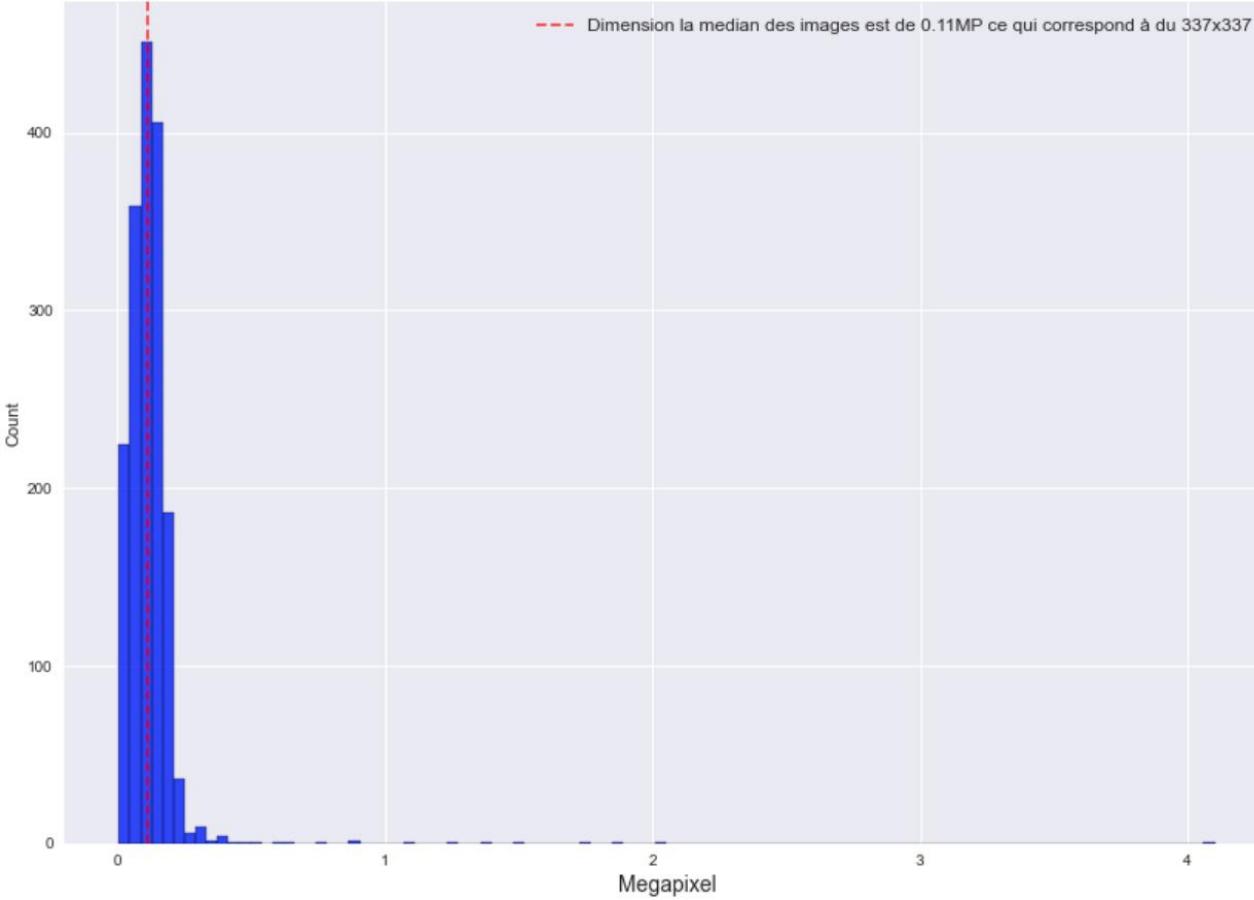
Exploration  
des données



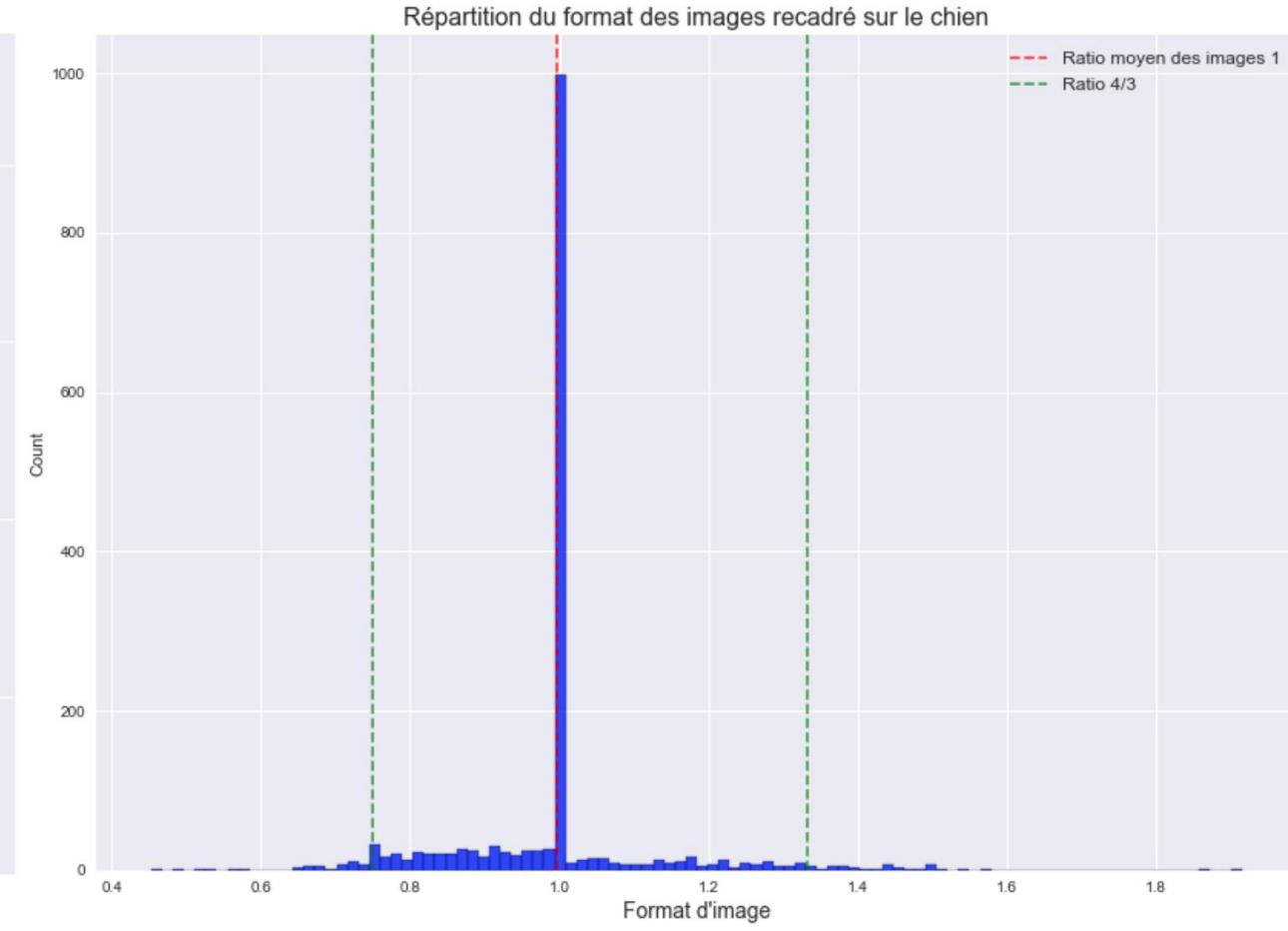
# Problématique

Exploration  
des données

Dimensions des images recadré sur le chien



Répartition du format des images recadré sur le chien



# Recherche Prétraitement

Configurations  
essayés



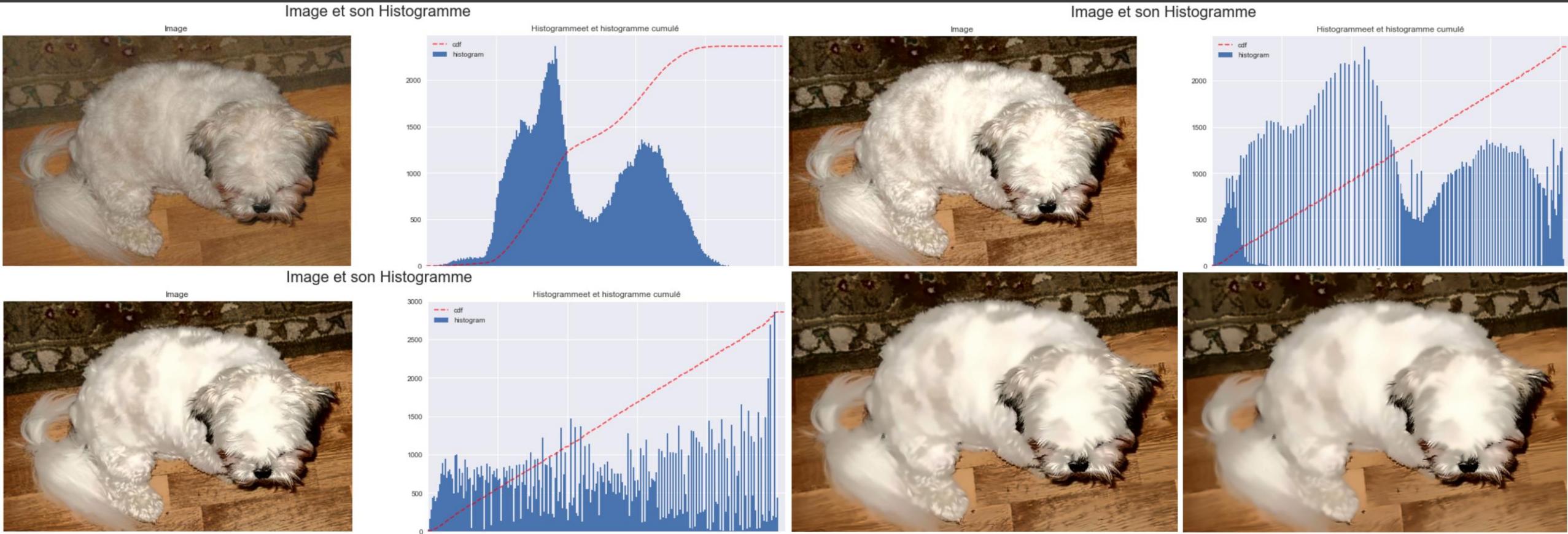
# Recherche Prétraitement

Configurations  
essayés



# Recherche Prétraitement

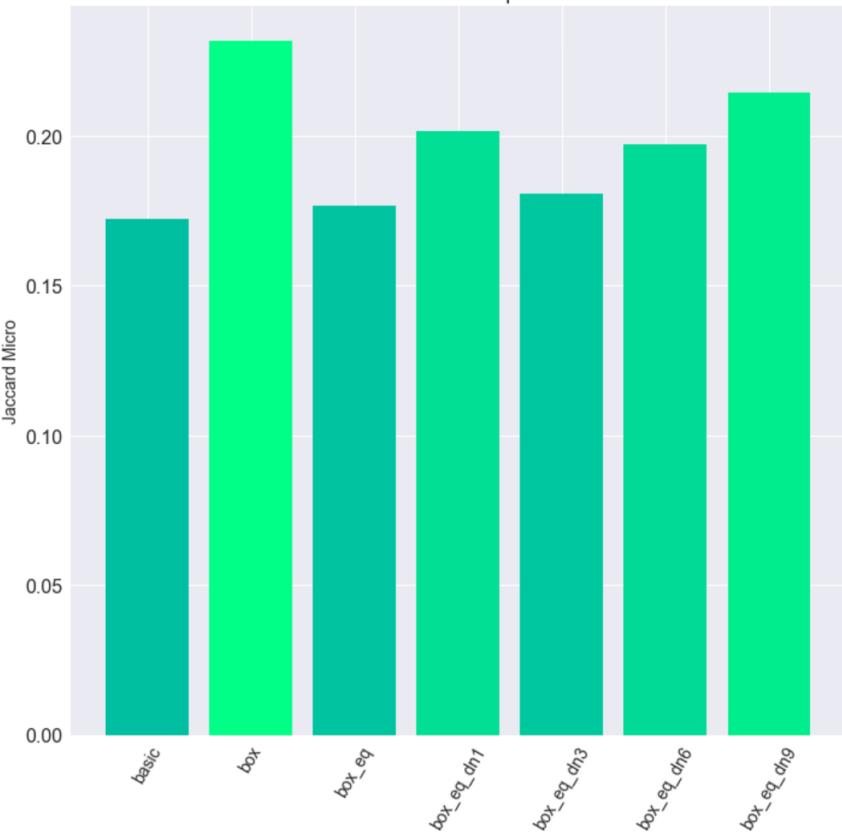
Configurations  
essayés



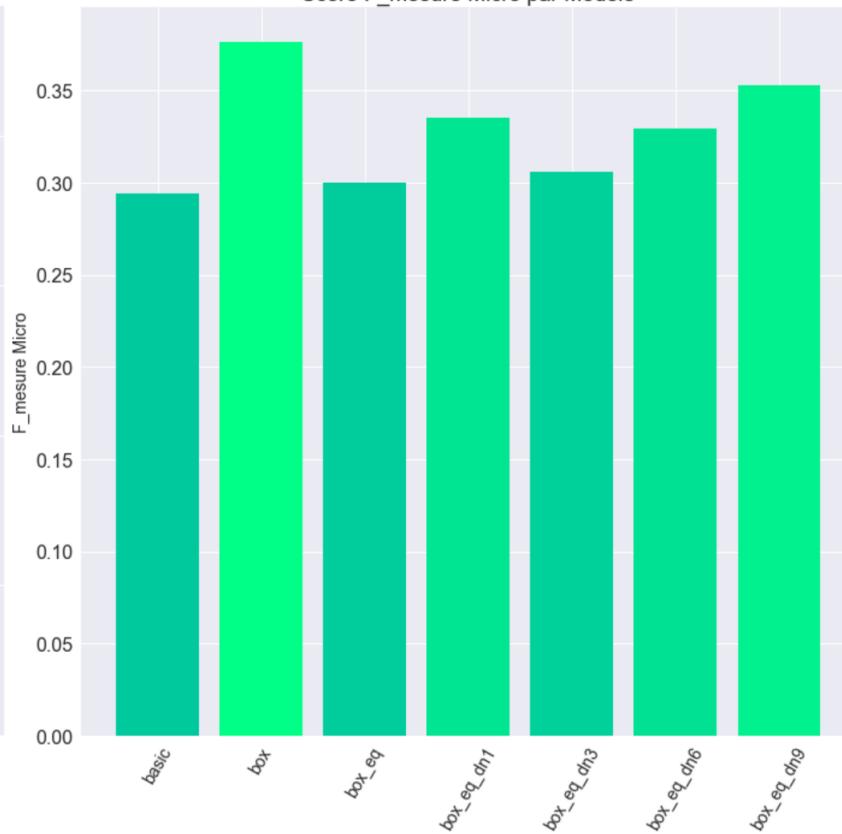
# Recherche Prétraitement

Résultats

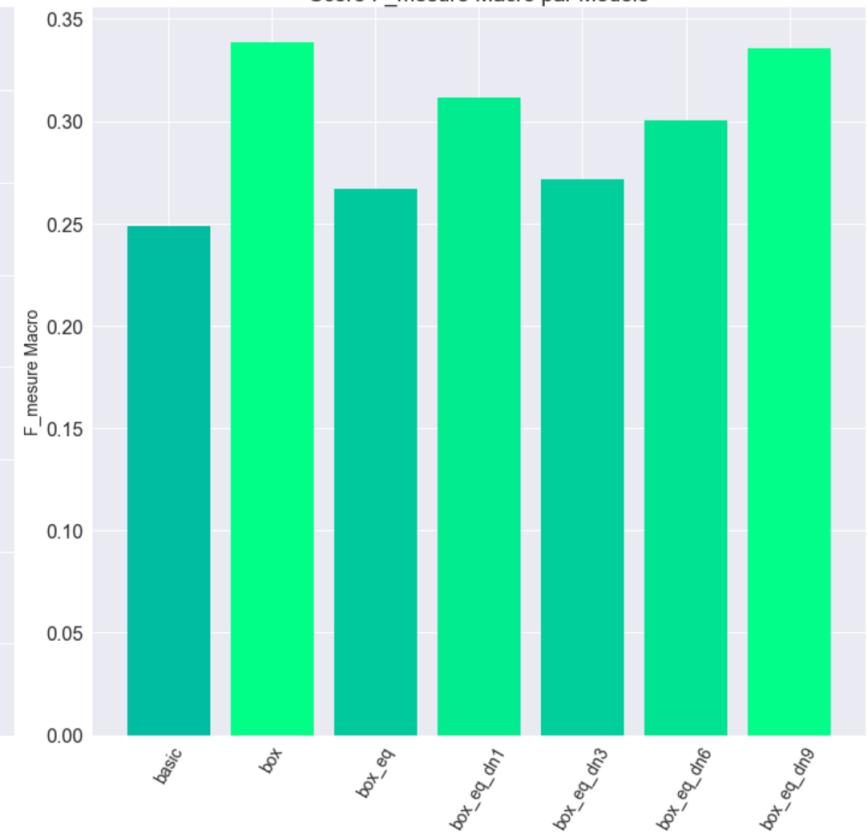
Score Jaccard Micro par Modele



Score F\_mesure Micro par Modele

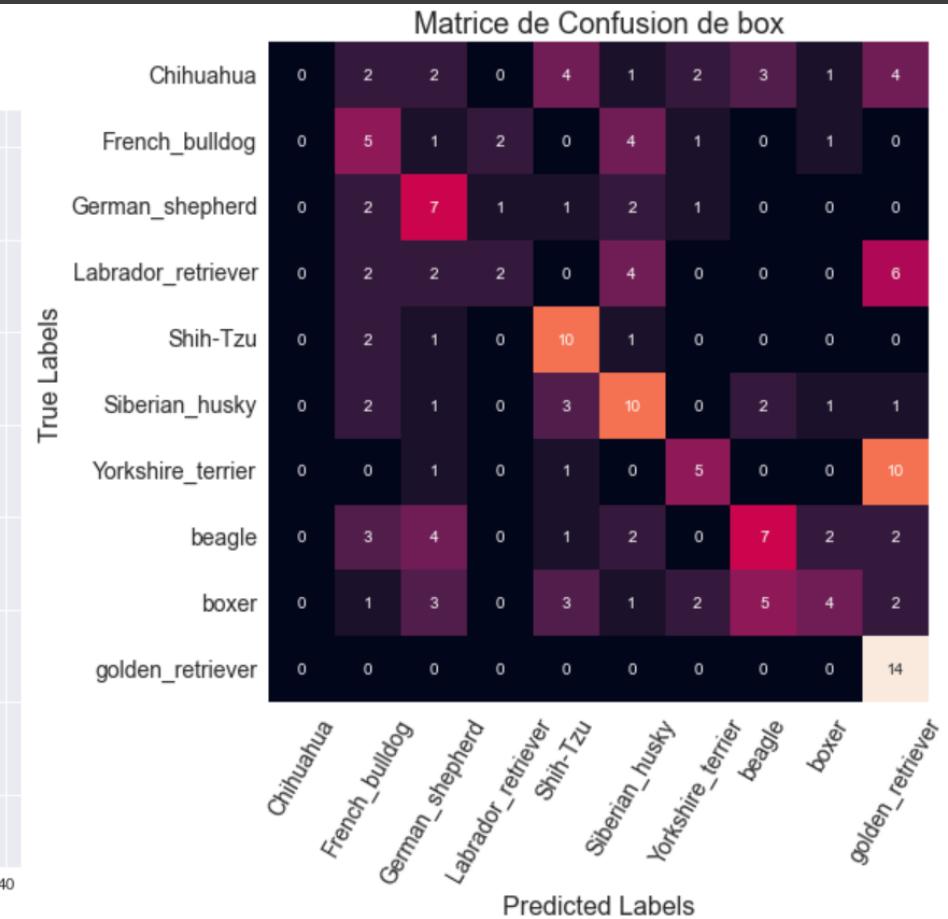
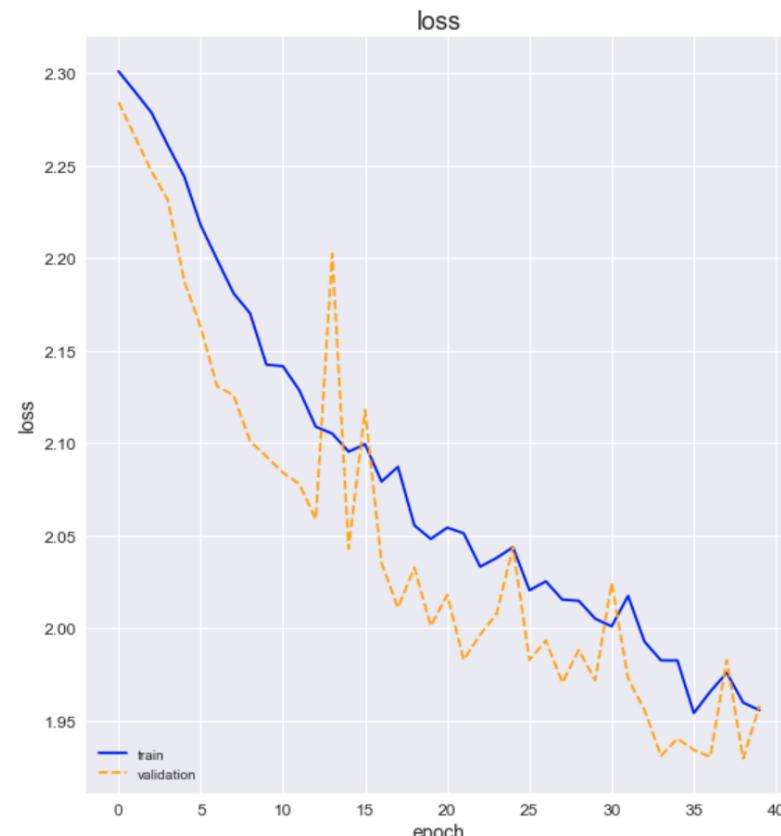
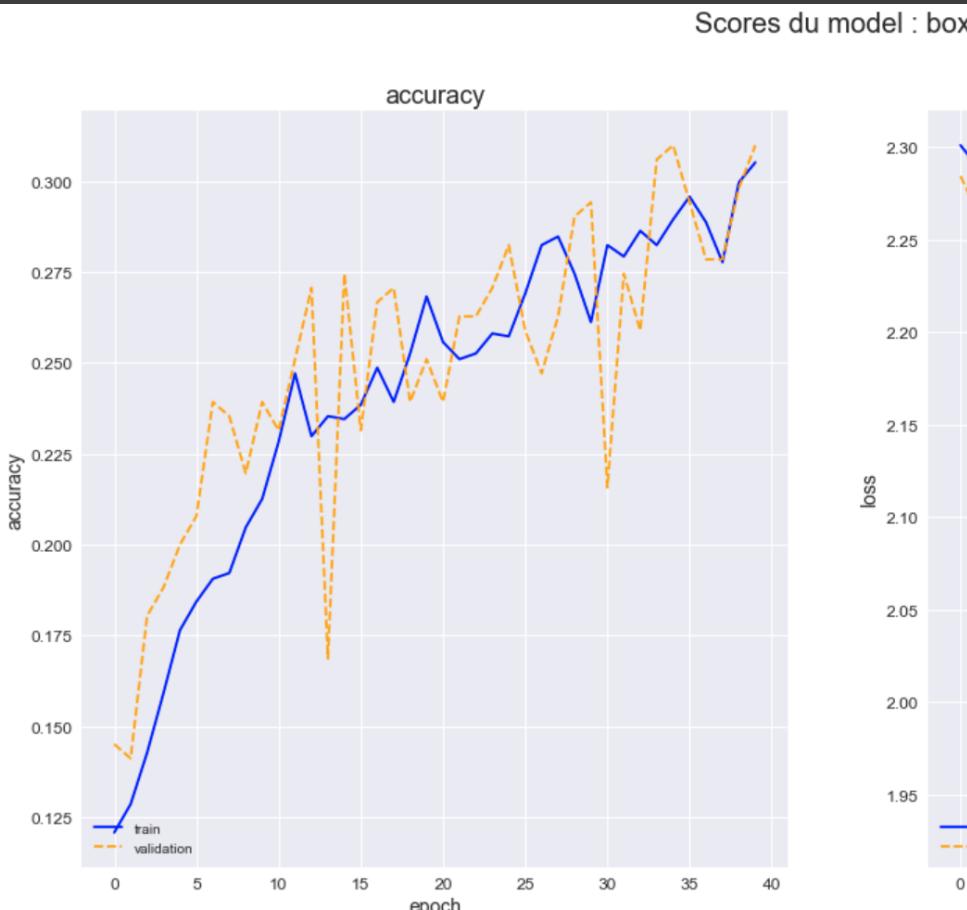


Score F\_mesure Macro par Modele



# Recherche Prétraitement

Résultats



# Recherche d'Augmentateur

- Zoom
- Rotation
- Symétrie verticale
- Décalage vertical
- Décalage horizontal

Configurations  
essayés

Augmentation basique



# Recherche d'Augmentateur

Configurations  
essayés

Variation de luminosité



Forte variation de luminosité

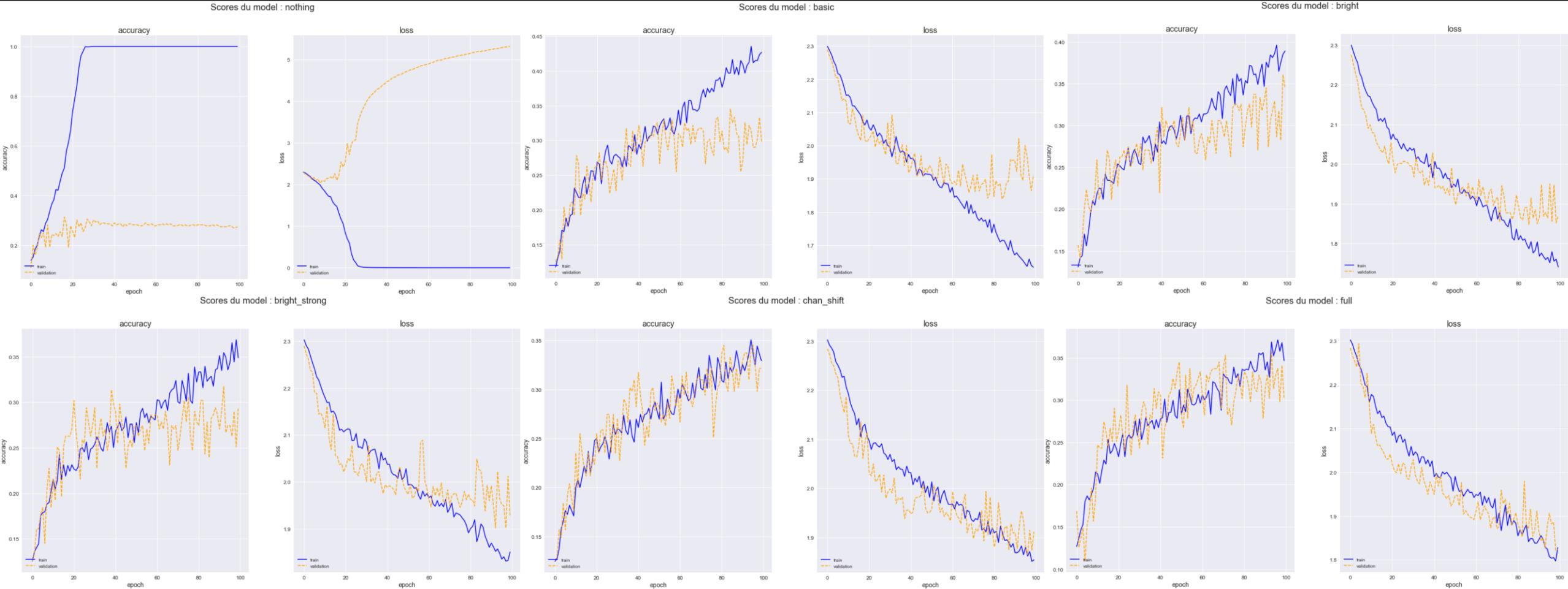


Variation de Gamma



# Recherche d'Augmentateur

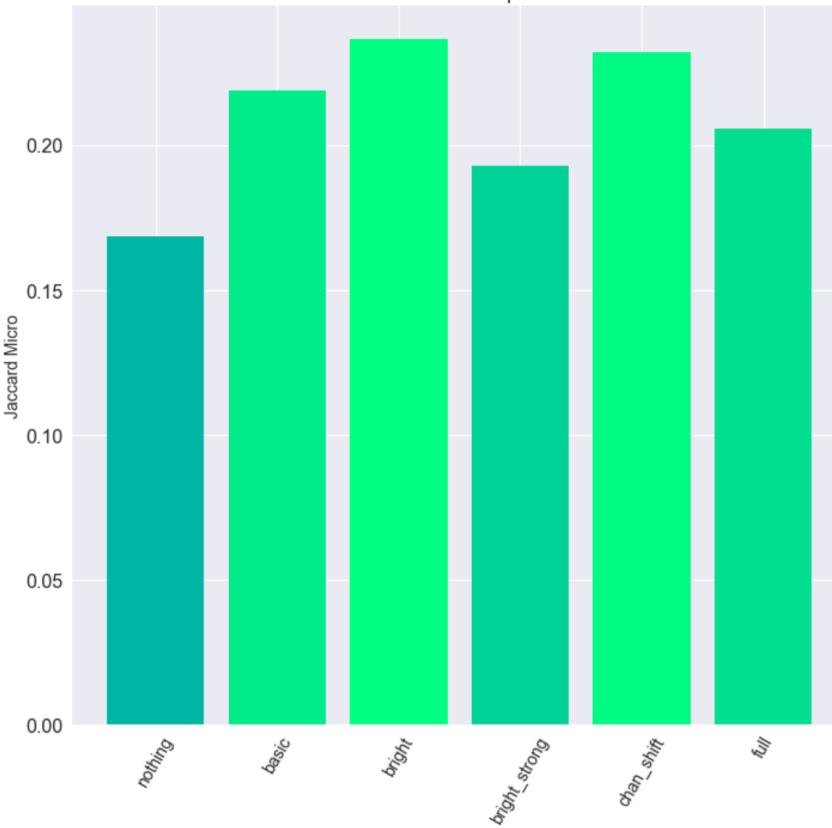
## Résultats



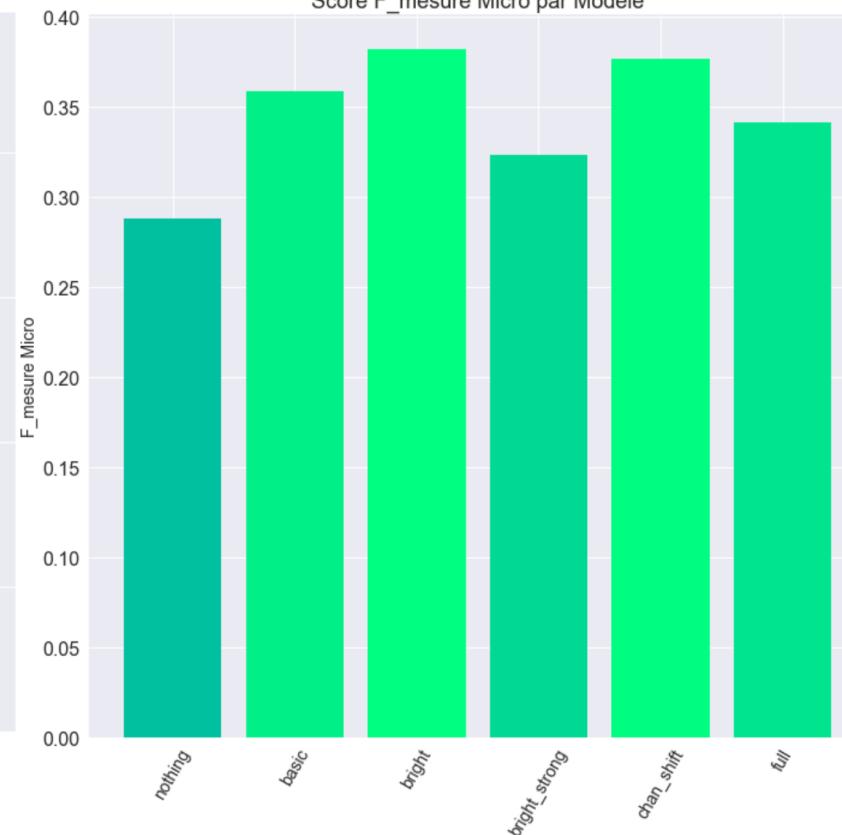
# Recherche d'Augmentateur

Résultats

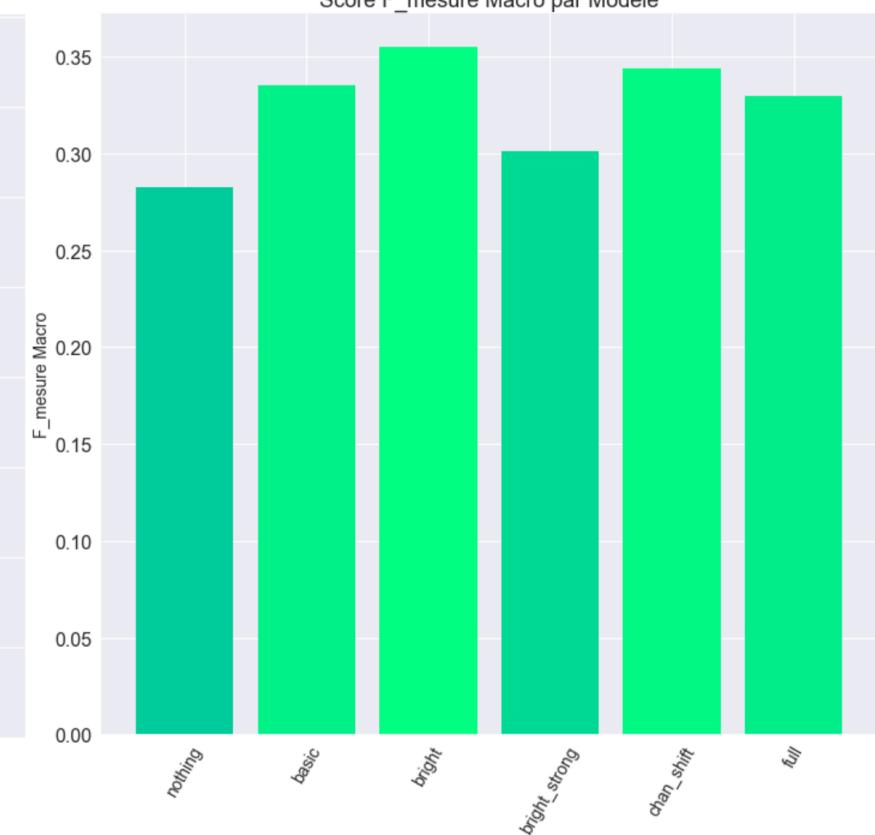
Score Jaccard Micro par Modele



Score F\_mesure Micro par Modele

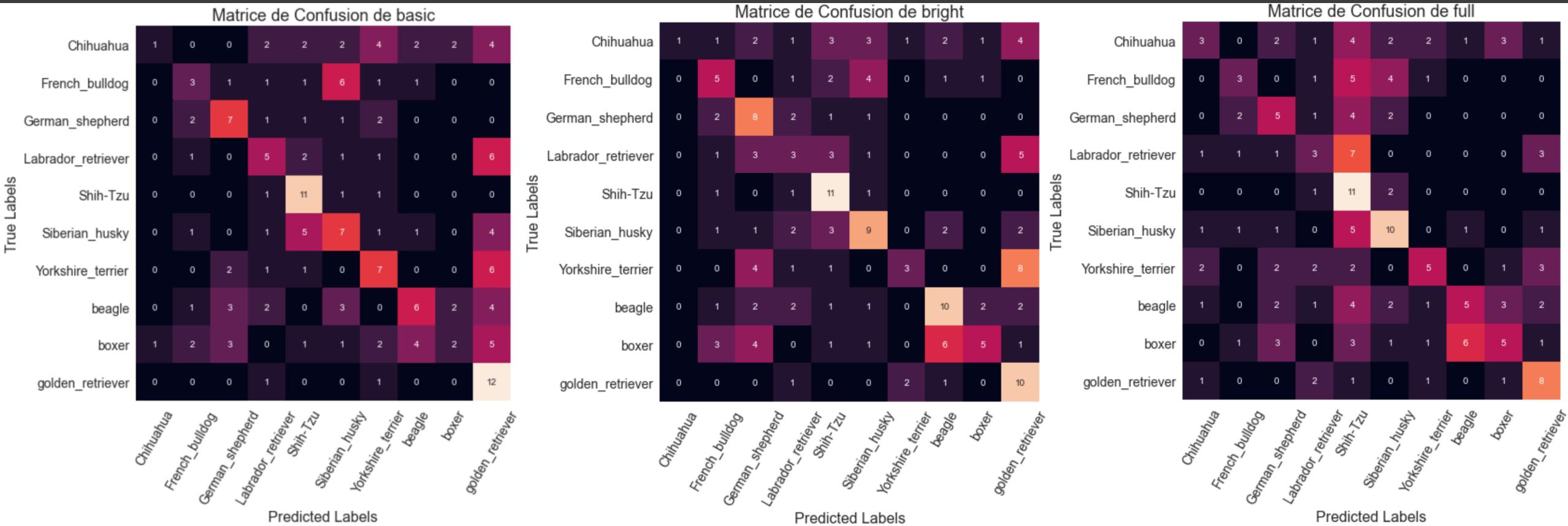


Score F\_mesure Macro par Modele



# Recherche d'Augmentateur

## Résultats



# Recherche de modèle

Configurations  
essayés

## Les Différents Modèles essayé

2 Couches Conv 2D  
2 Couches Dense

Total params: 10,698  
Trainable params: 10,602  
Non-trainable params: 96

3 Couches Conv 2D  
2 Couches Dense

Total params: 139,056,266  
Trainable params: 139,056,266  
Non-trainable params: 0

4 Couches Conv 2D  
2 Couches Dense  
3 Couches Dropout

Total params: 75,568,682  
Trainable params: 75,568,682  
Non-trainable params: 0

5 Couches Conv 2D  
4 Couches Dense  
3 Couches Dropout

Total params: 25,727,394  
Trainable params: 25,707,794  
Non-trainable params: 19,600

8 Couches Conv 2D  
2 Couches Dense  
5 Couches Dropout

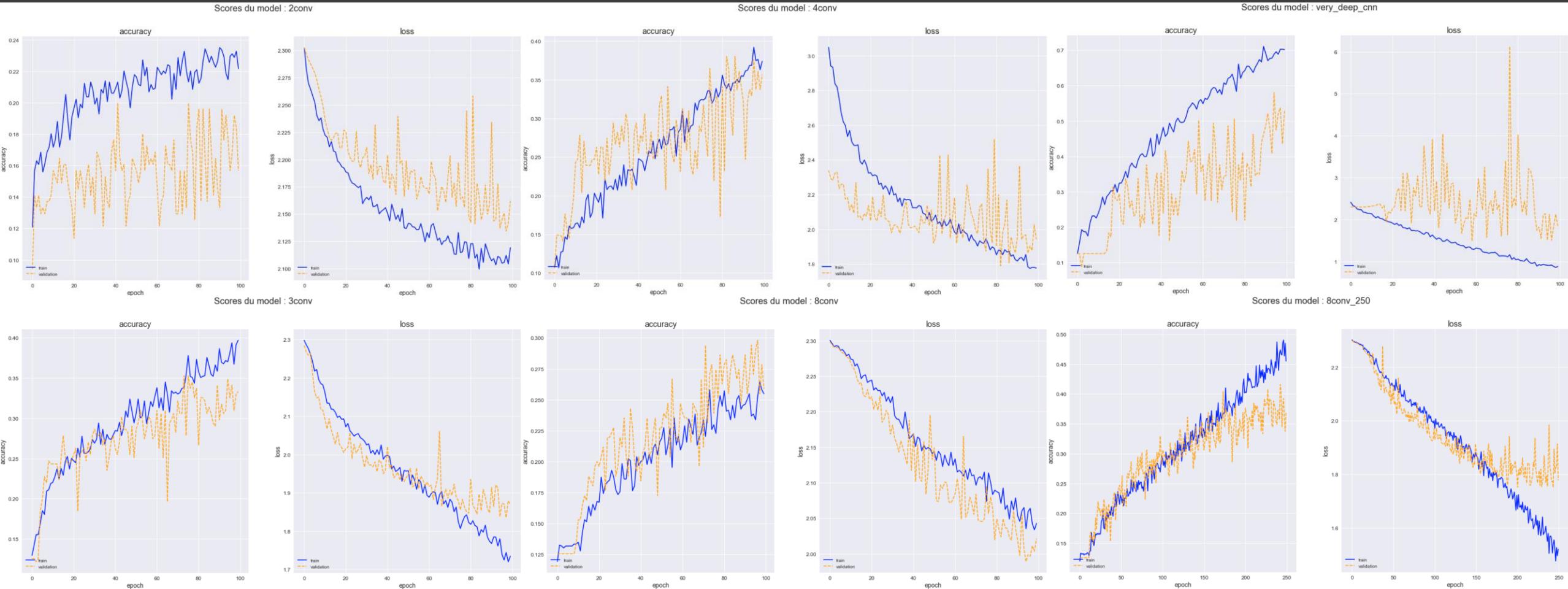
Total params: 16,879,914  
Trainable params: 16,879,914  
Non-trainable params: 0

Modèle type very deep learning

Total params: 2,934,794  
Trainable params: 2,925,898  
Non-trainable params: 8,896

# Recherche de modèle

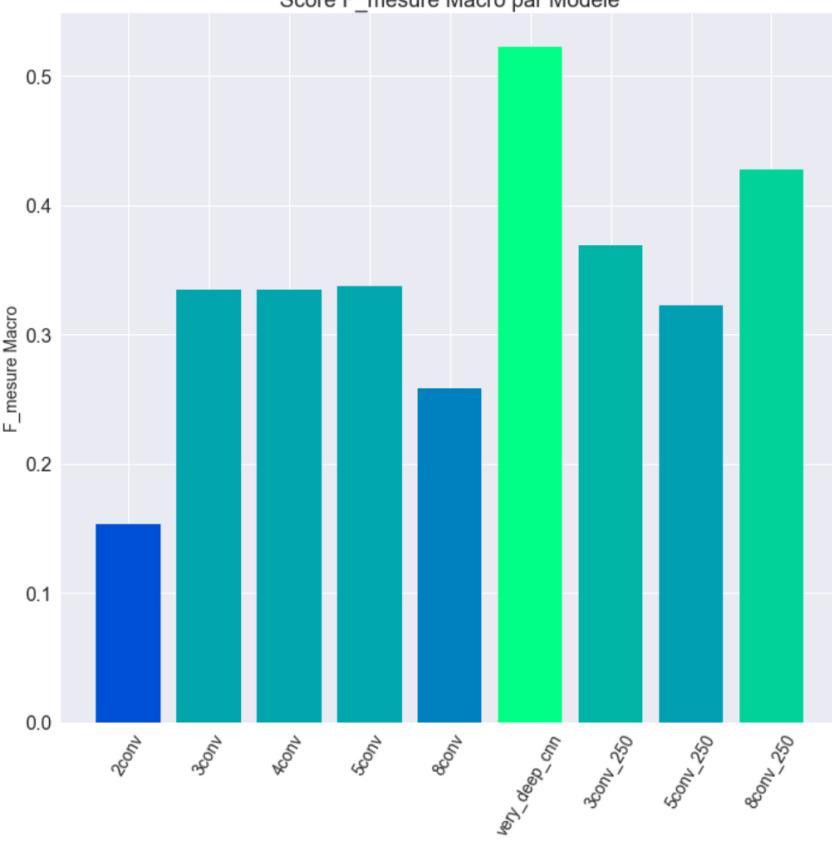
Résultats



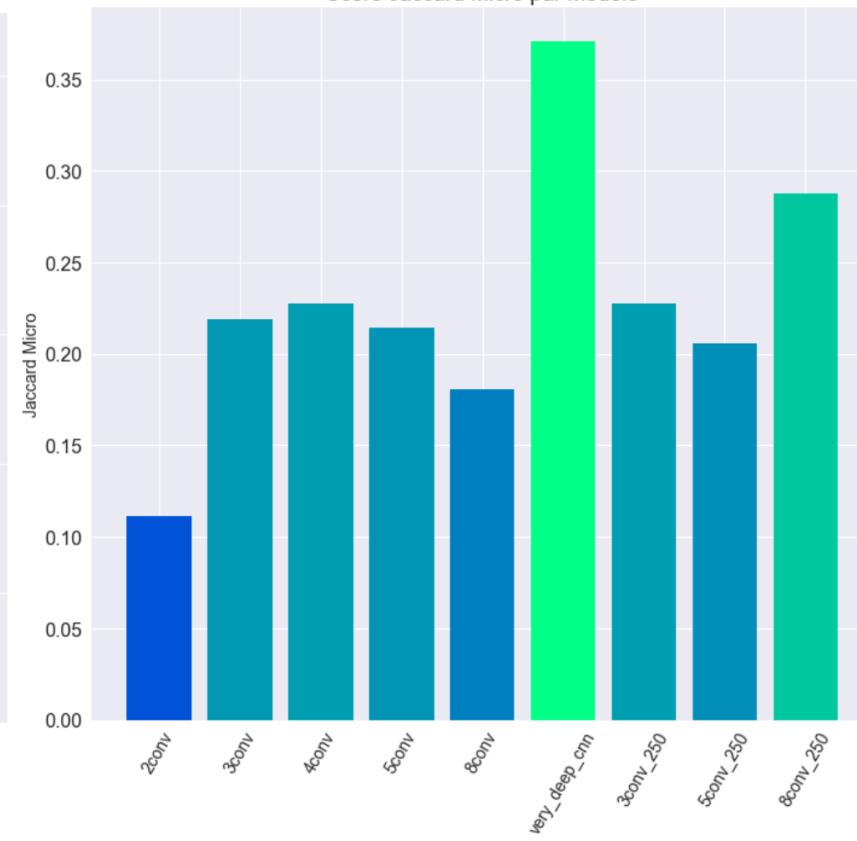
# Recherche de modèle

Résultats

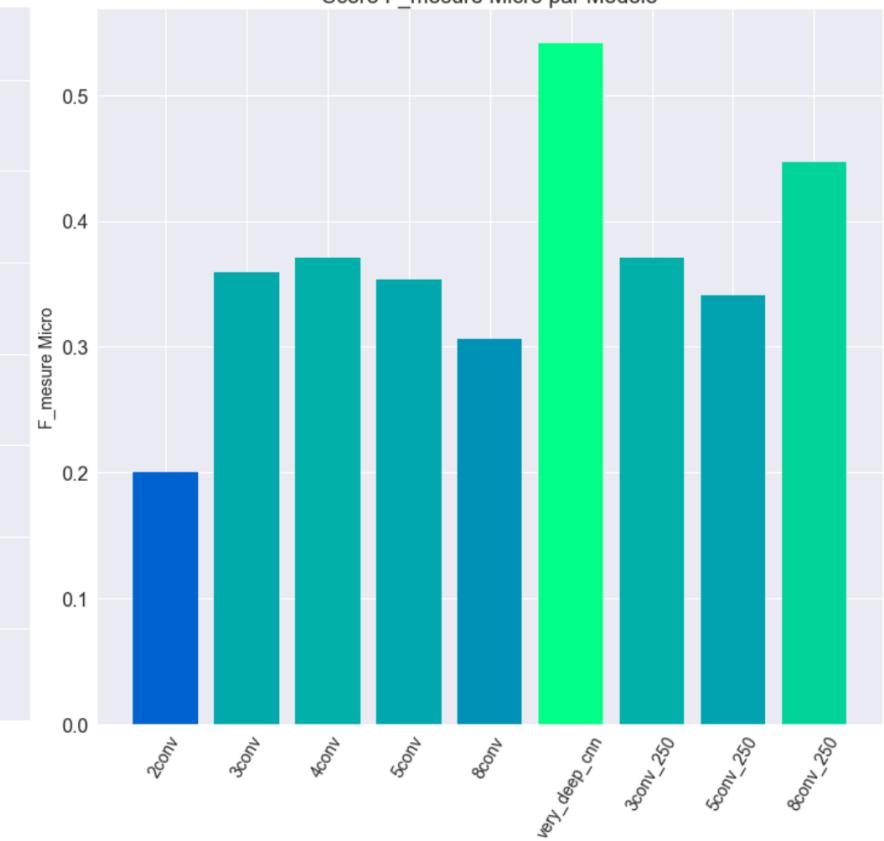
Score F\_mesure Macro par Modele



Score Jaccard Micro par Modele

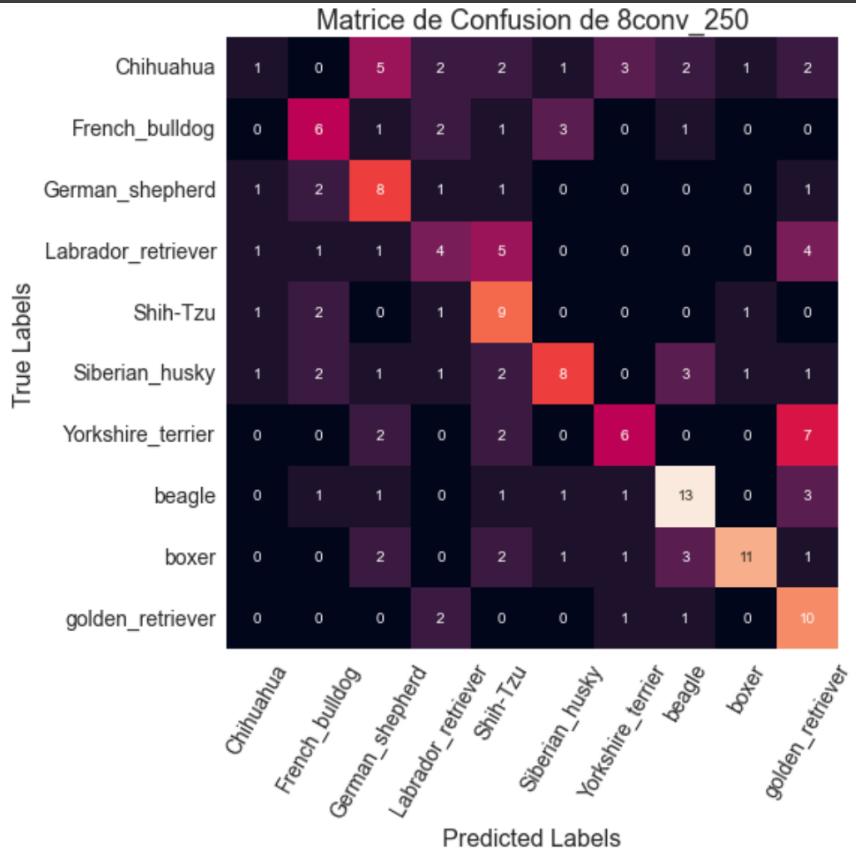
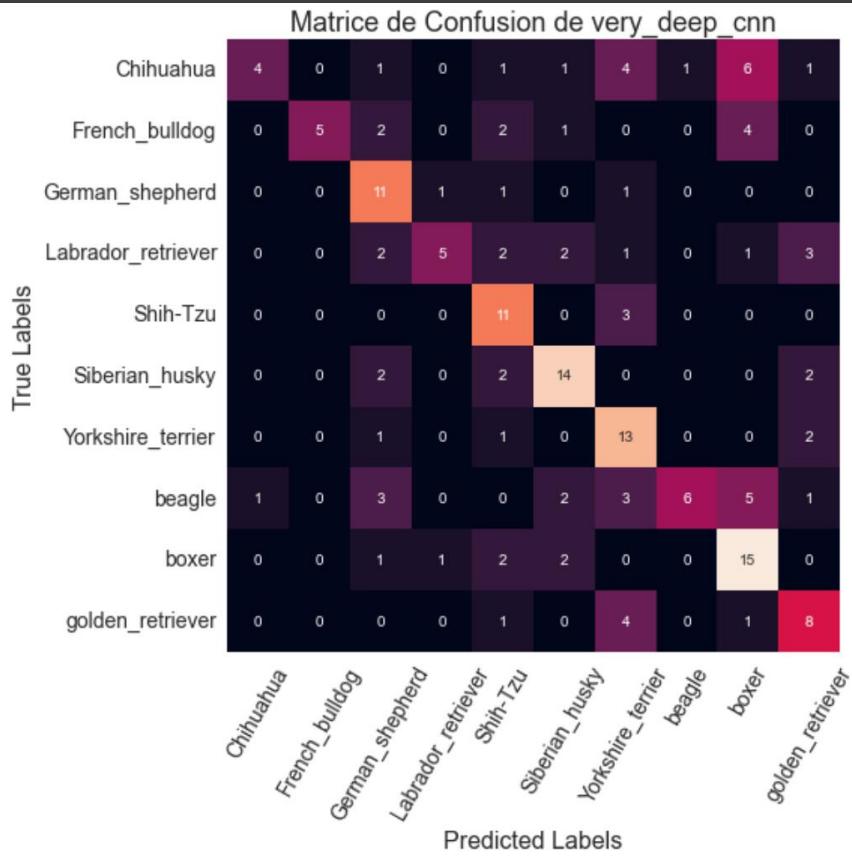
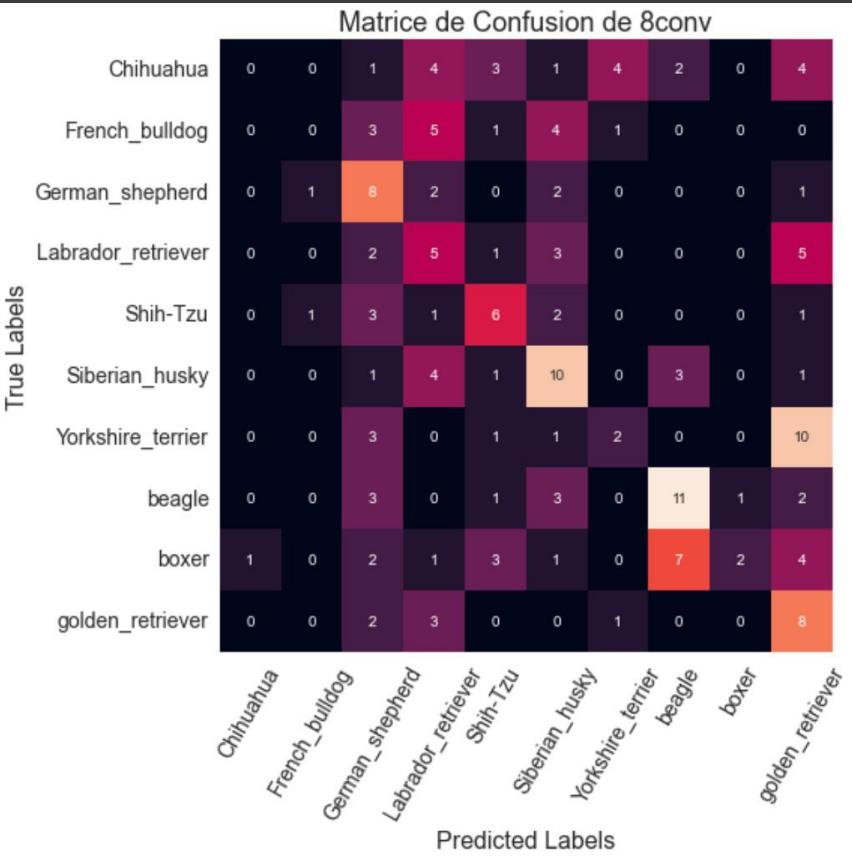


Score F\_mesure Micro par Modele



# Recherche de modèle

Résultats



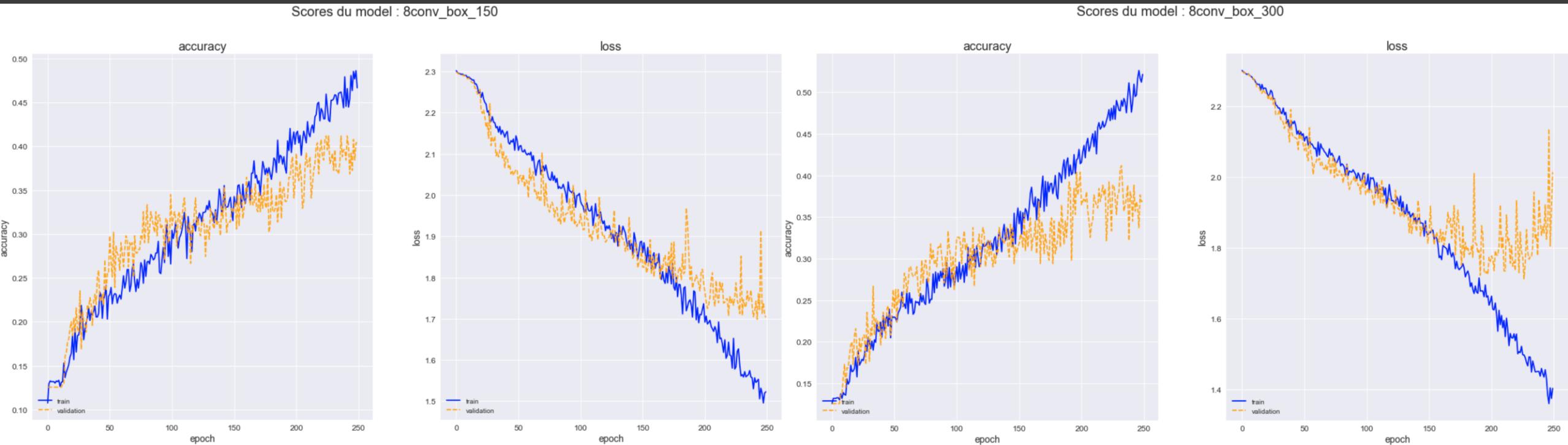
# Recherche de résolution

Configurations  
essayés



# Recherche de résolution

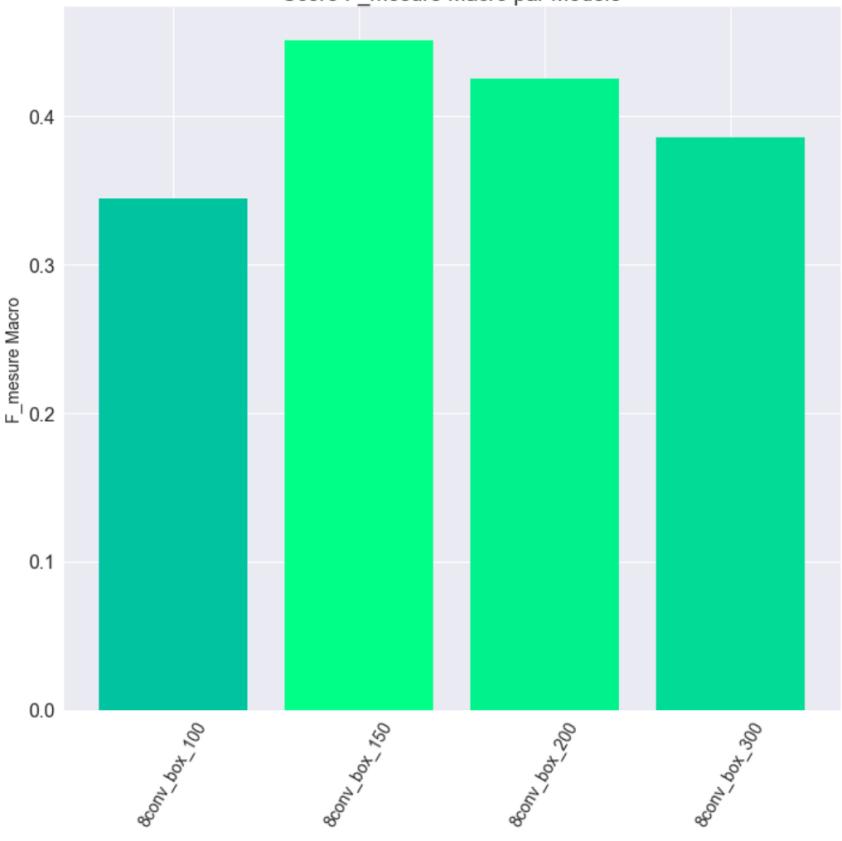
Résultats



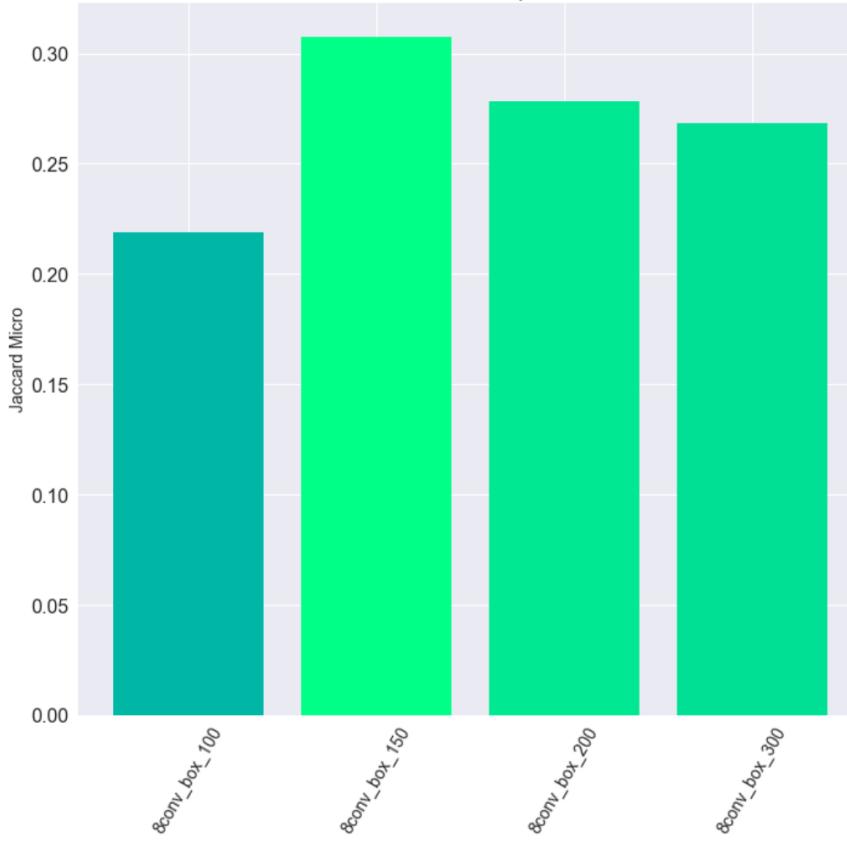
# Recherche de résolution

Résultats

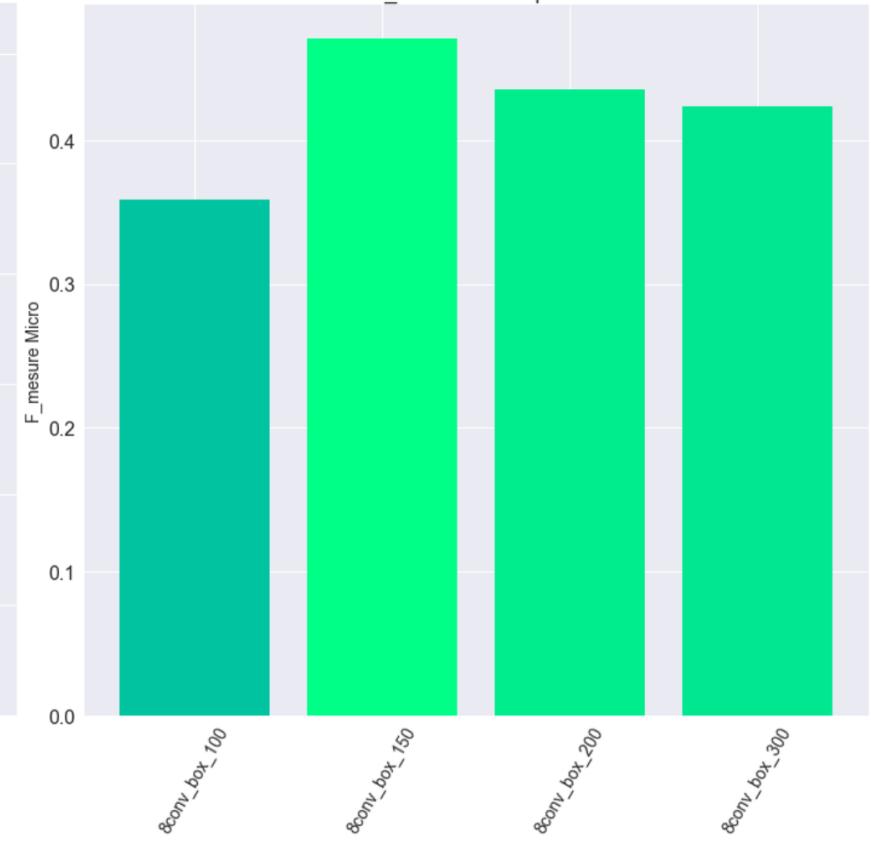
Score F\_mesure Macro par Modele



Score Jaccard Micro par Modele



Score F\_mesure Micro par Modele



# Recherche de Learning rate

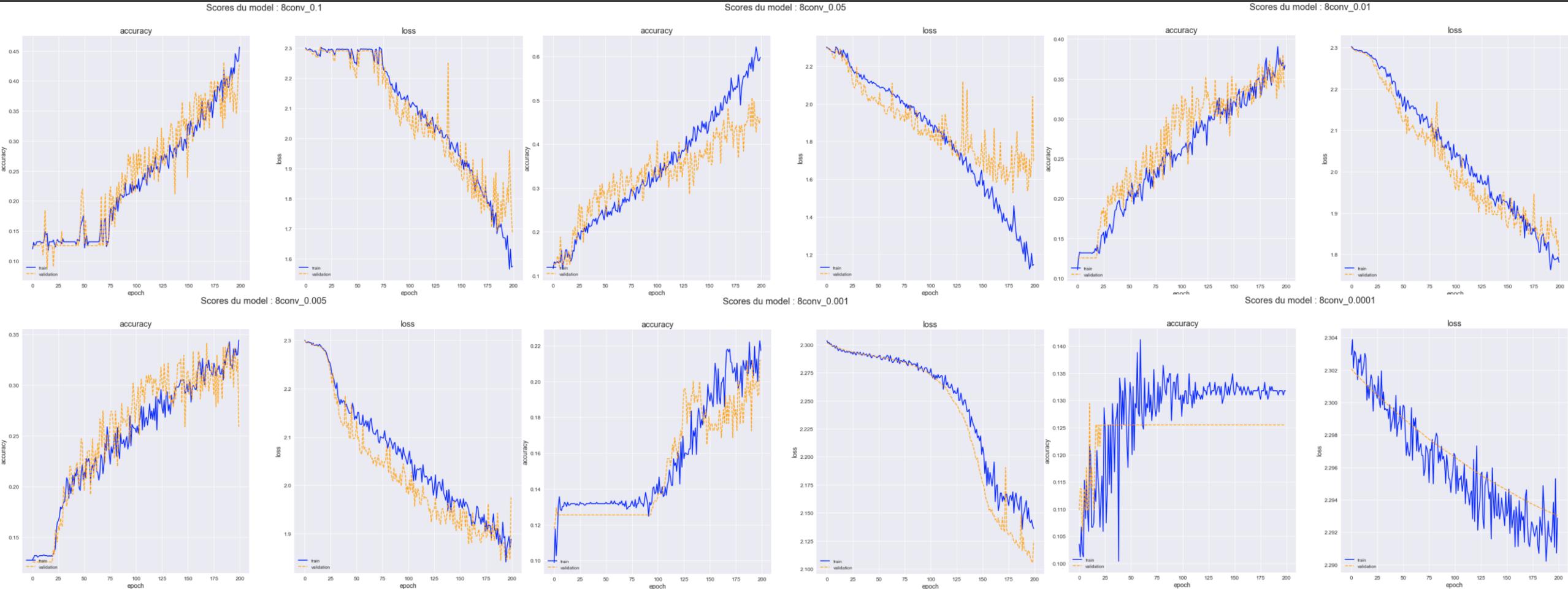


Différents Learning rate essayés:

- 0.1
- 0.05
- 0.01
- 0.005
- 0.001
- 0.0001

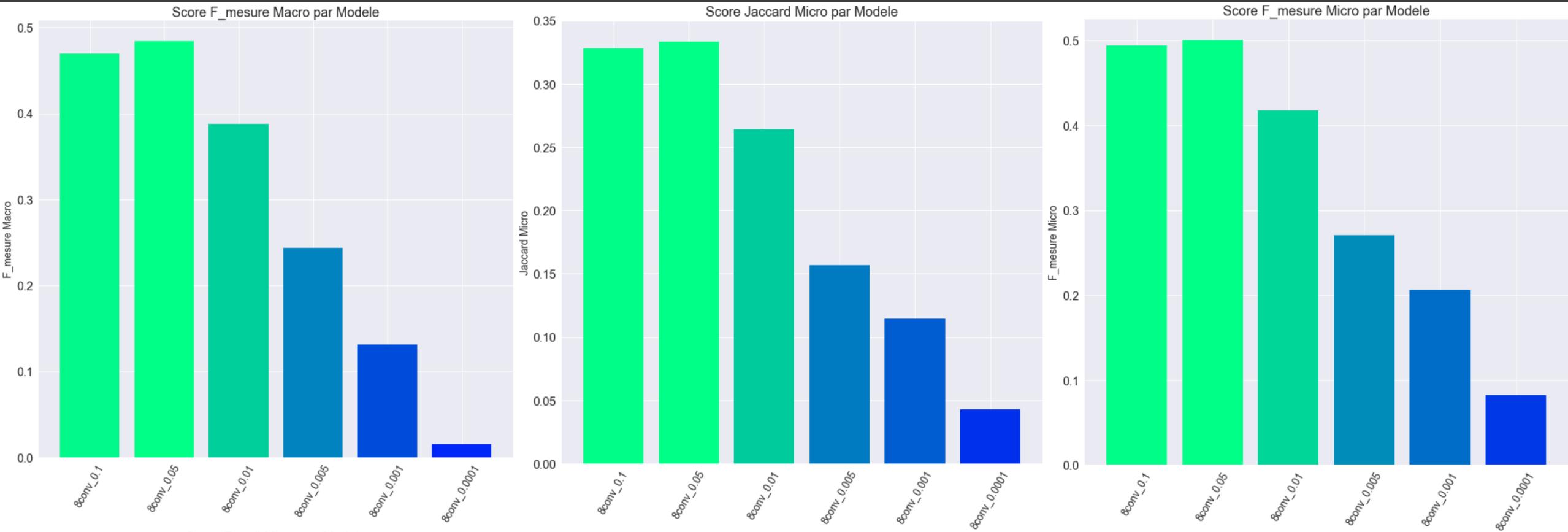
# Recherche de Learning rate

Résultats



# Recherche de Learning rate

Résultats

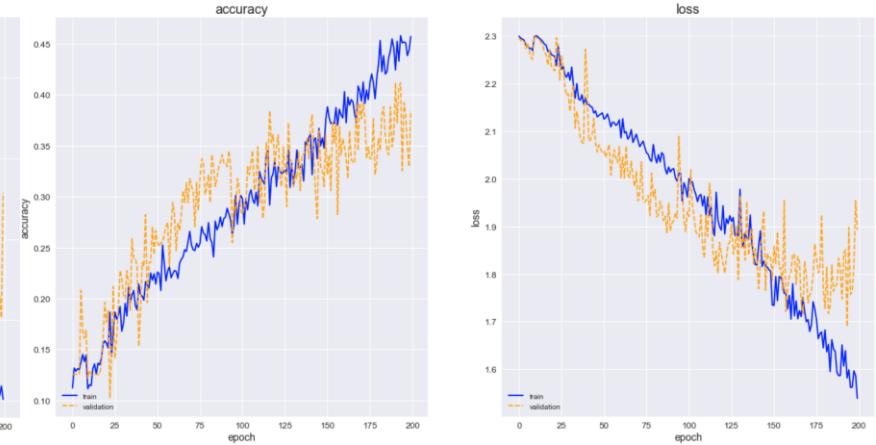
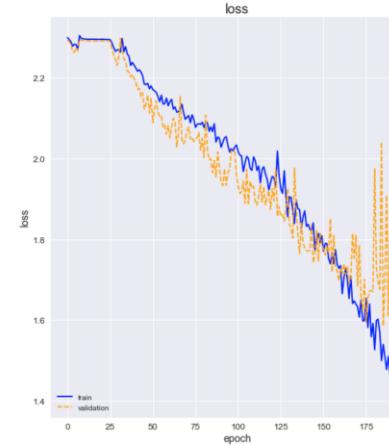
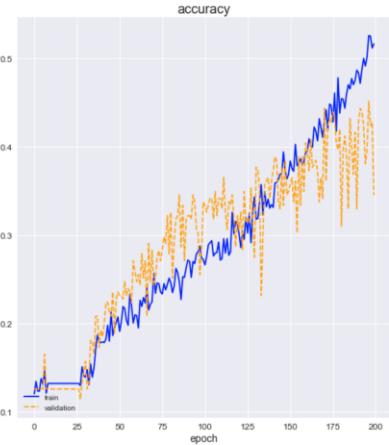
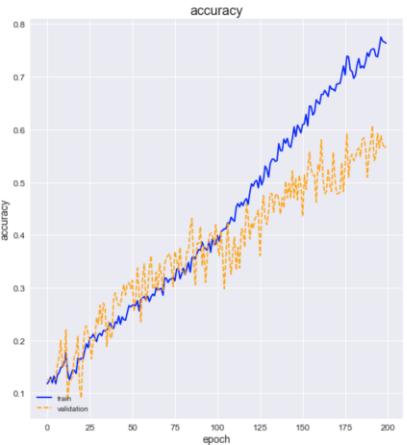
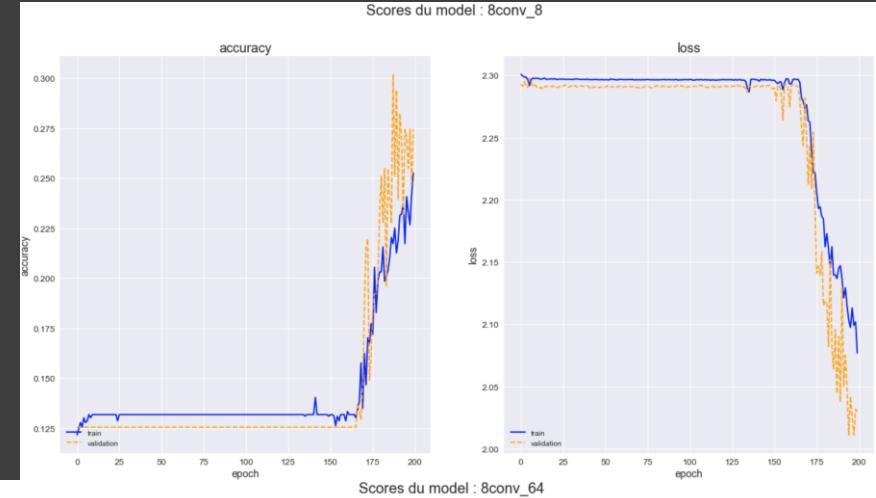
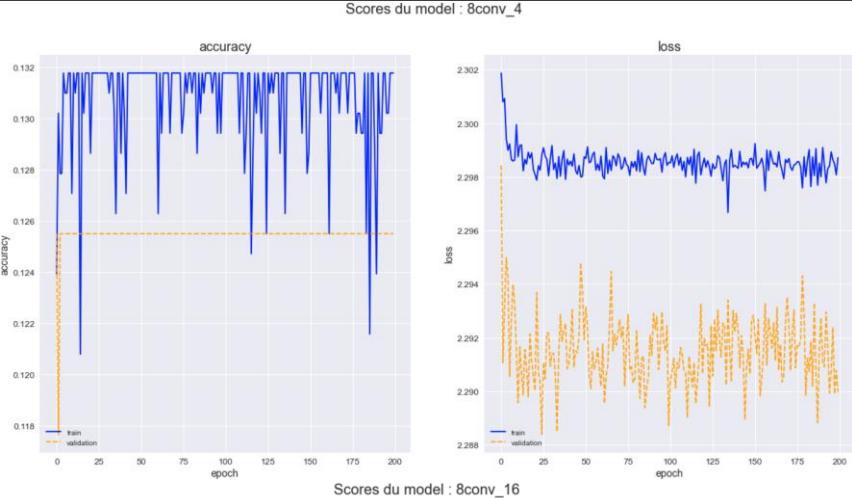


# Recherche de Batsh

## Résultats

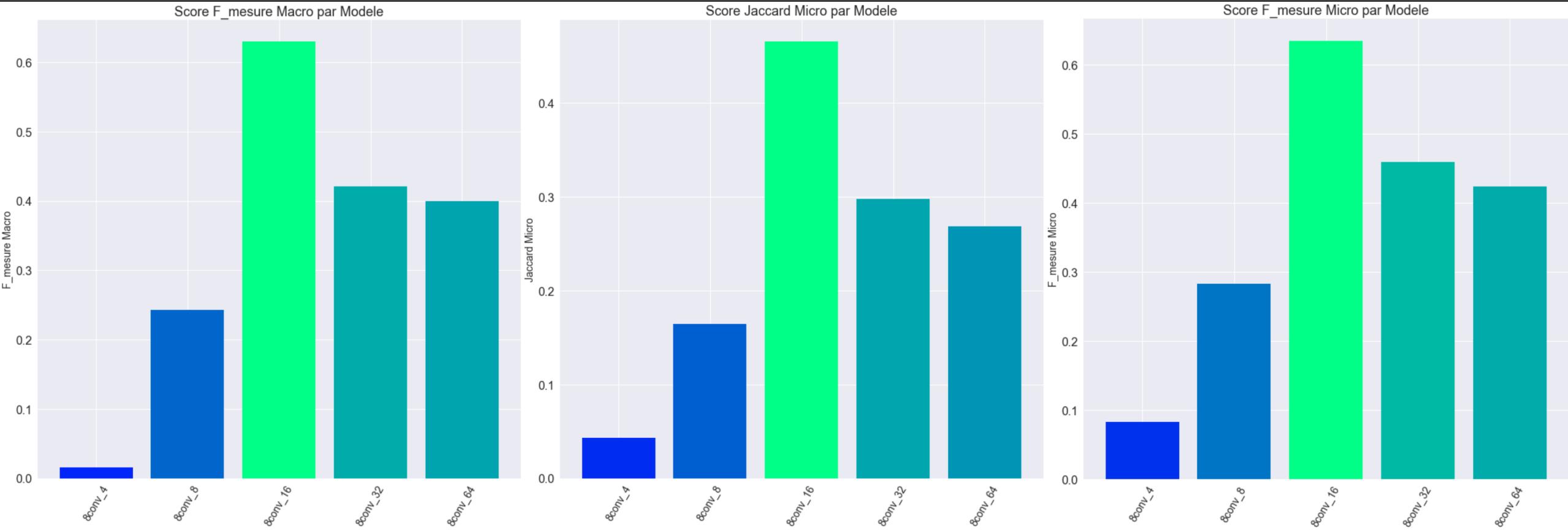
### Différents Batsh essayés:

- 4
- 8
- 16
- 32
- 64

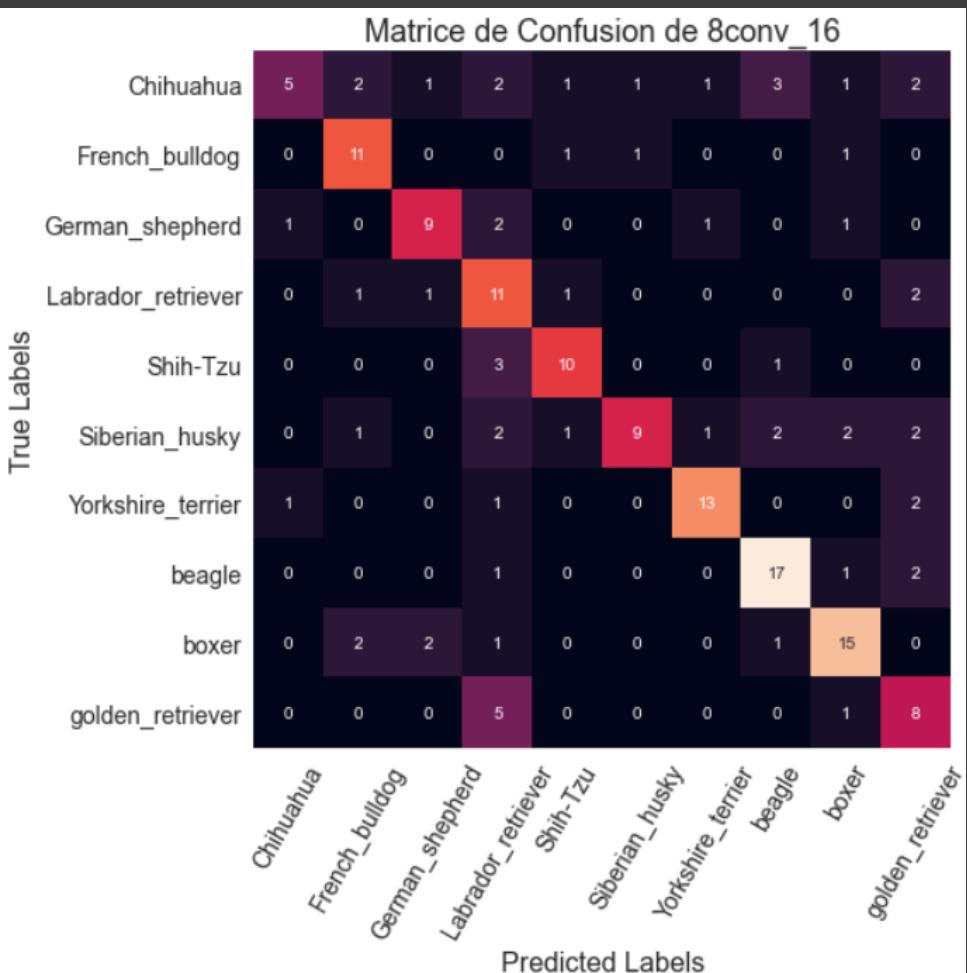


# Recherche de Batsh

Résultats



# Paramètre du model final



Prétraitement : box simple  
Augmentateur : bright  
Modèle : 8 conv  
Résolution : 150 px  
Learning rate : 0.05  
Batch : 16

Score F mesure pour les 10 races de chien : 0.635

# Recherche de Modèle de Transfert Learning



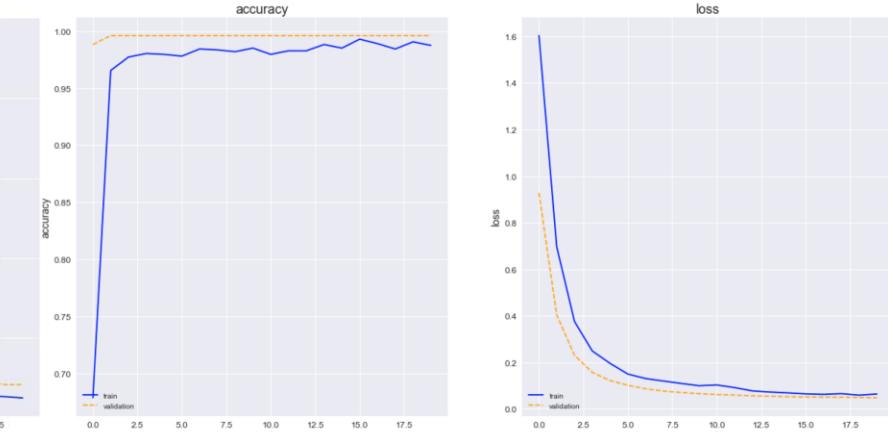
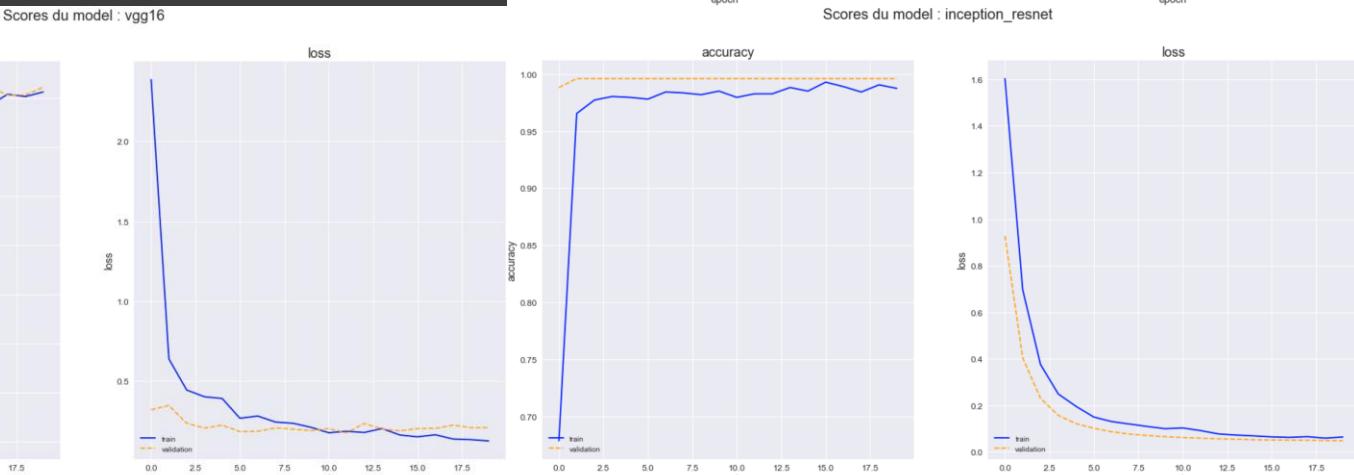
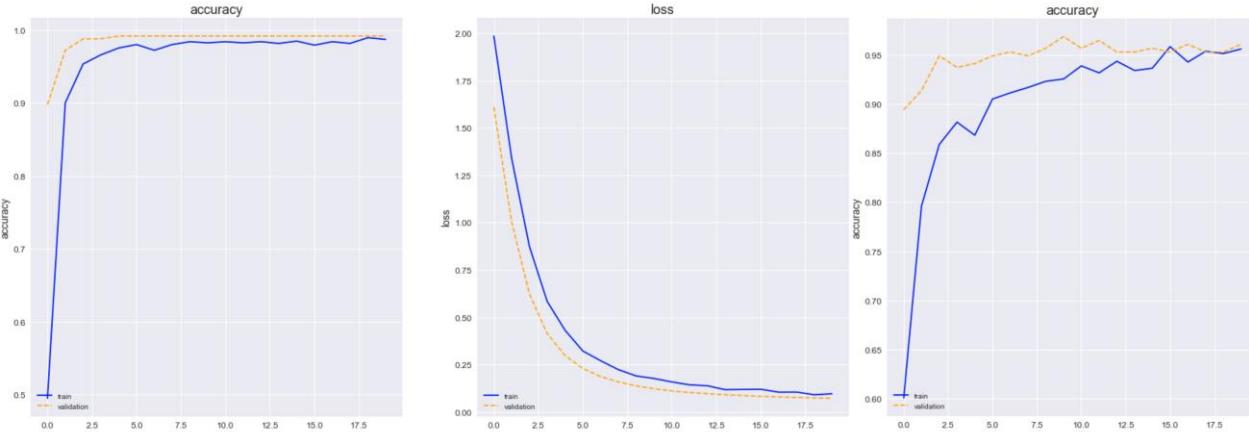
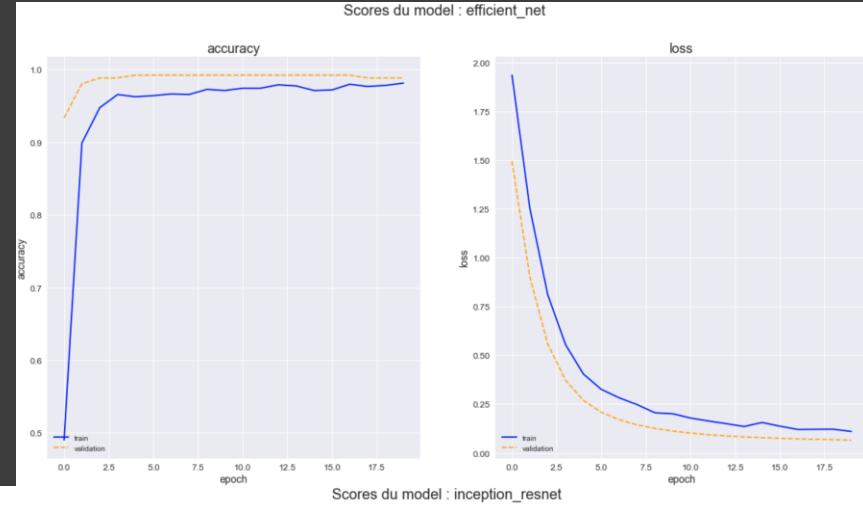
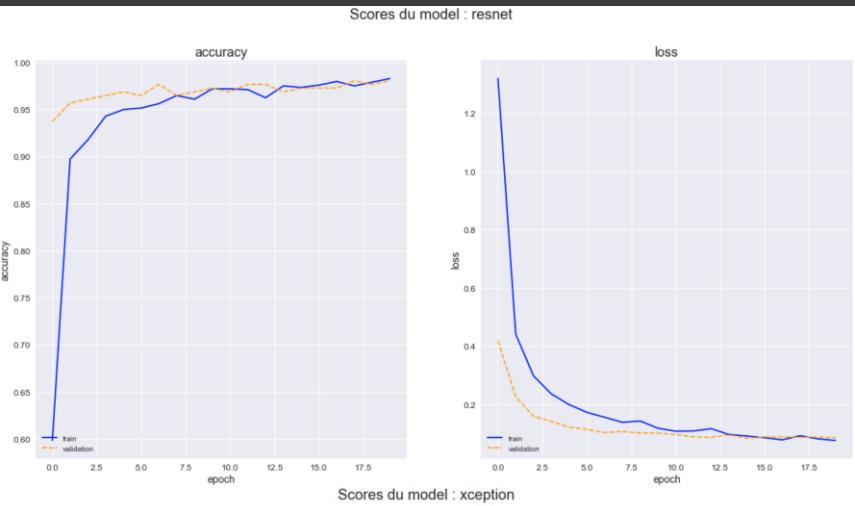
Différents Modèles essayés:

- Xception
- VGG16
- Inception Resnet
- Resnet
- Efficient Net

# Recherche de Modèle de Transfert Learning

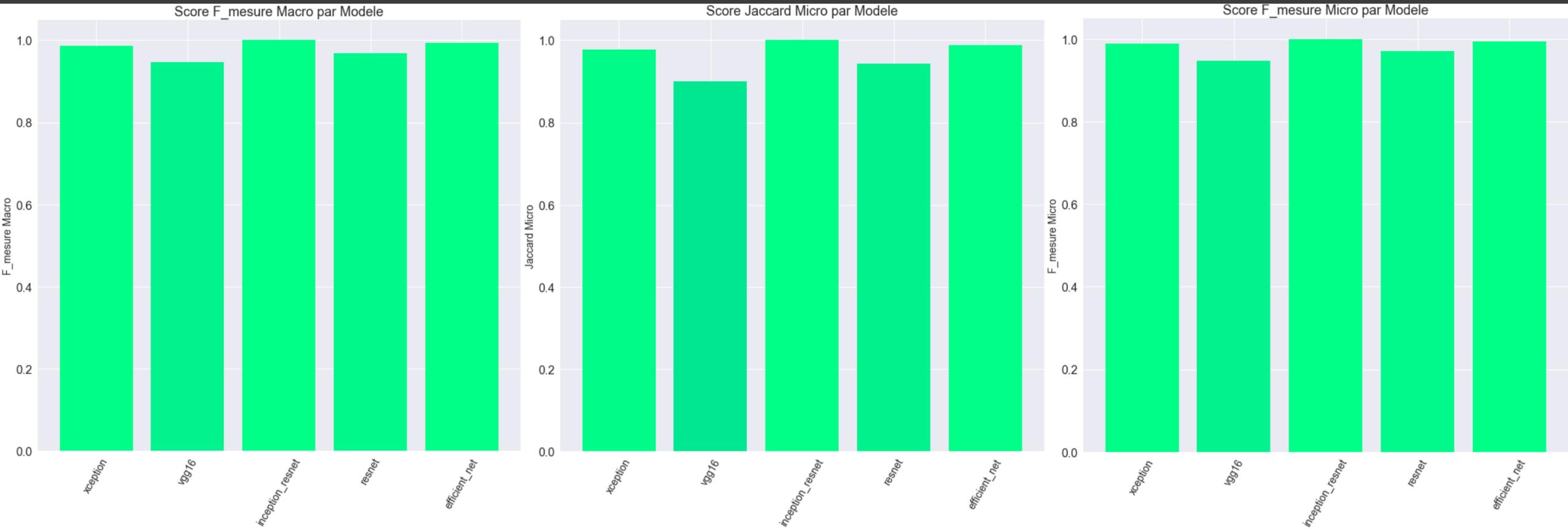
## Résultats

Résultats pour les  
10 Races de chiens



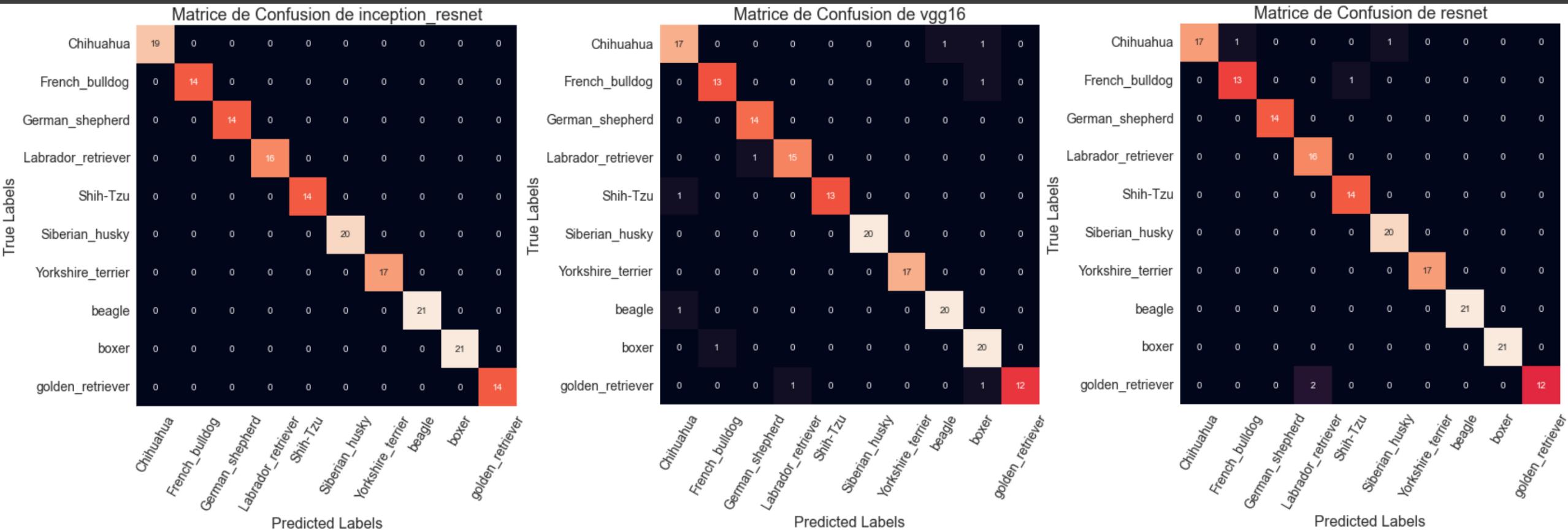
# Recherche de Modèle de Transfert Learning

Résultats



# Recherche de Modèle de Transfert Learning

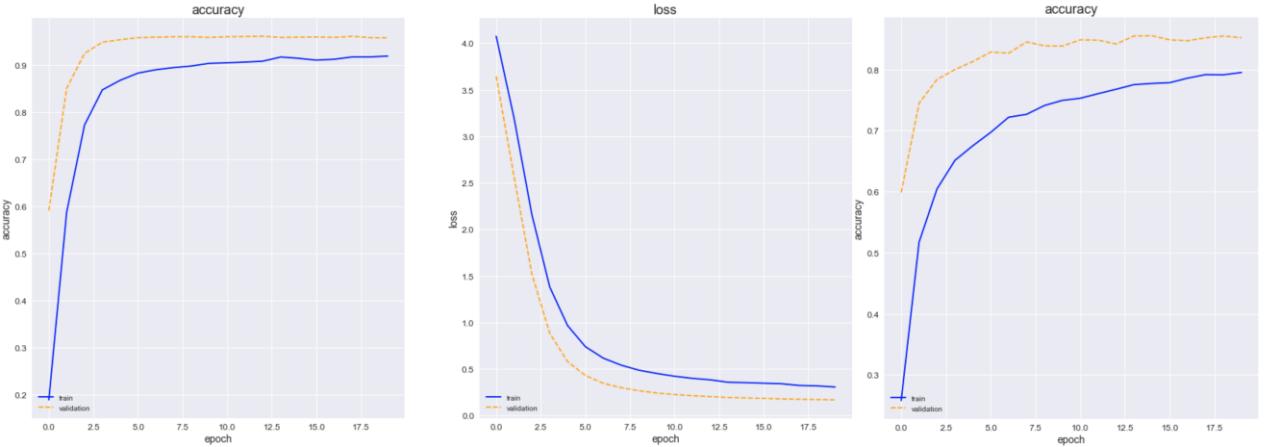
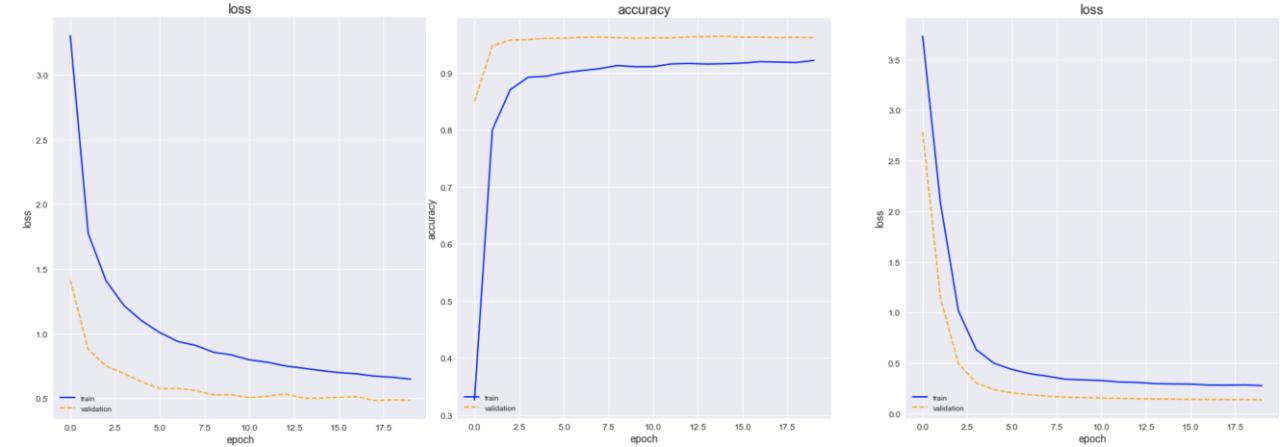
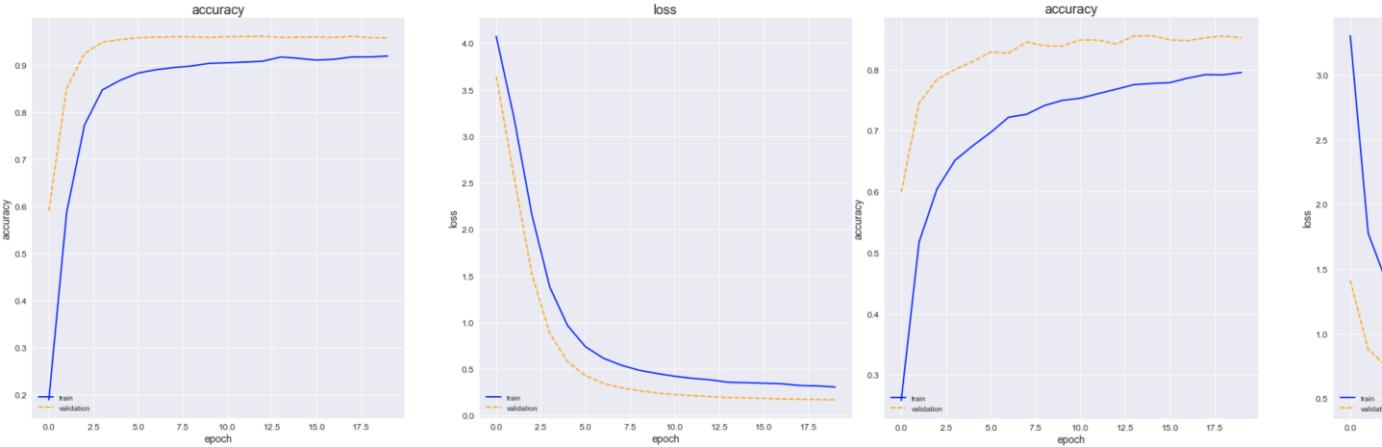
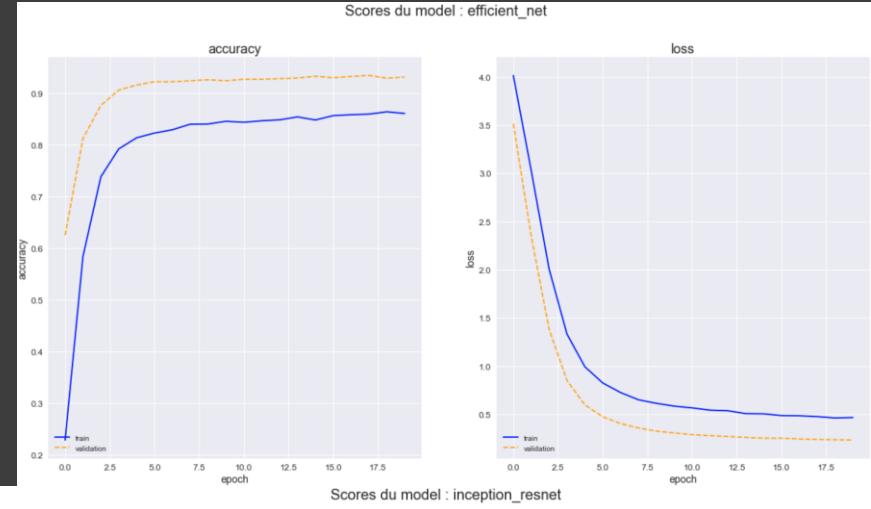
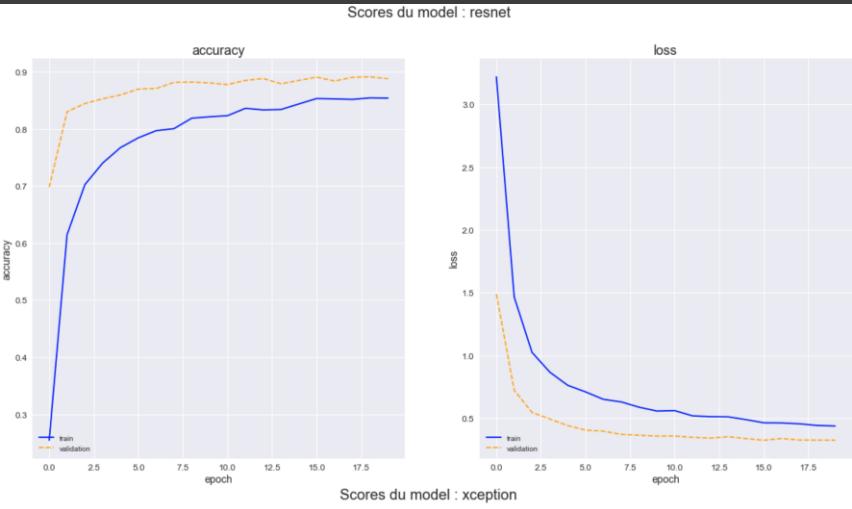
## Résultats



# Recherche de Modèle de Transfert Learning

## Résultats Global

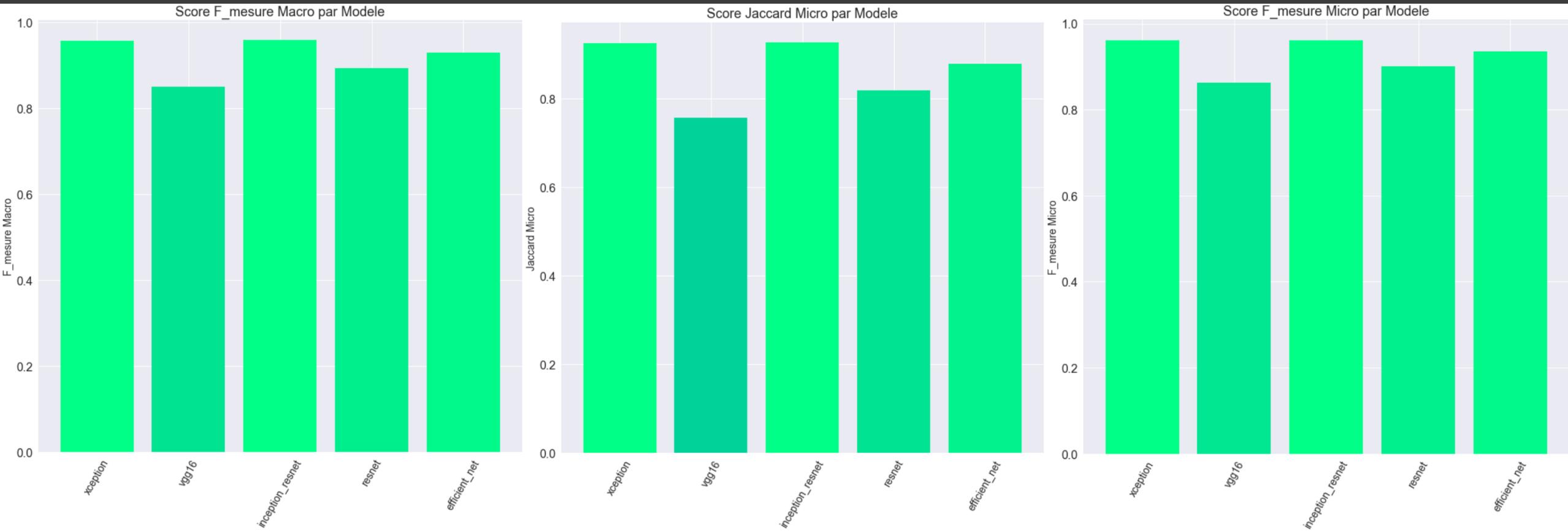
Résultats pour  
80 Races de chiens



# Recherche de Modèle de Transfert Learning

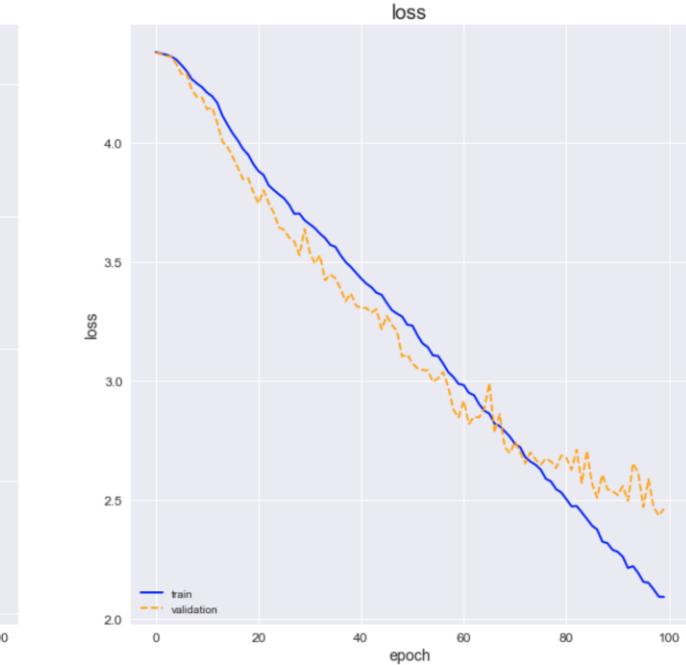
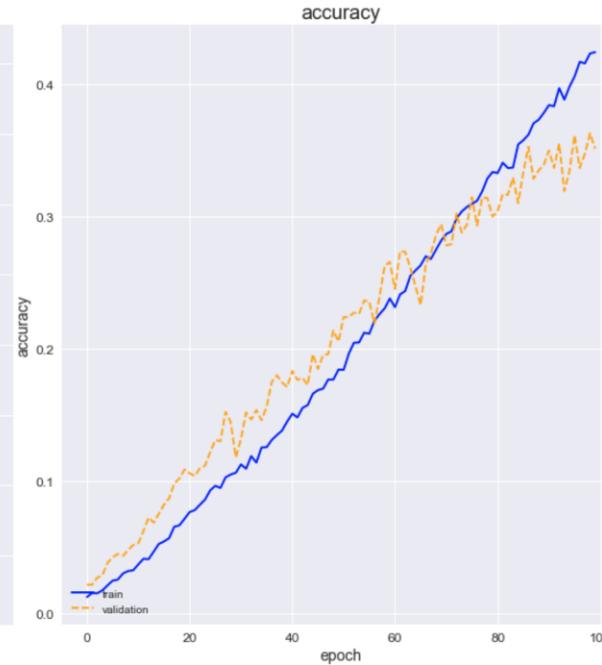
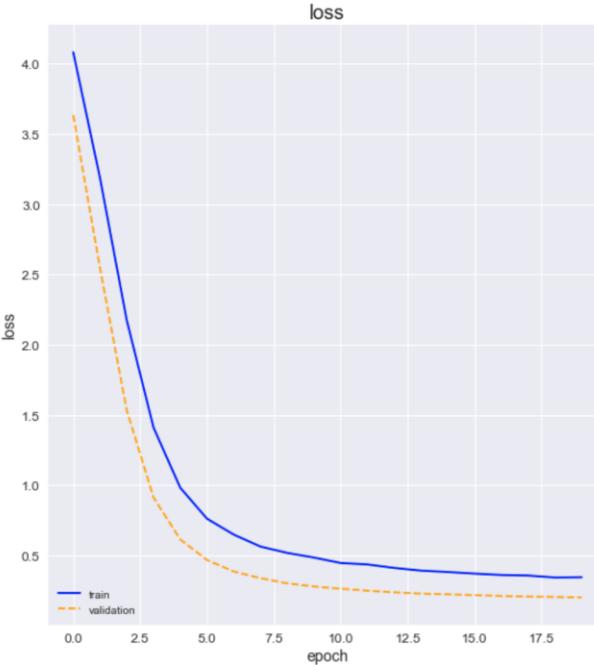
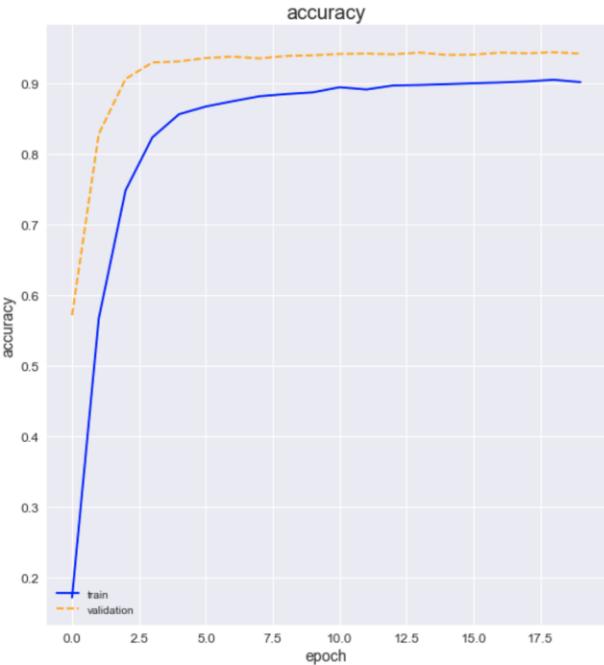
Résultats

Global



# Comparaison des modèles finaux

Scores du model : xception



# Comparaison des modèles finaux

Score F mesure

Xception : 0.937

8 conv : 0.372

