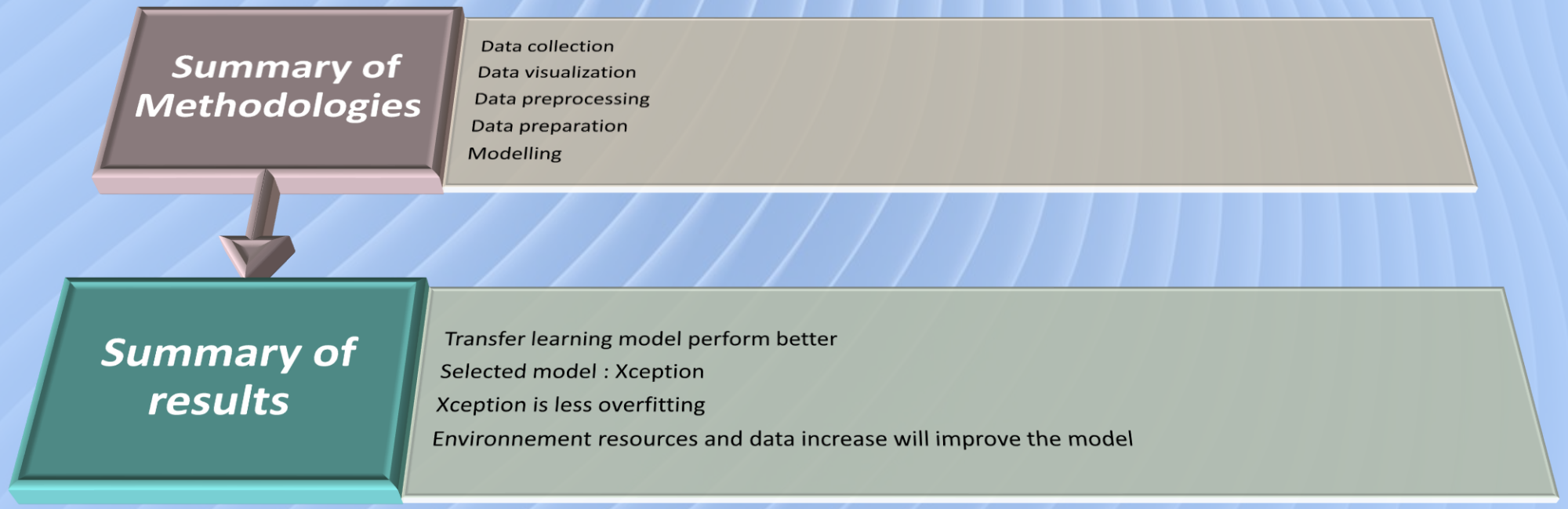
Classification of images with deep learning algorithm

Adonija ZIO

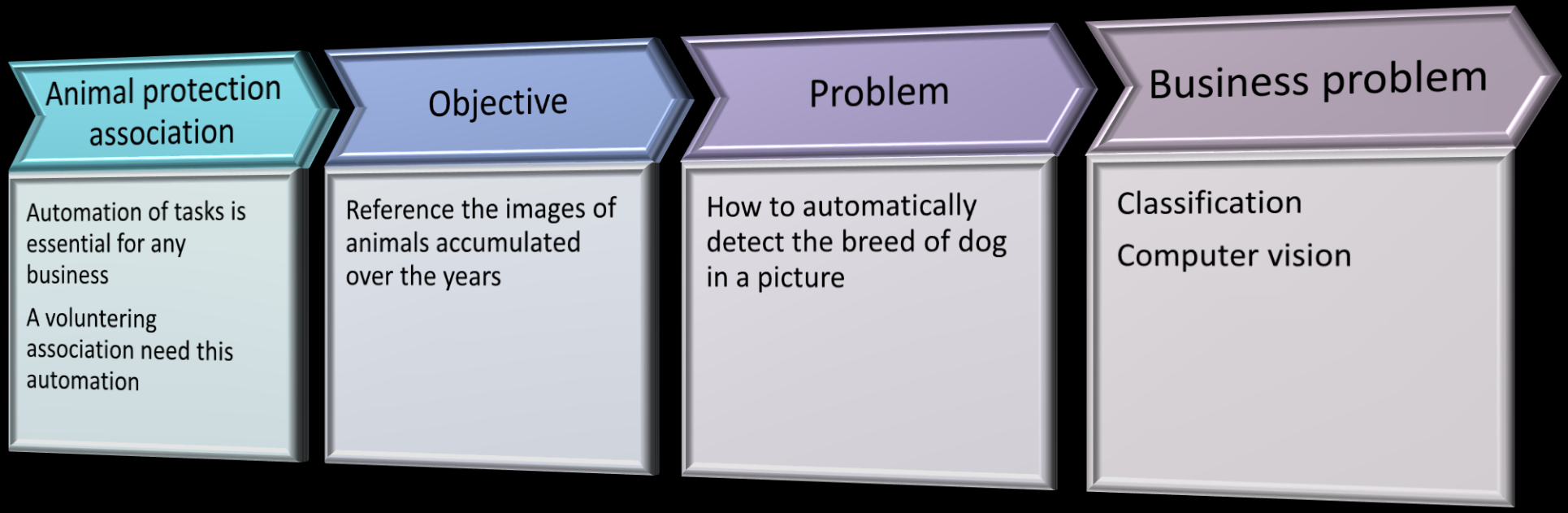
Outline

- Executive Summary
- Introduction
- Methodology
- Results
- Conclusion

Executive Summary

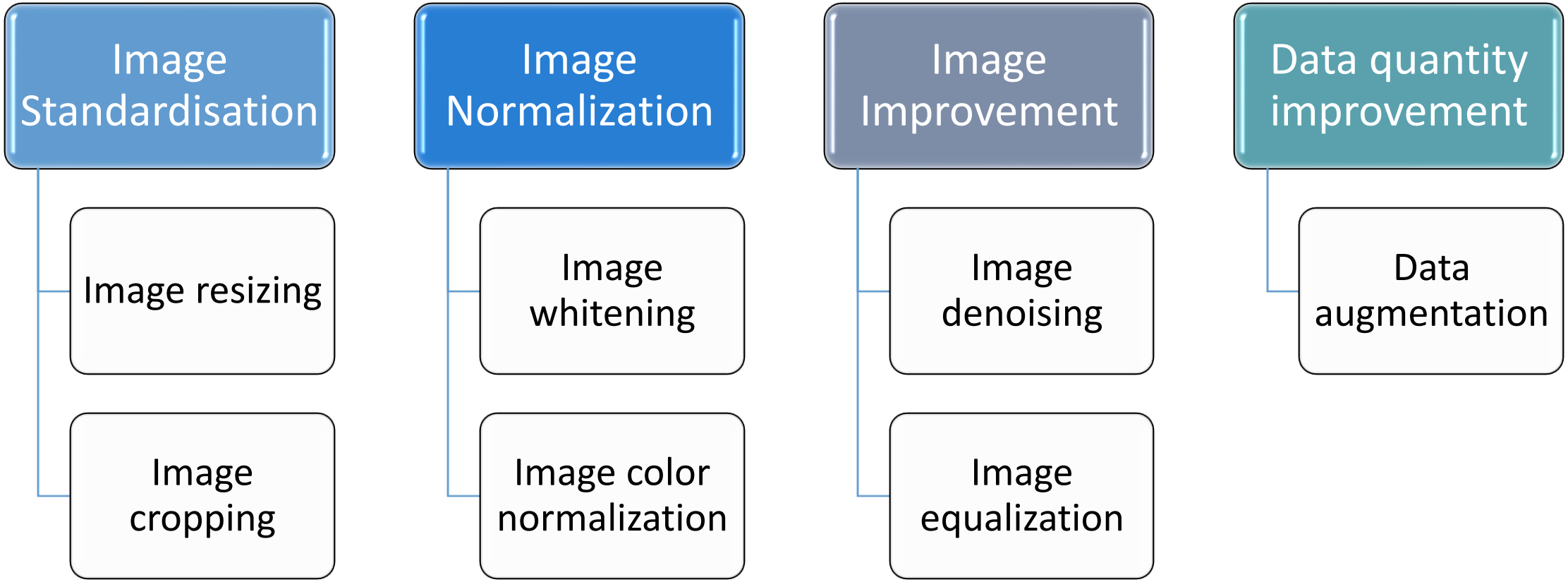


Introduction



Methodology

- Image Visualization
- Image Transformation
- Data preprocessing
- Data Preparation
- Building and testing deep learning model
- Model selection and fine tuning
- Model demo



Preprocessing Approach

Results

- Image visualization
- Image transforming
- Image preprocessed

- Model Building
- CNN
- Transfer learning

- Model selection
- Prediction
- Demo

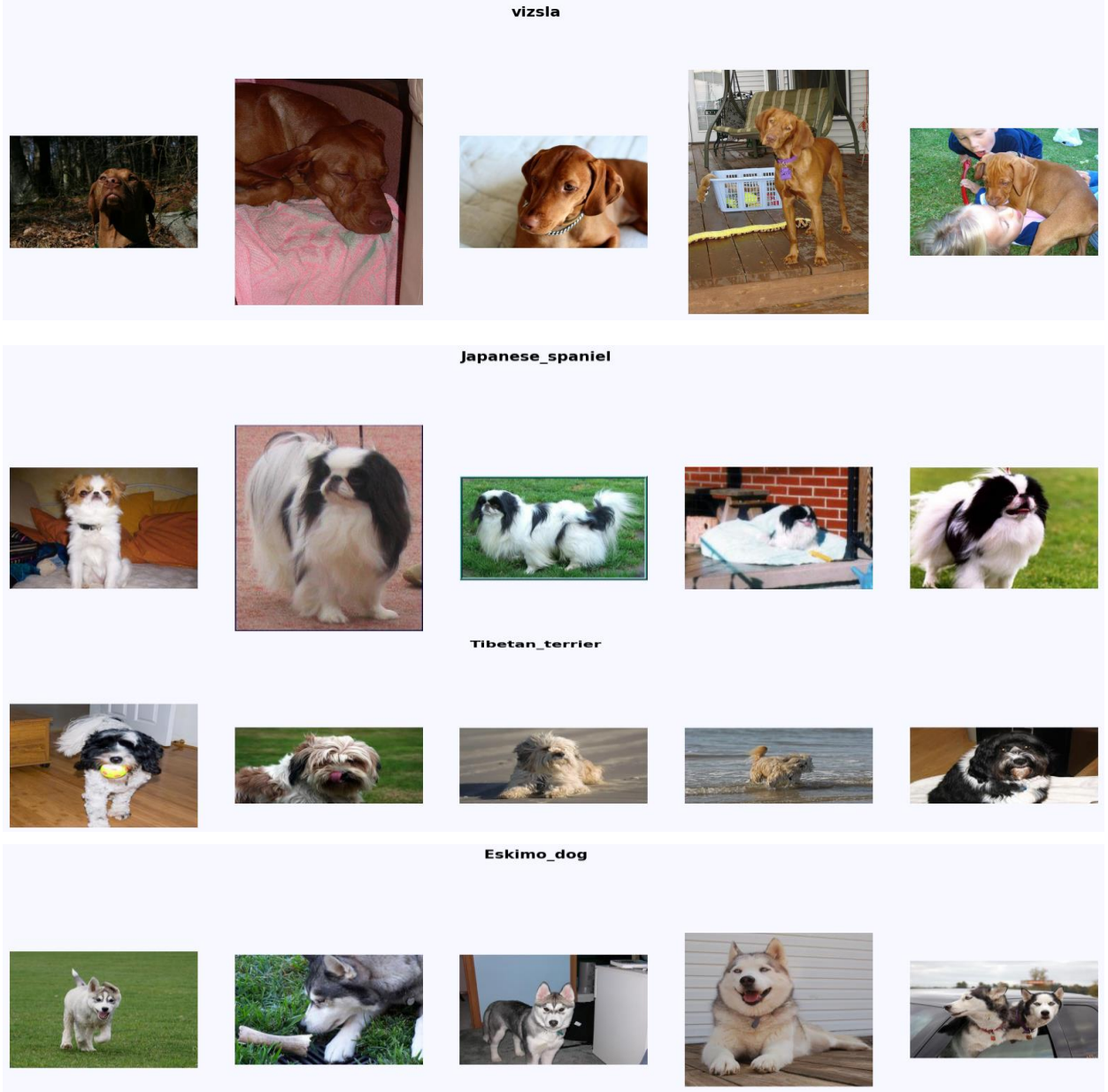
Exploratory analysis

IMAGE VISUALIZATION

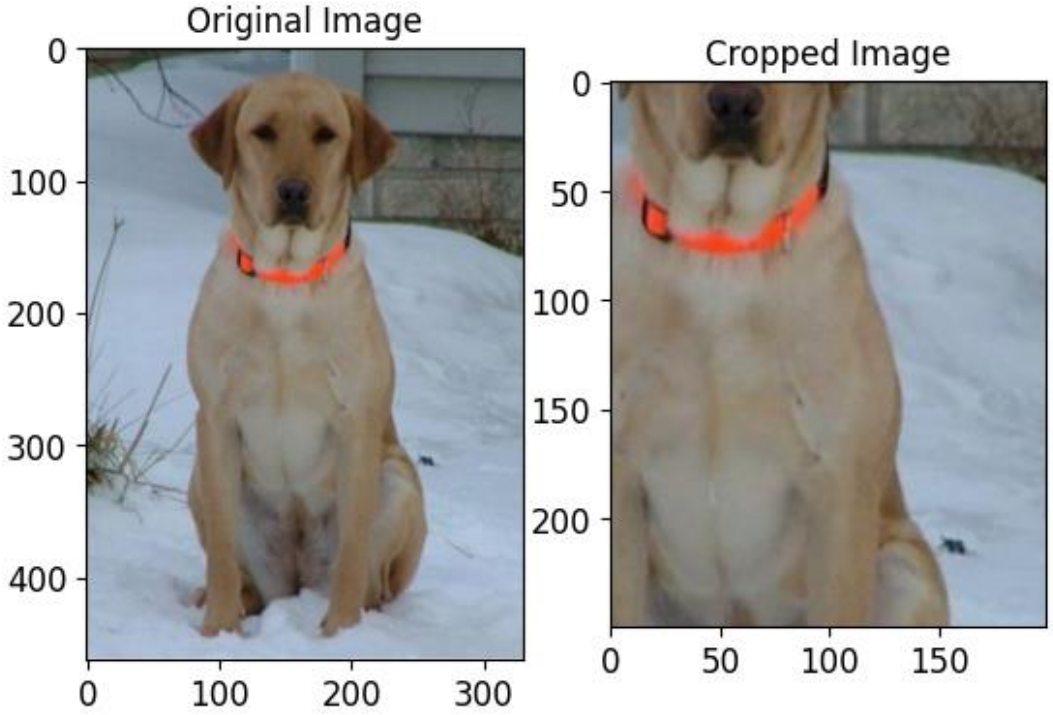
IMAGE TRANSFORMING

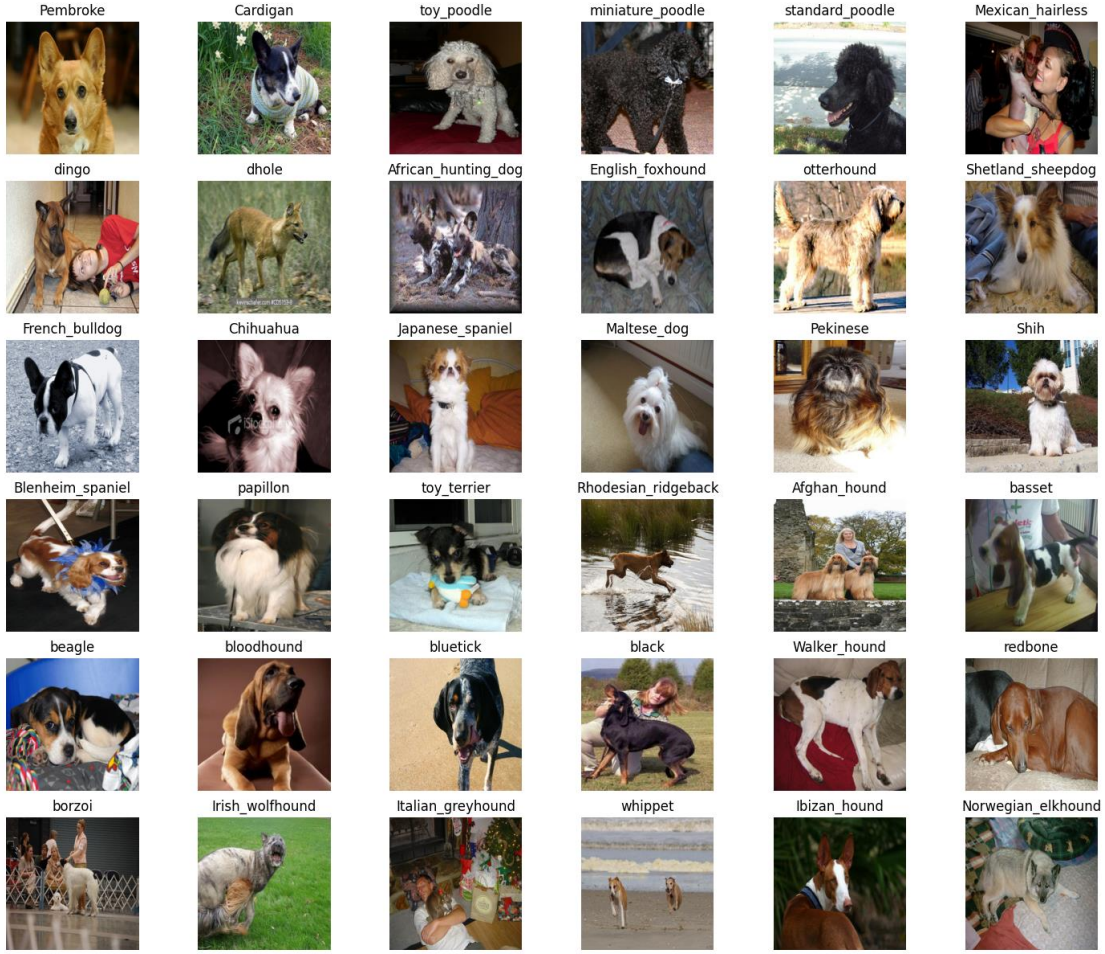
IMAGE PREPROCESSED

Original images

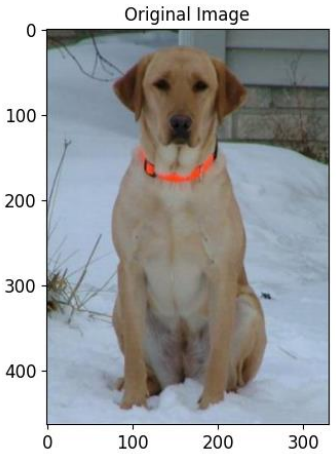


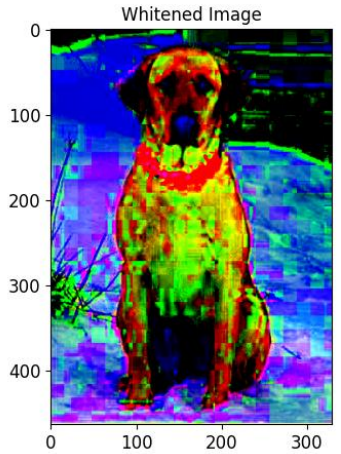
Standardisation

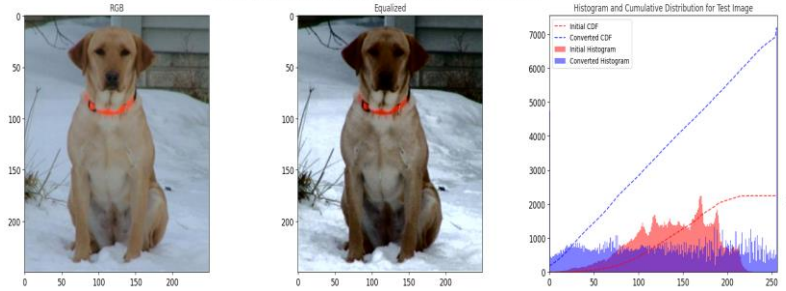


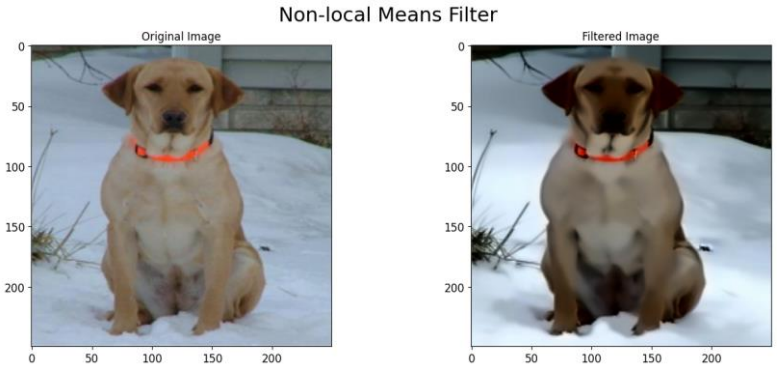


Normalization and quality improvement









Data Quantity

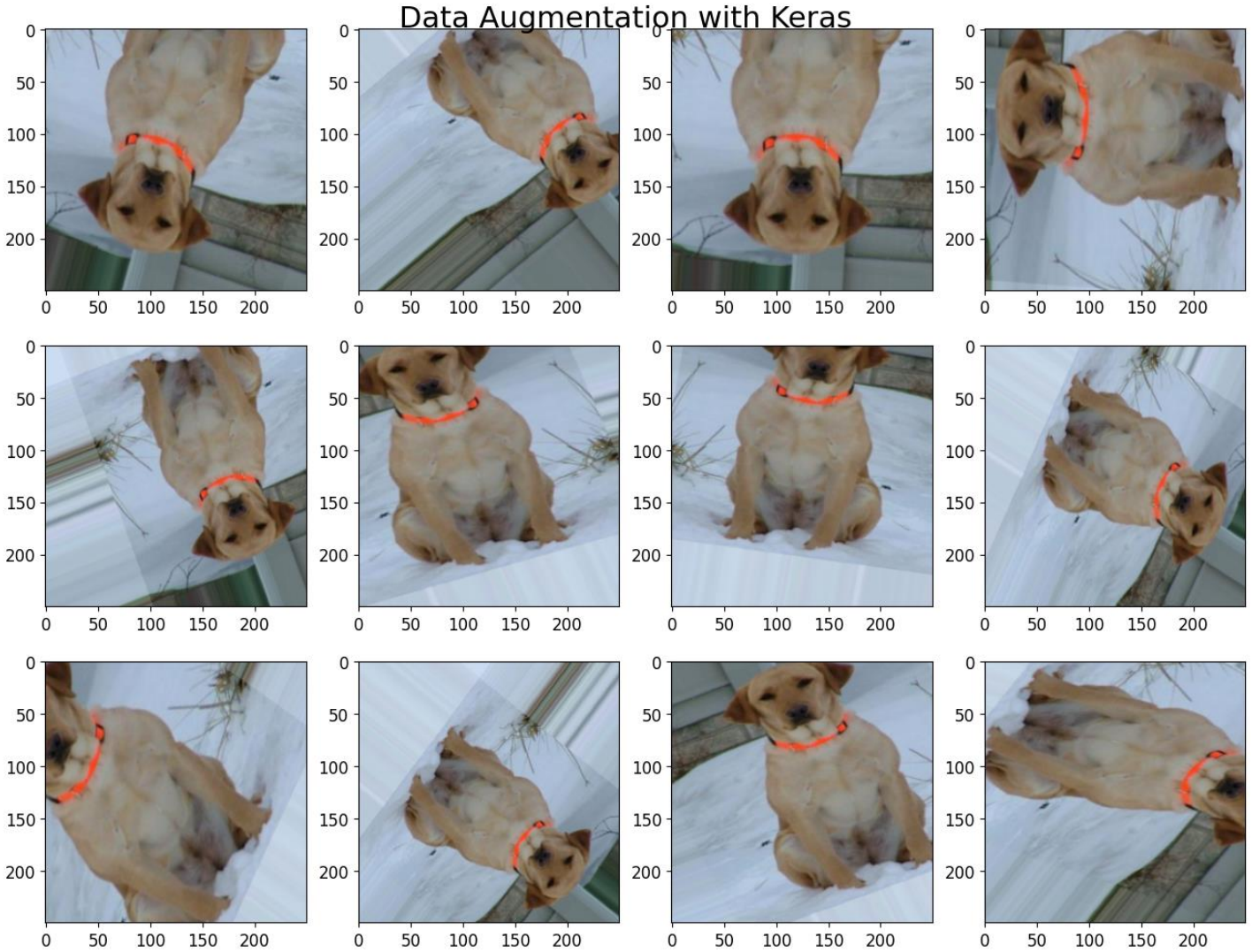
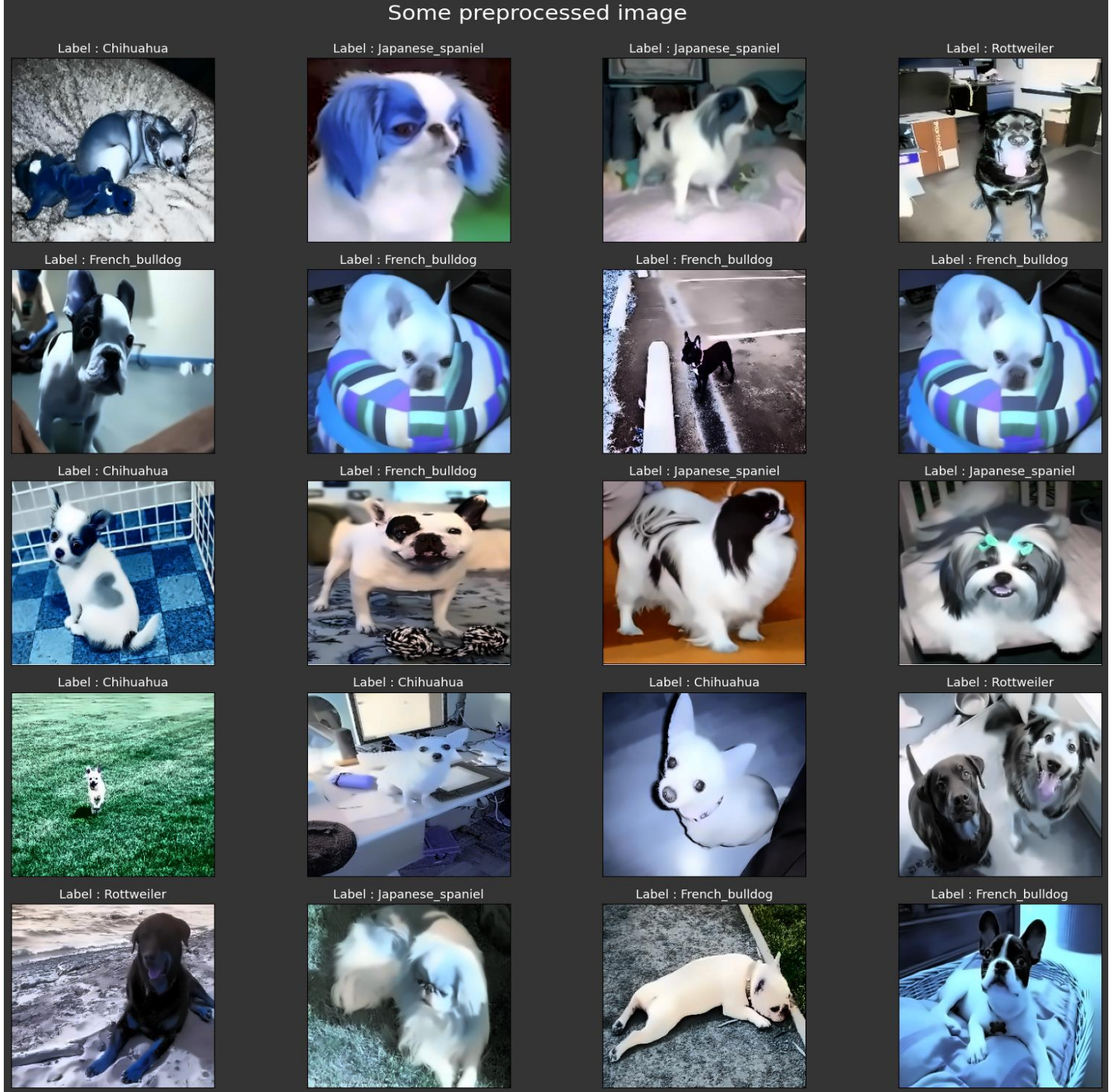
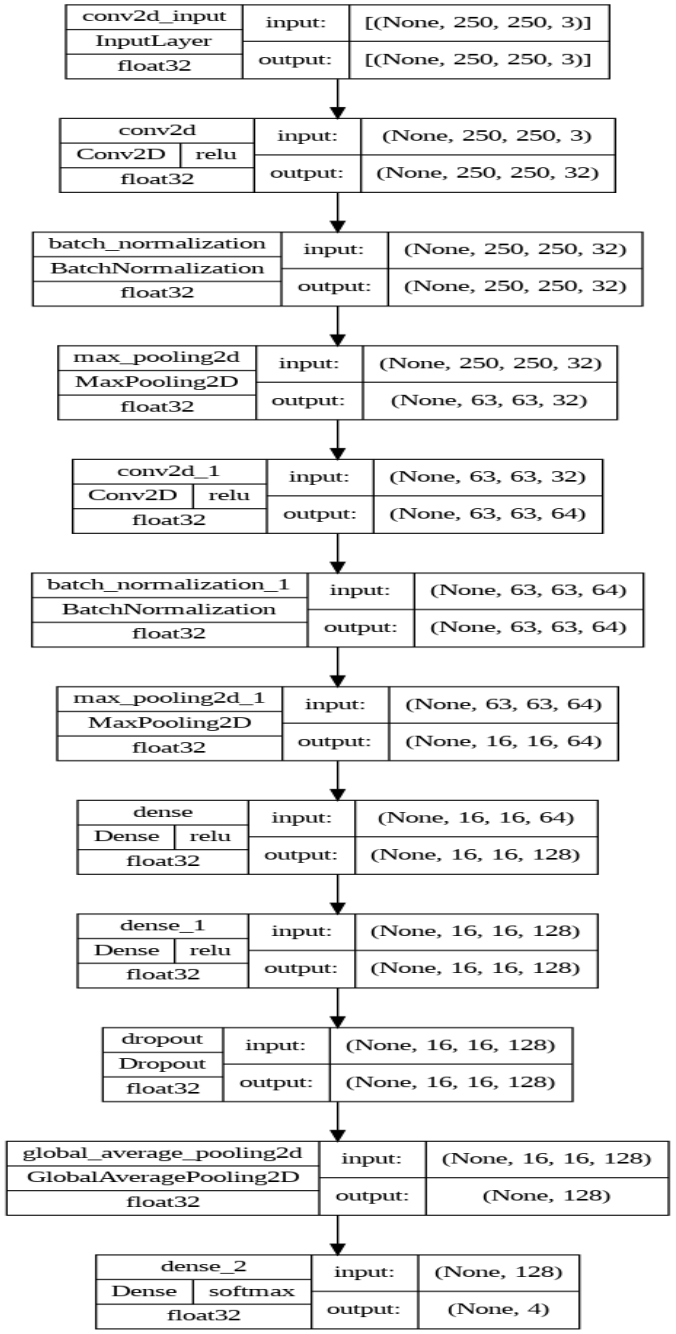
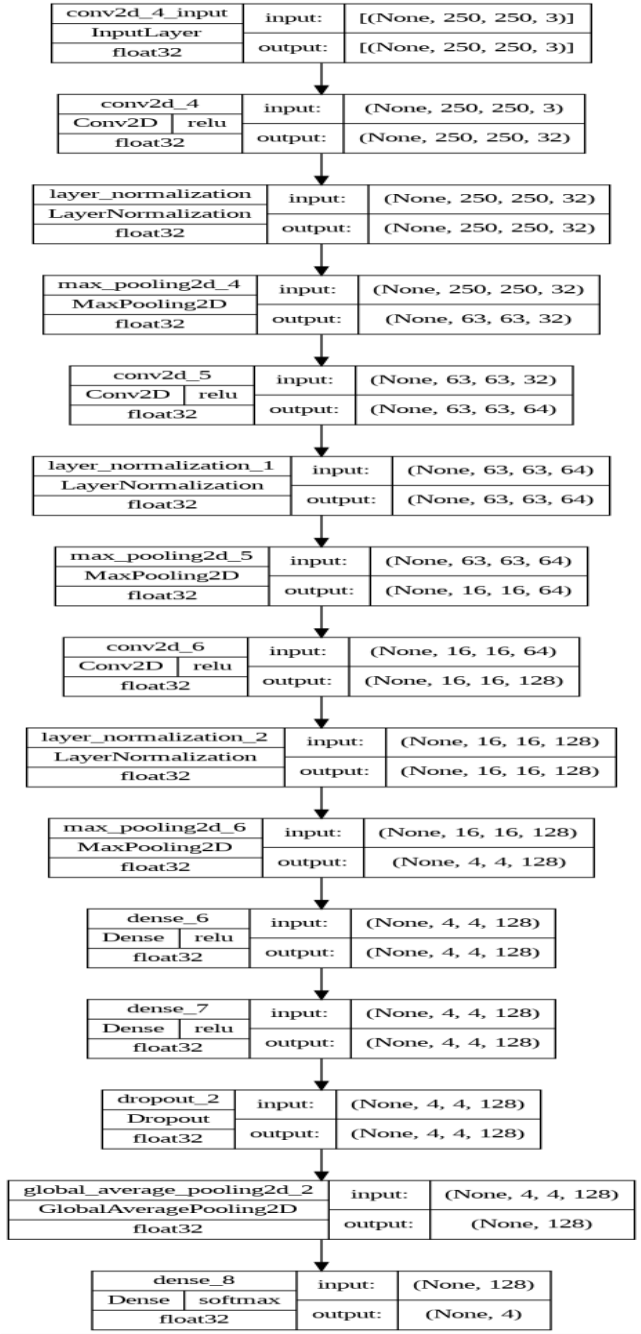


Image preprocessed



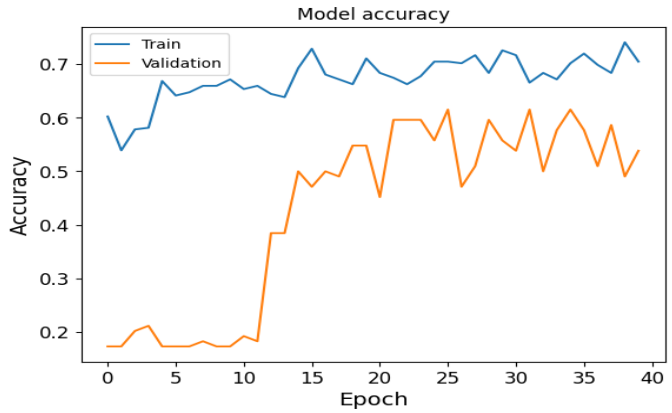
Model Building: Model Architecture

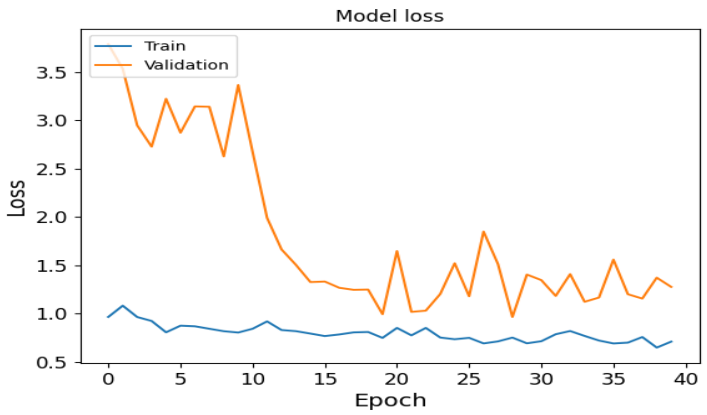




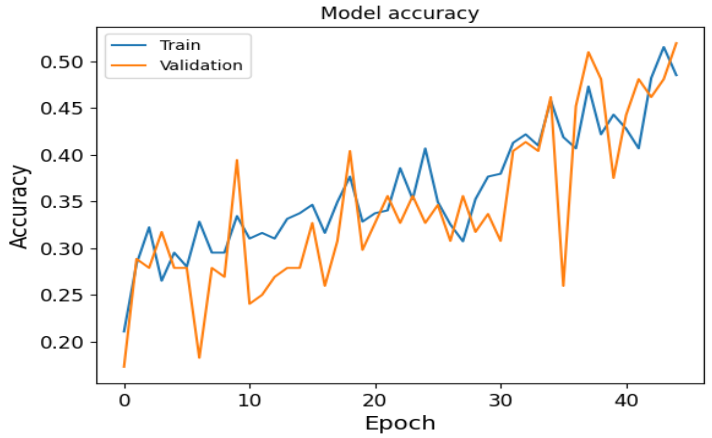
Model testing: Standard CNN

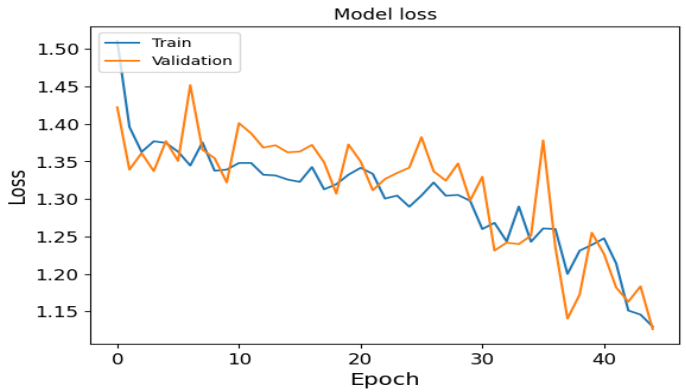
Batch Normalization



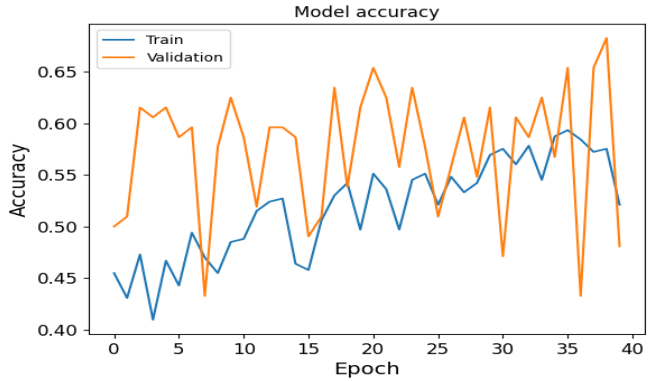


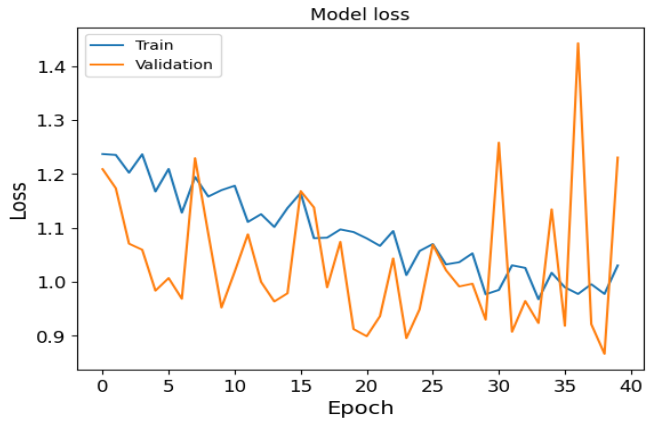
Layer Normalization





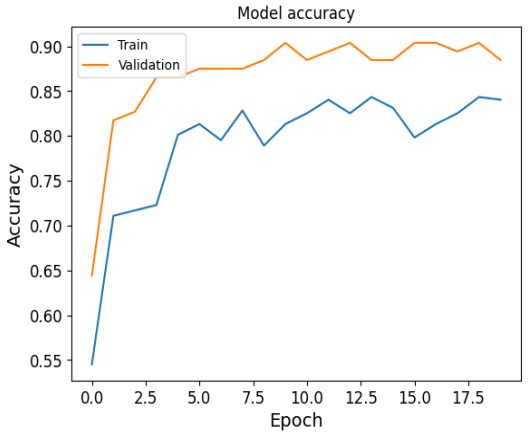
Fine tune

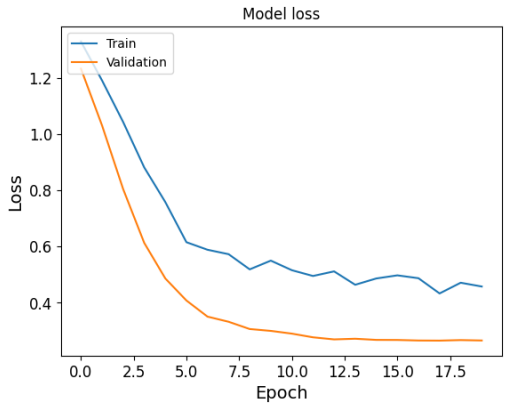




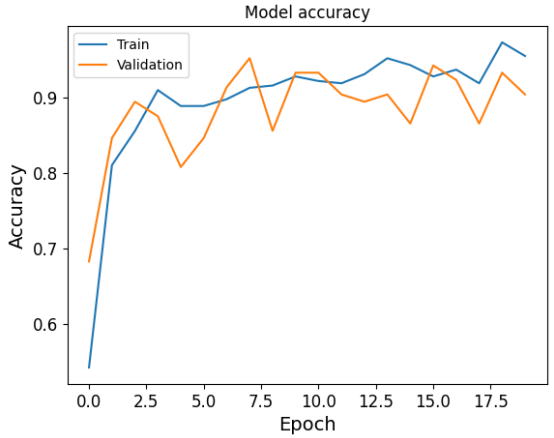
Transfer Learning

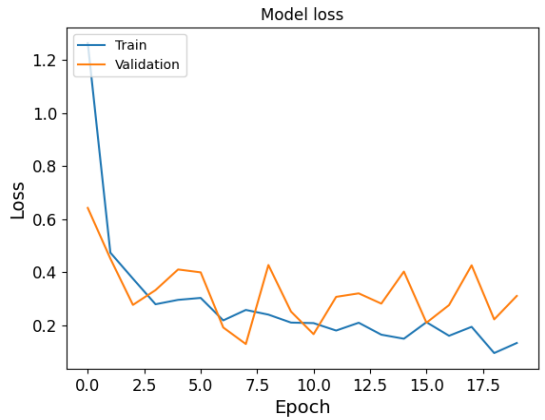
Inception



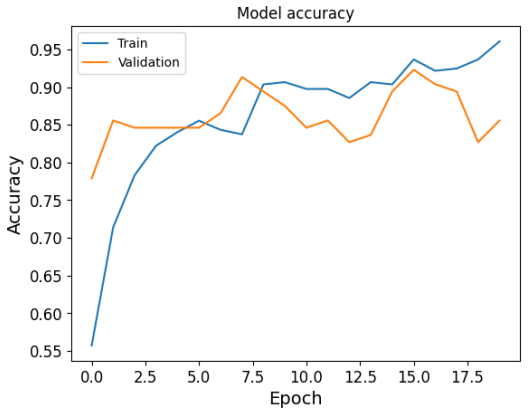


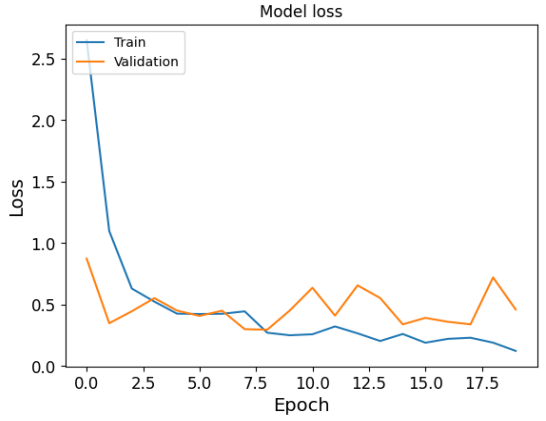
Resnet50



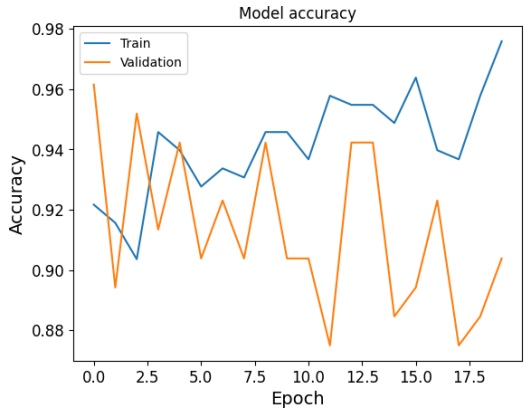


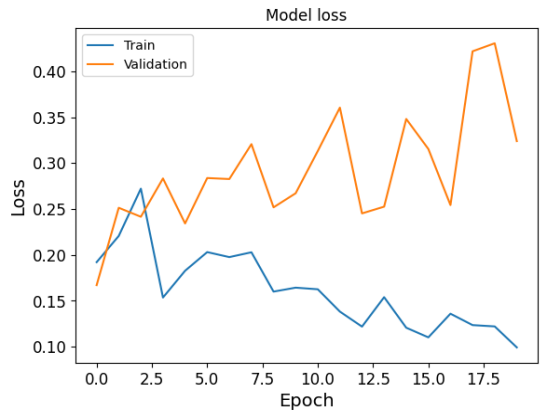
VGG 16





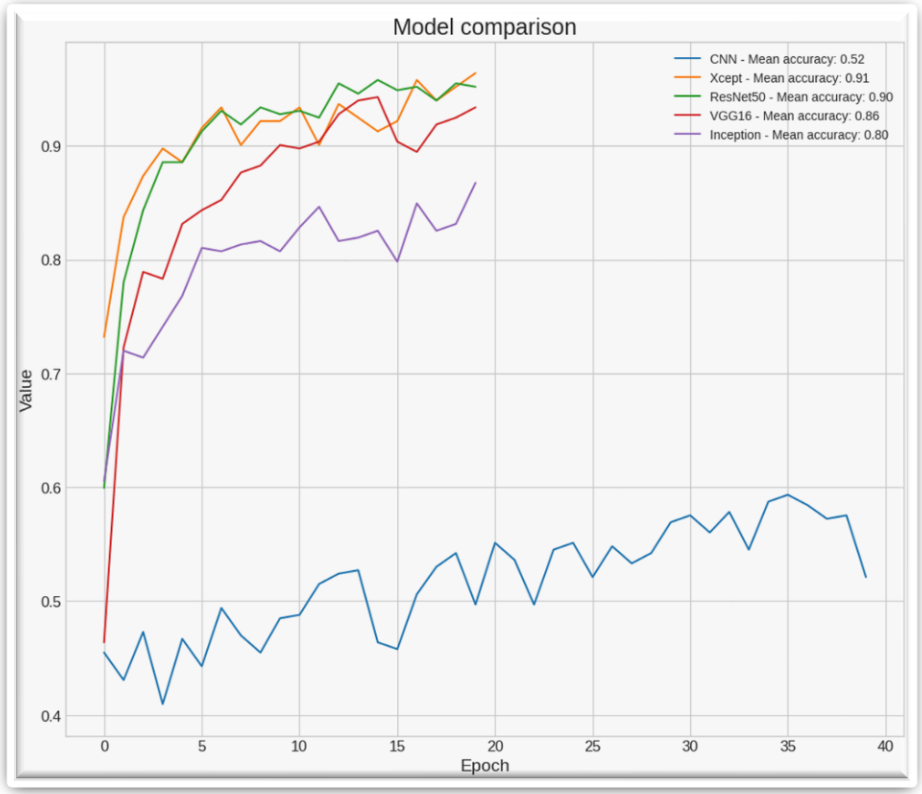
Xception



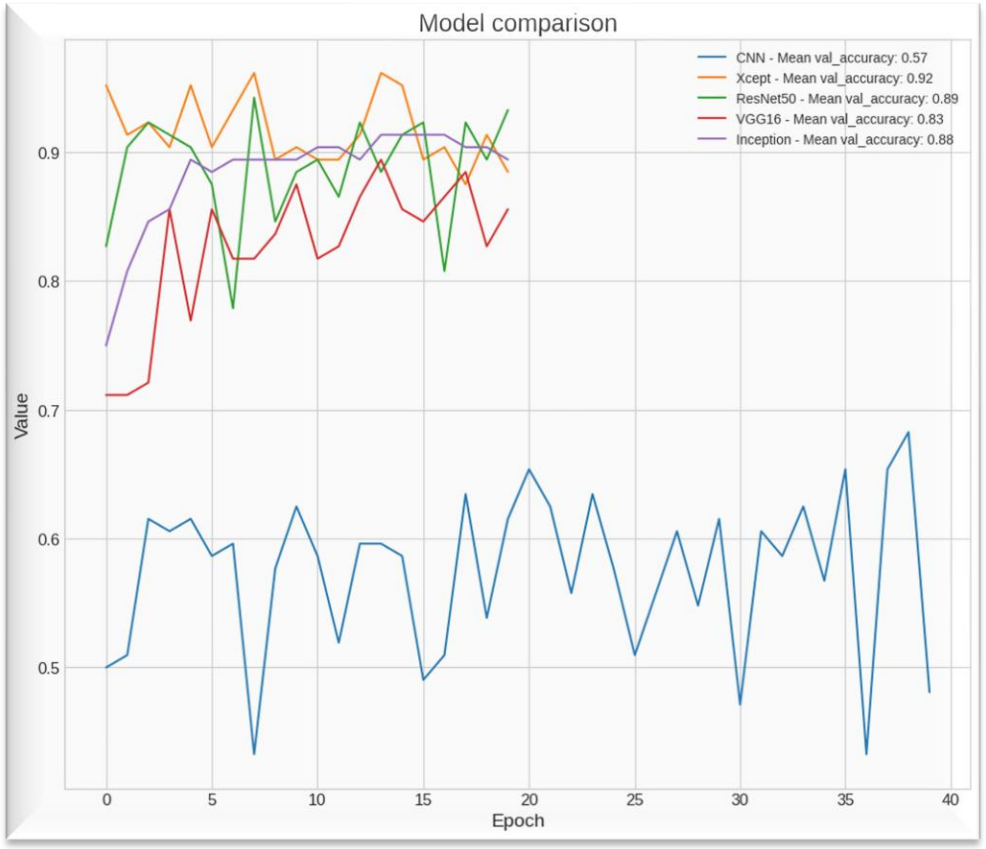


Model Selection

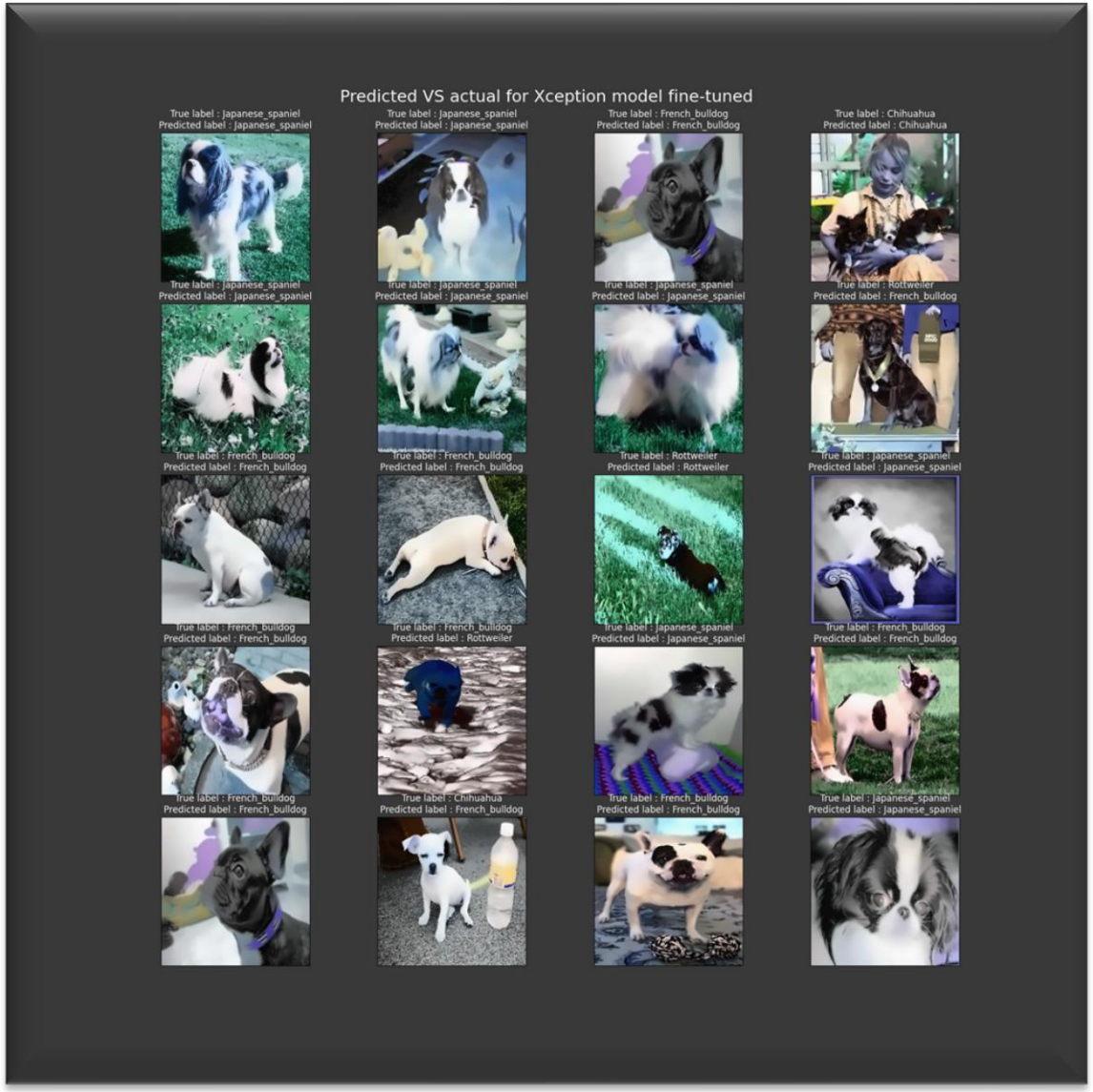
Train accuracy

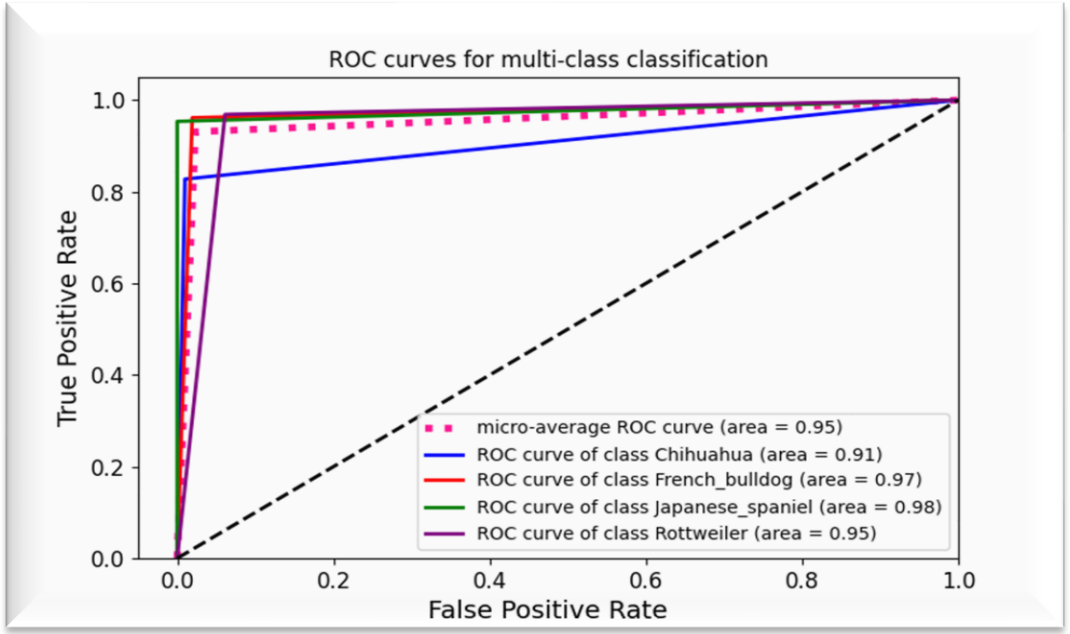


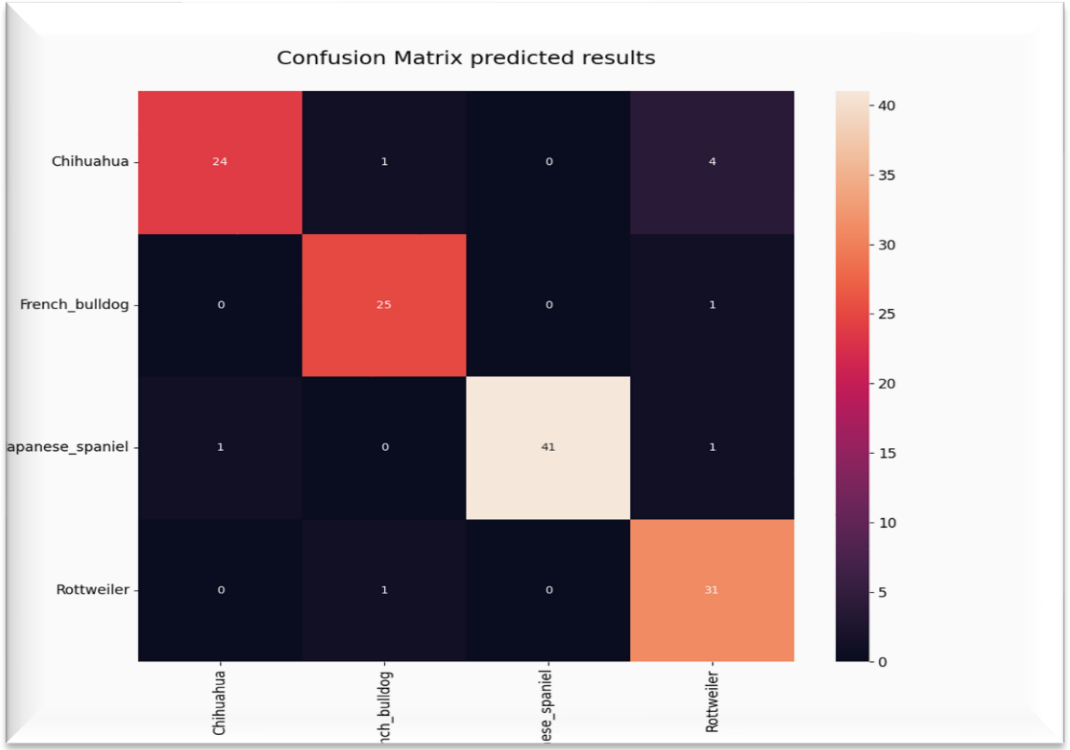
Validation accuracy



Prédiction results

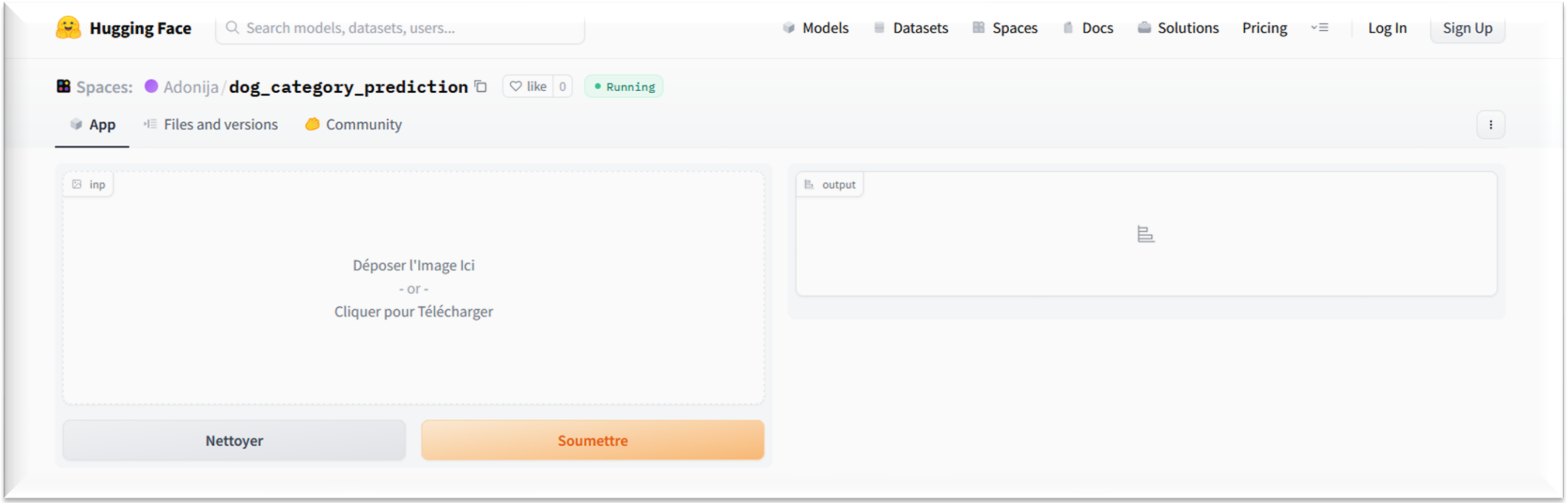






Model demo

Get demo interface here



Conclusion

- High performance for the transfer learning models
- Standard CNN : unstable, underfitting
- High complexity of transfer learning : overfitting
- Improvement via data augmentation and data quantity.
- New complexity for standard CNN