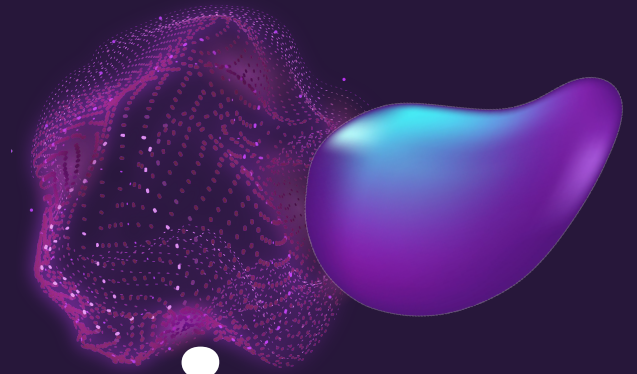
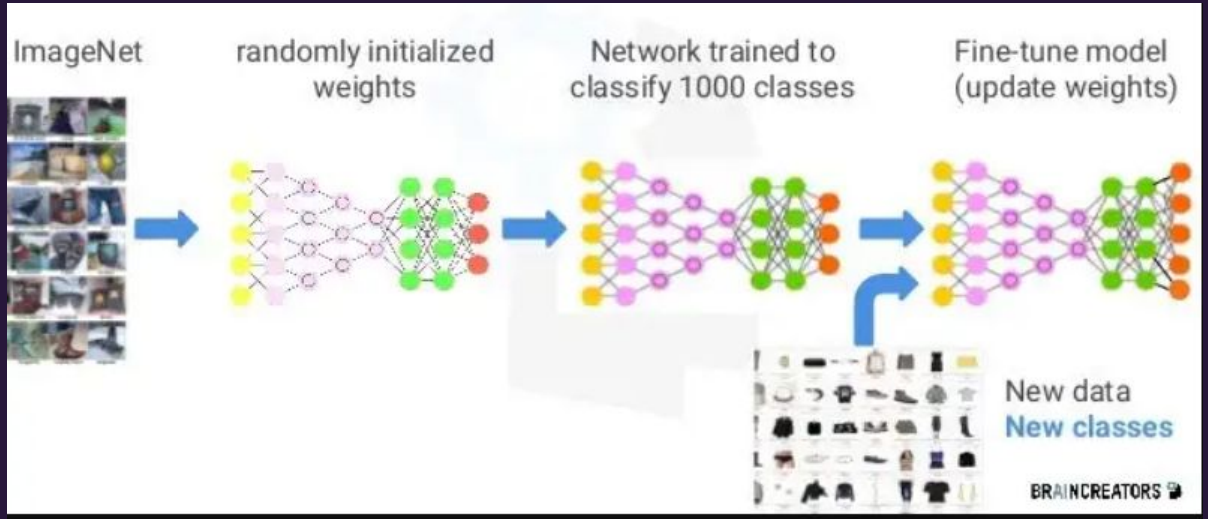


Transfer Learning
(VGG16 / Resnet101)

Guilherme Pablo de Santana Maciel
Thiago Theiry de Oliveira

Transfer Learning

É a reutilização de um modelo pré-treinado em um novo problema. Isto é, vou usar uma rede neural treinada em outro outro conjunto de dados, geralmente maior, para resolver um novo problema.



Vantages Transfer Learning?

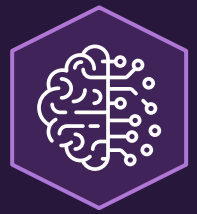
01 Velocidade

02 Menor custo energético

03 DATASET menor

04 Menor InfraesTrutura

Dataset



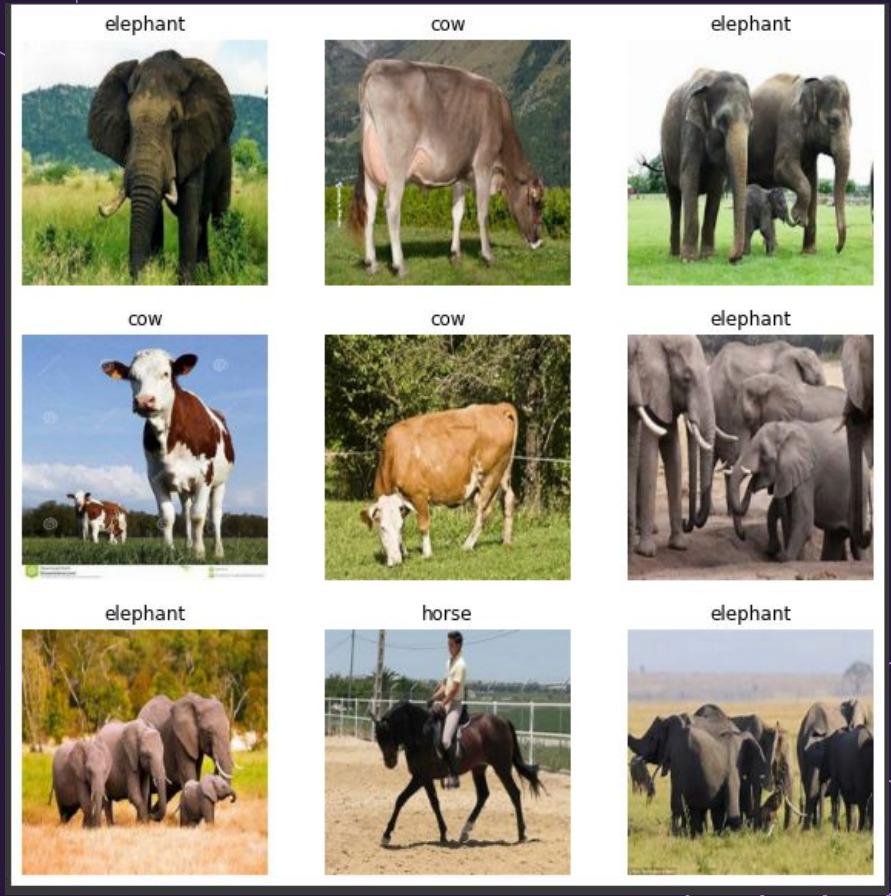
Classes 3

- Cow
- Elephant
- Horse

110 MB

Files 5k

Dataset


elephant
cow
elephant
cow
cow
elephant
elephant
horse
elephant

Pré-processamento / Data segragation

Resize() OpenCv

32x32x3

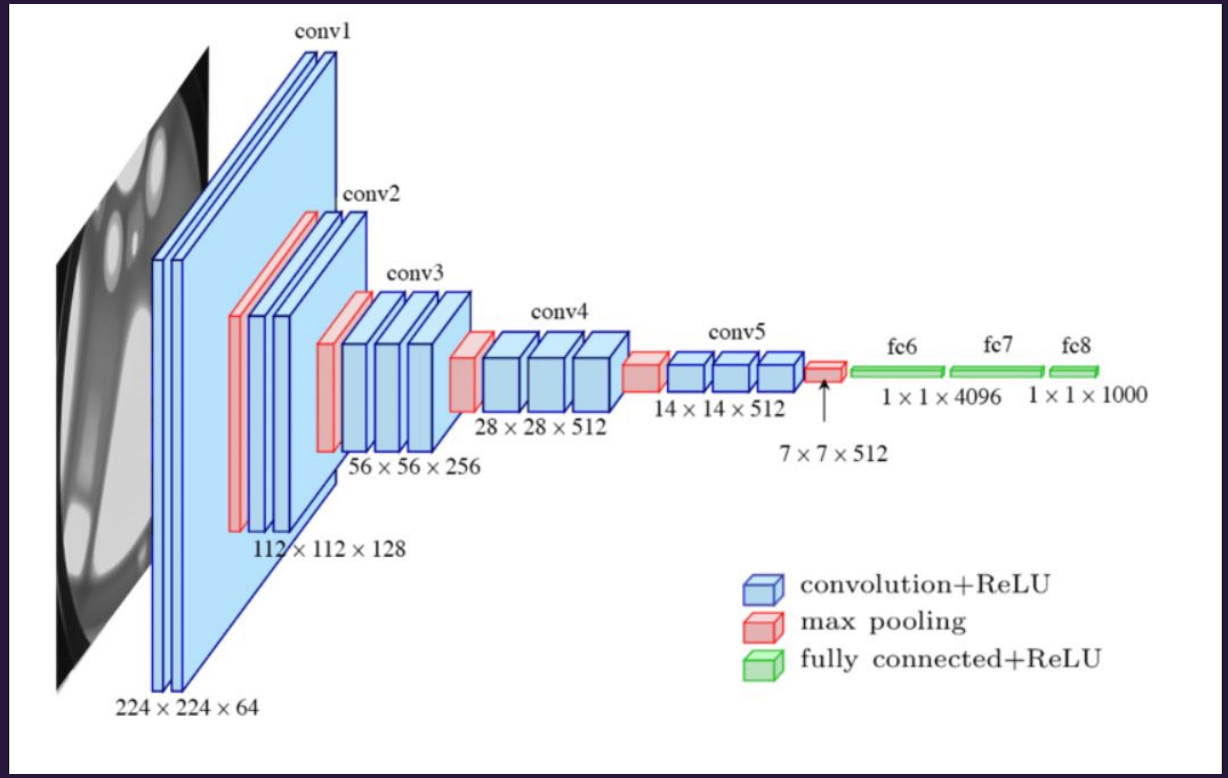
Train / teste

80% / 20%

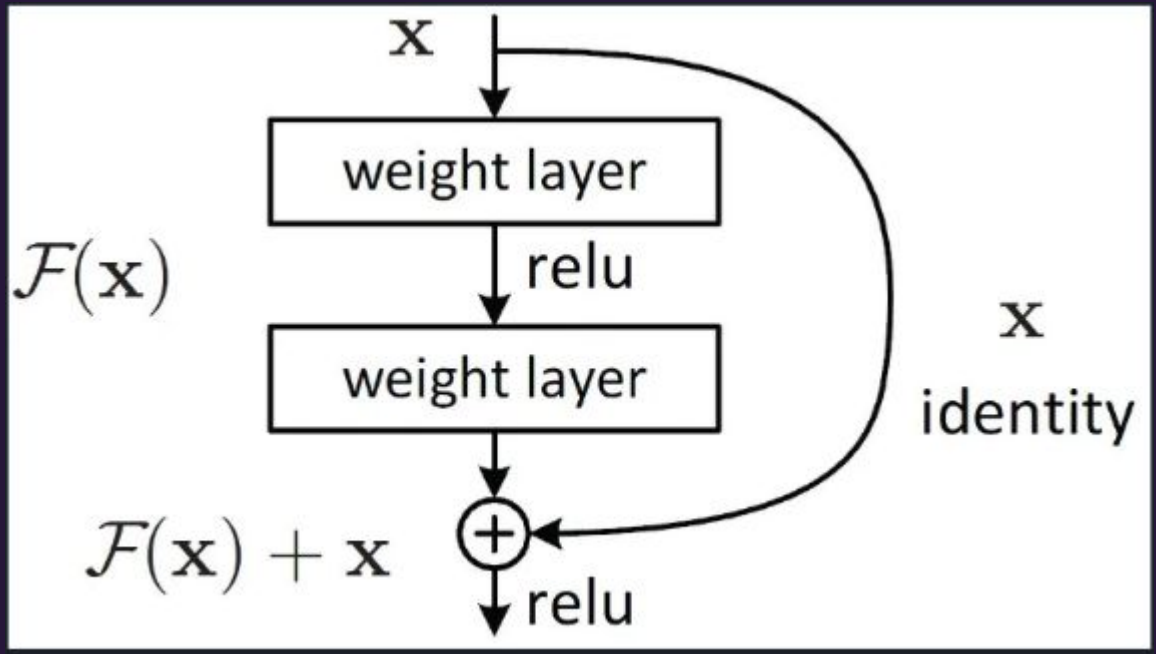
Data Augmentation

Arquitetura

VGG16

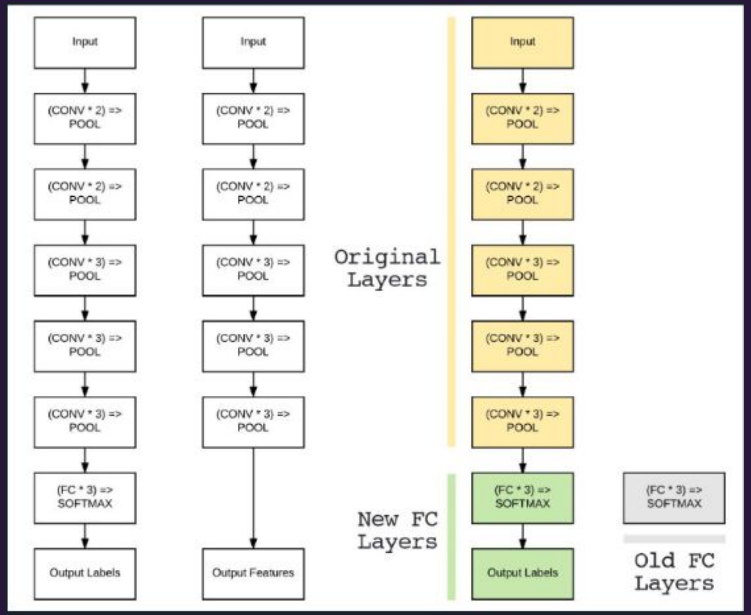

conv1
conv2
conv3
conv4
conv5
fc6
fc7
fc8
224 × 224 × 64
112 × 112 × 128
56 × 56 × 256
28 × 28 × 512
14 × 14 × 512
7 × 7 × 512
1 × 1 × 4096
1 × 1 × 1000
convolution+ReLU
max pooling
fully connected+ReLU

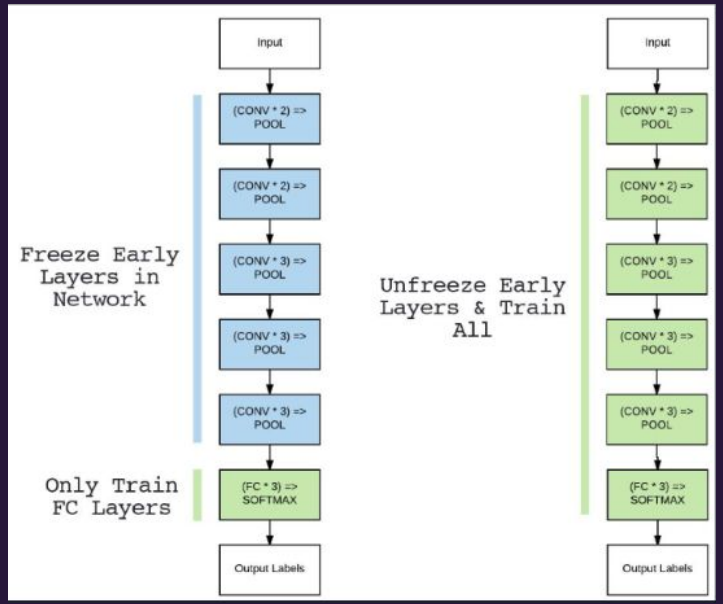
ResNet101



Bloco basico da ResNet

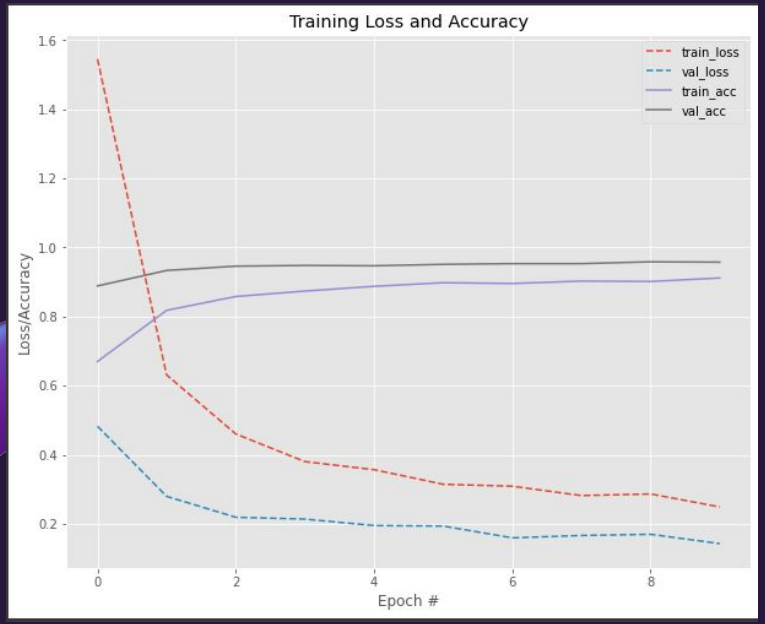
Feature Extraction X Fine Tuning

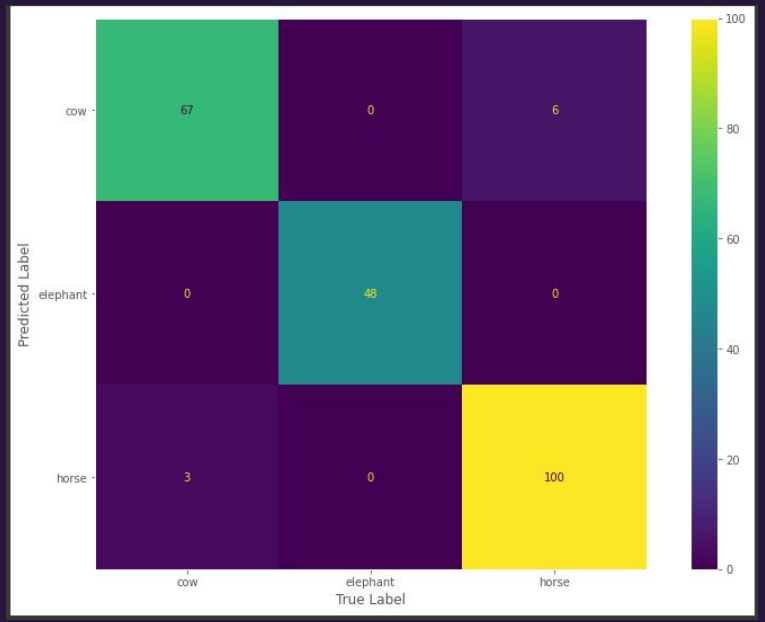




VGG16 - Feature Extraction

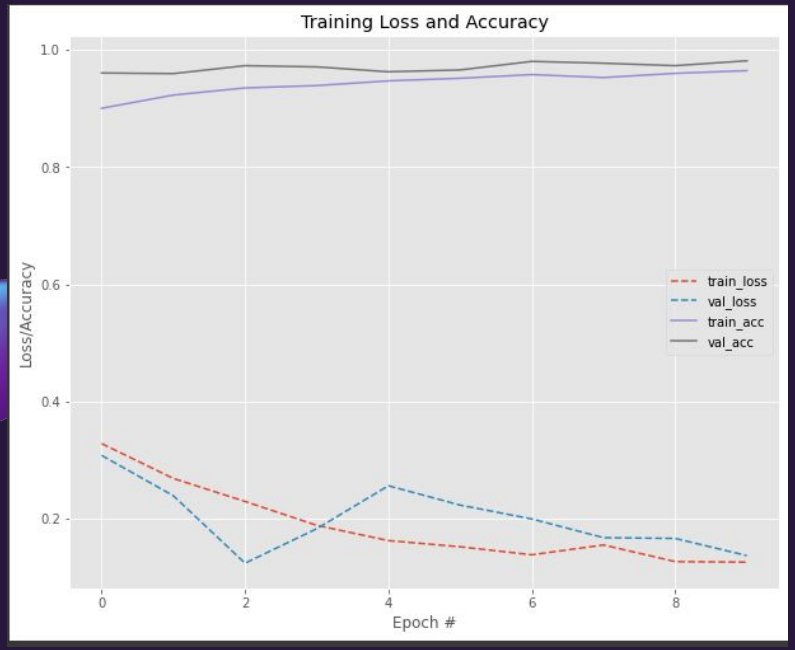
- Learning rate de 0.001
- 10 épocas

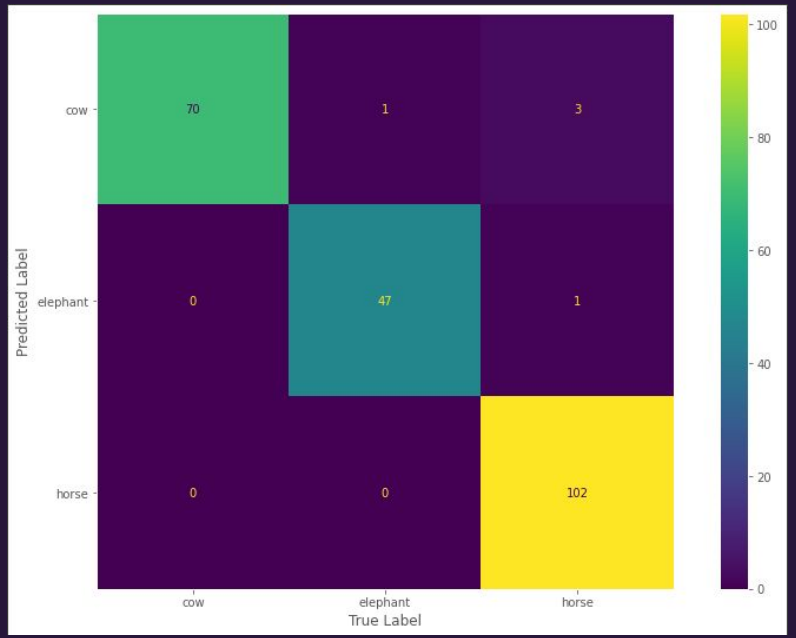




VGG16 - Fine Tuning

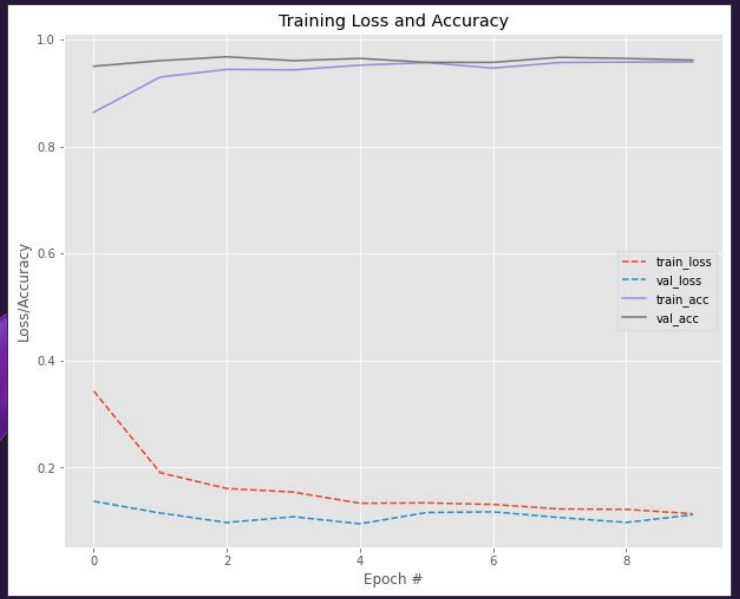
- Learning rate de 0.001
- 10 épocas

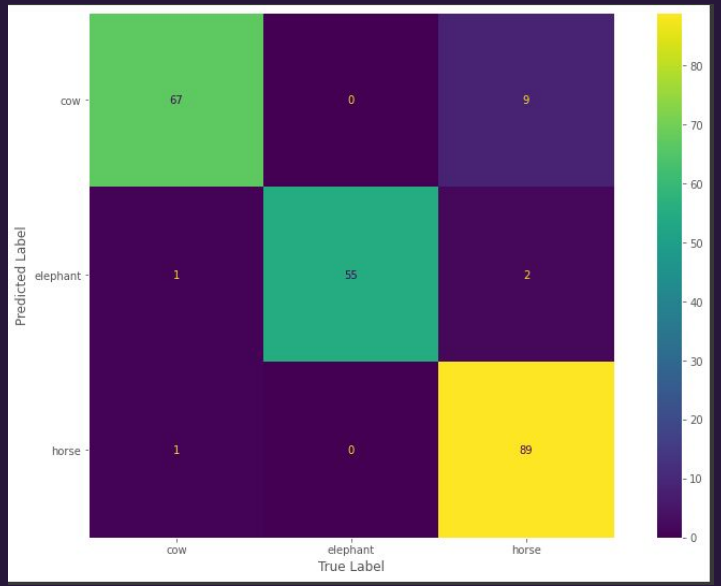




ResNet101 - Feature Extraction

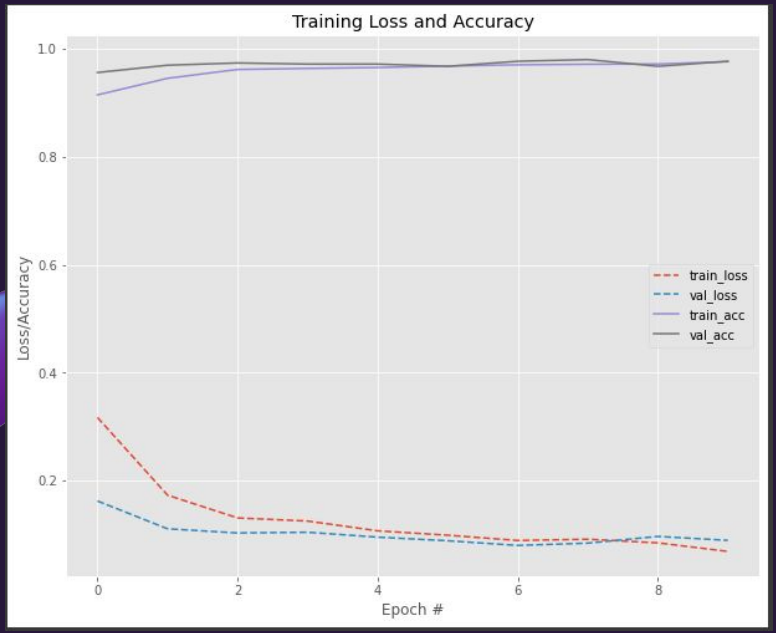
- Learning rate de 0.001
- 10 épocas

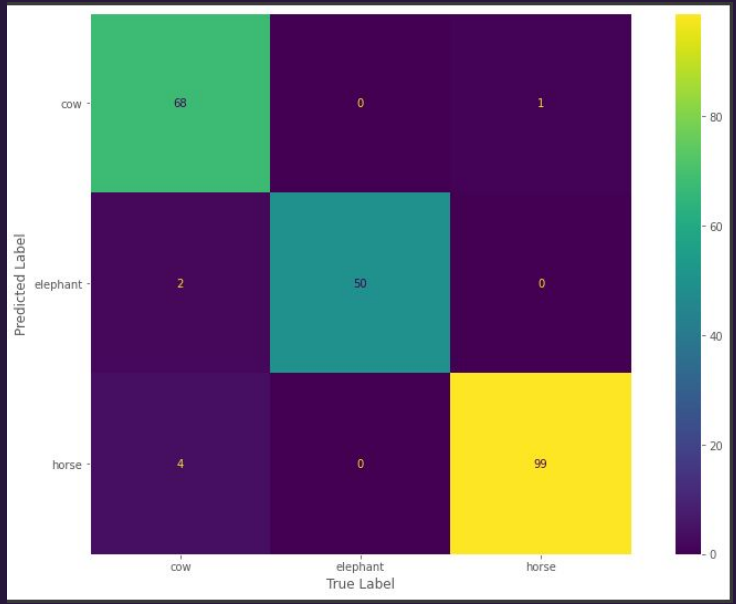




ResNet101 - Fine Tuning

- Learning rate de 0.001
- 10 épocas





Obrigado!