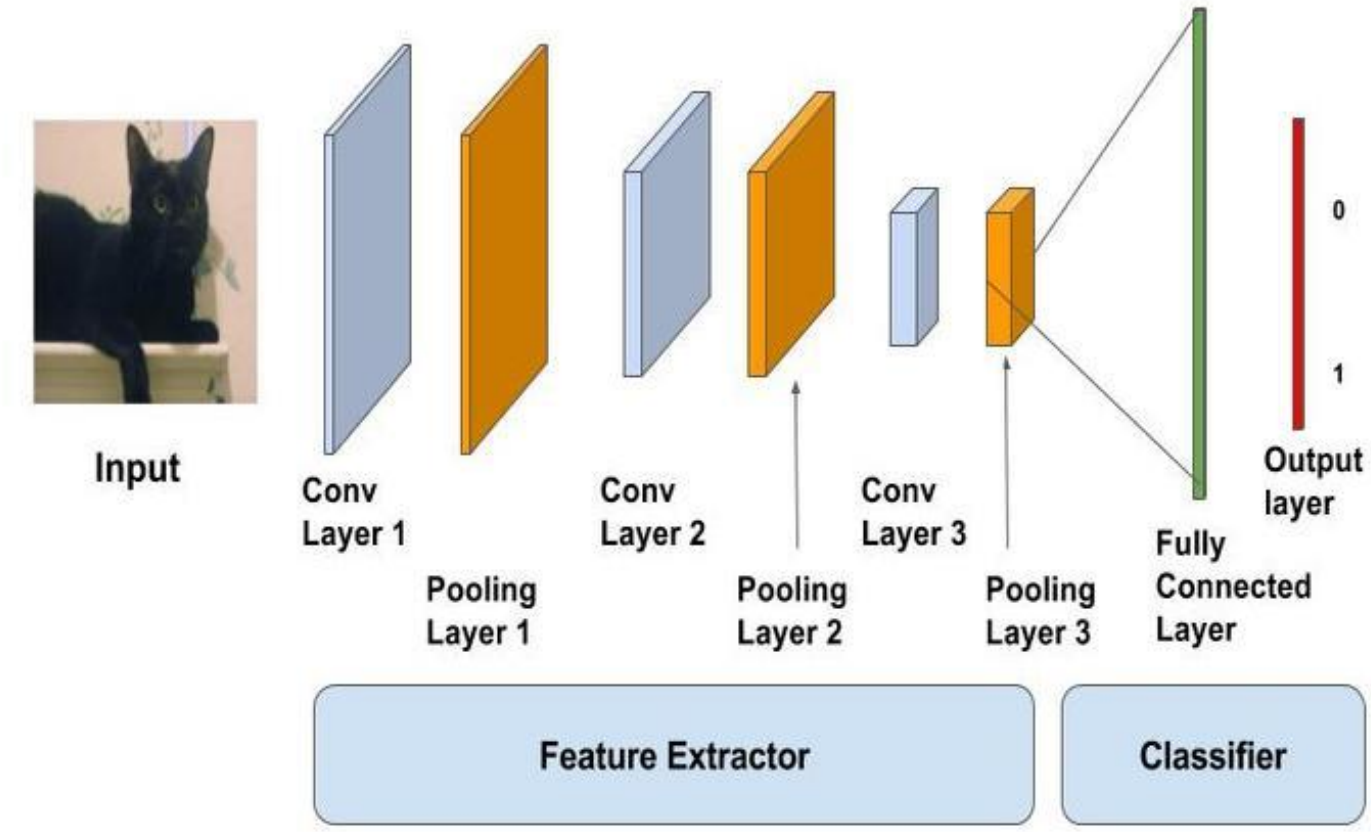
Convolutional Neural Network (CNN)

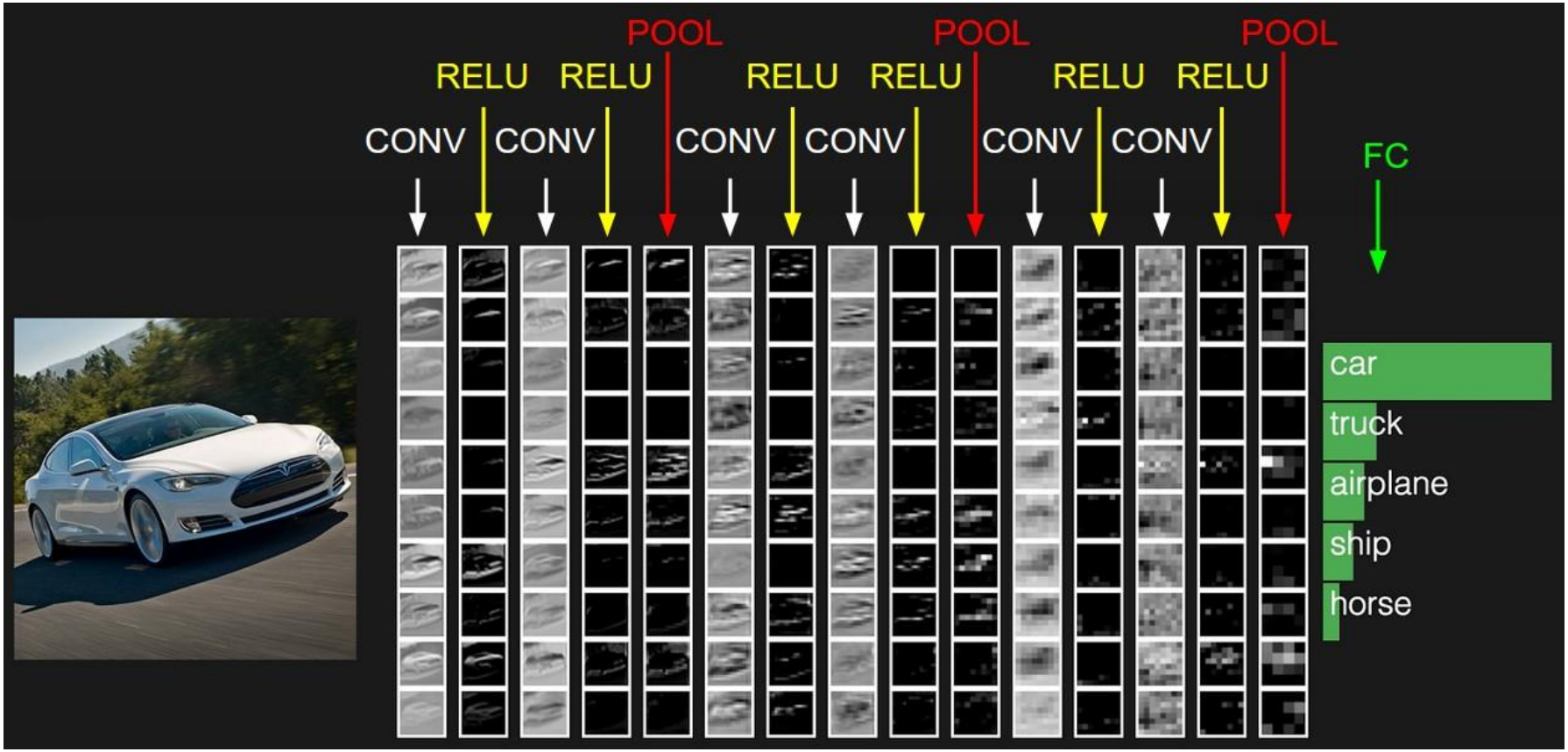
Quelques informations pour le projet
classification d'images

Structure générale d'un CNN

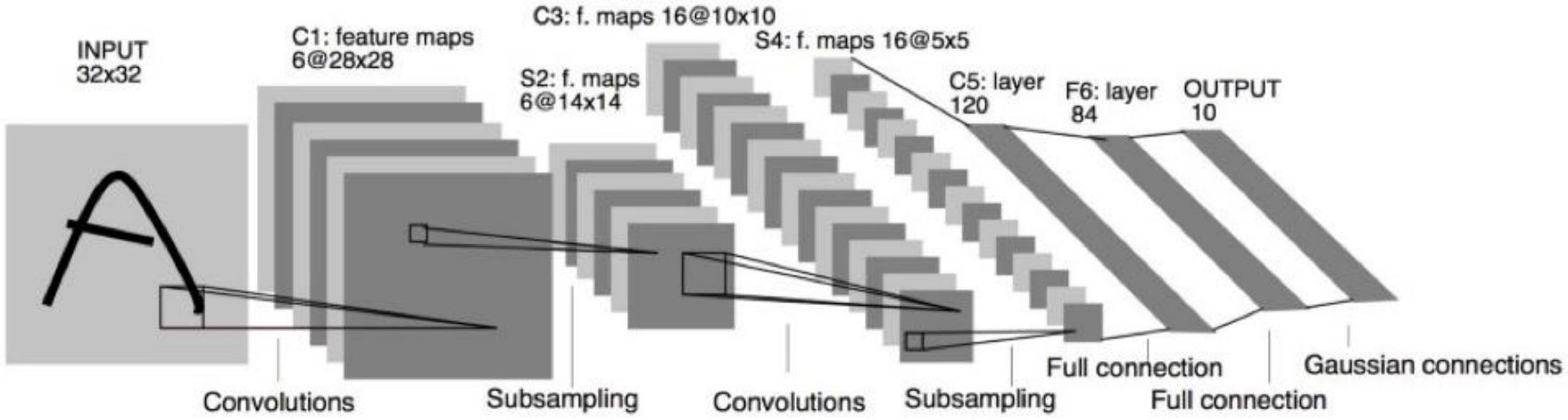


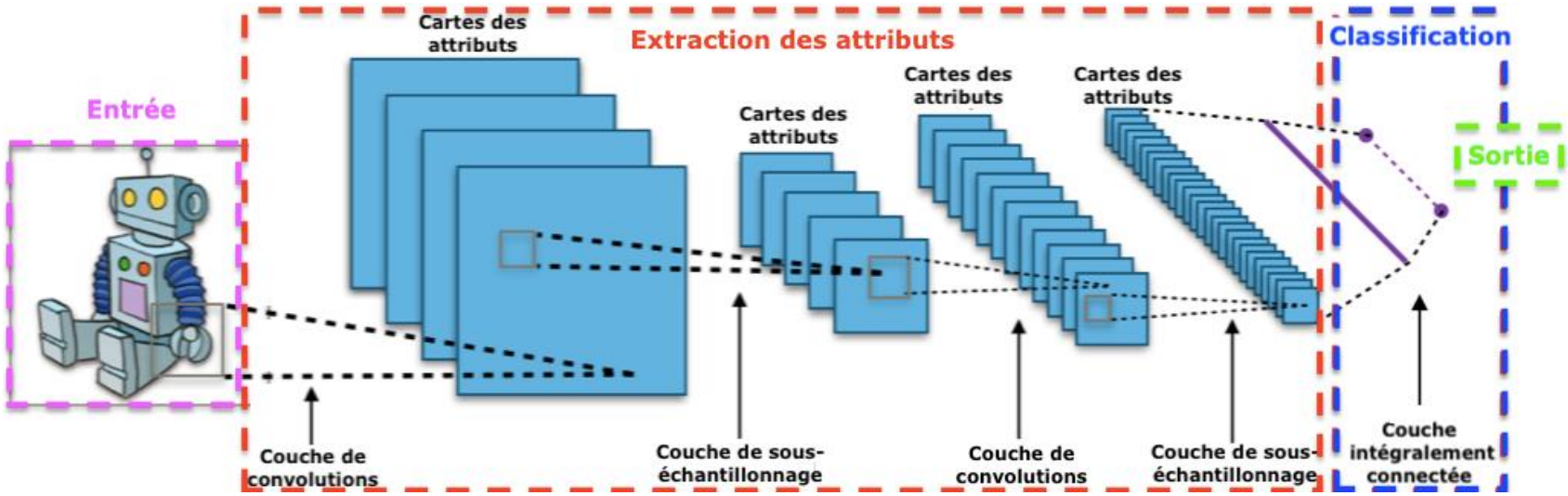
Objectif : apprendre les « features » ET le classifieur

Exemple des activations d'un CNN



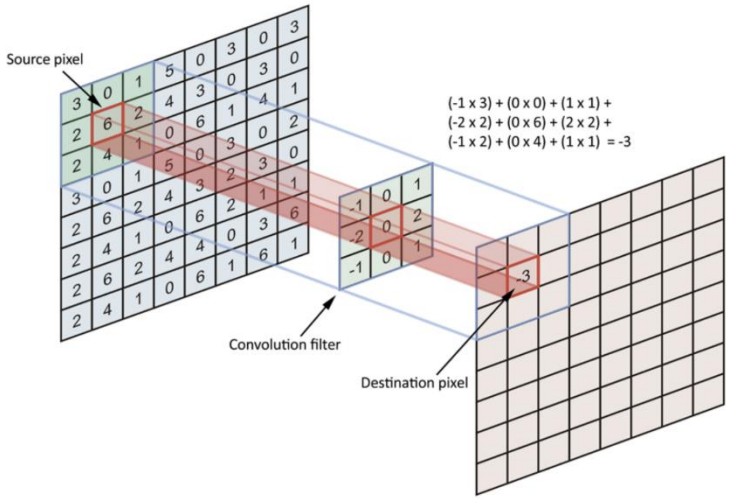
Architecture LeNet (1998)



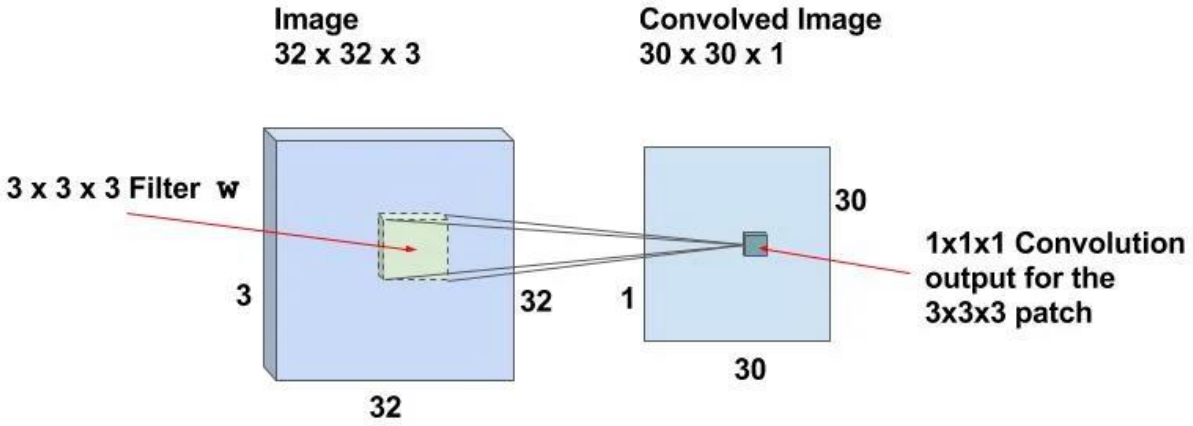


Convolution

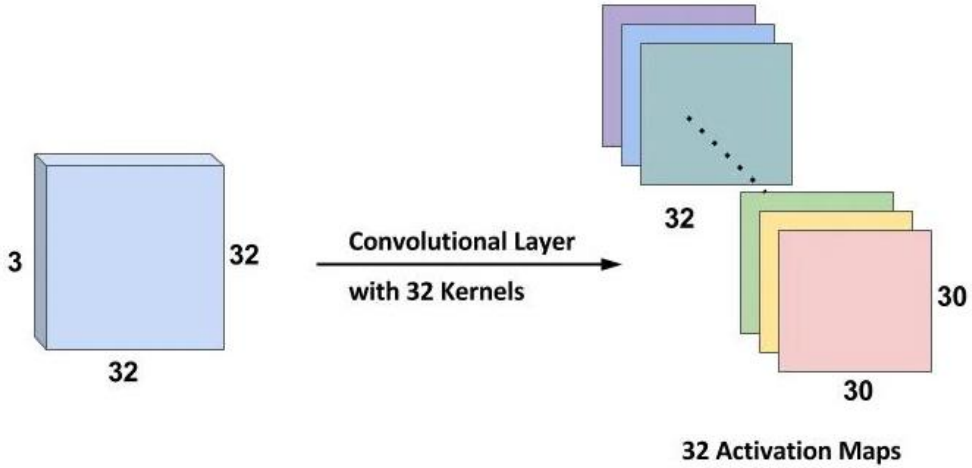
2D

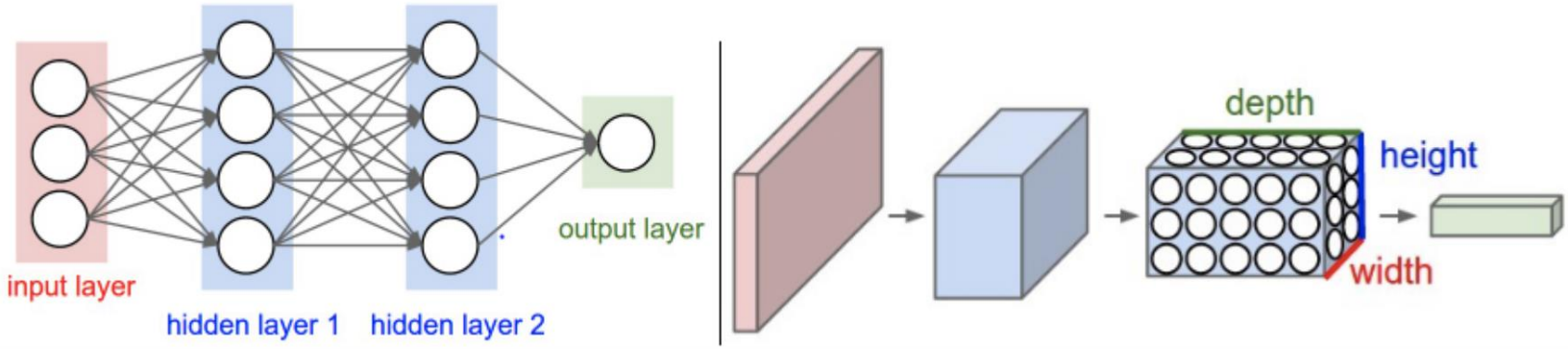


3D



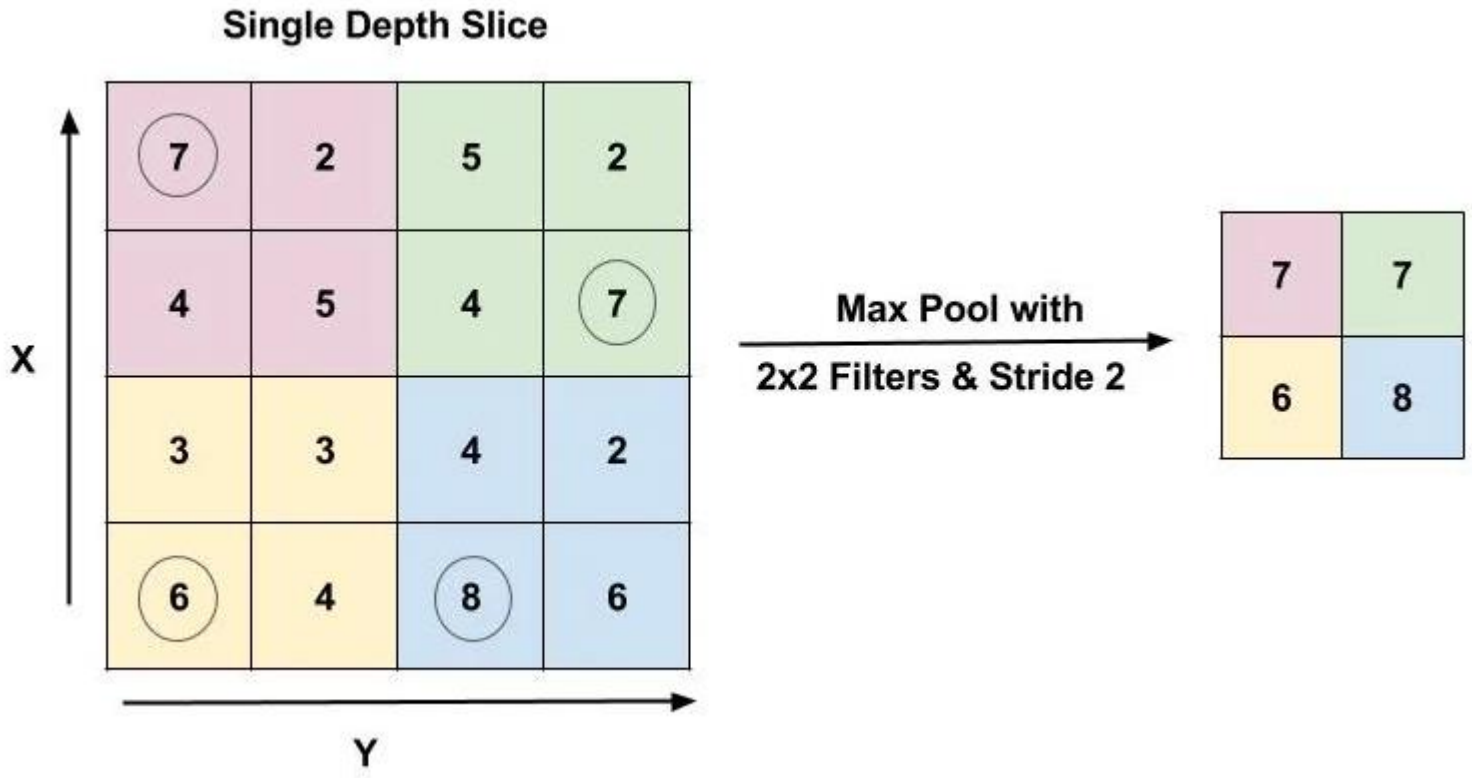
Convolution



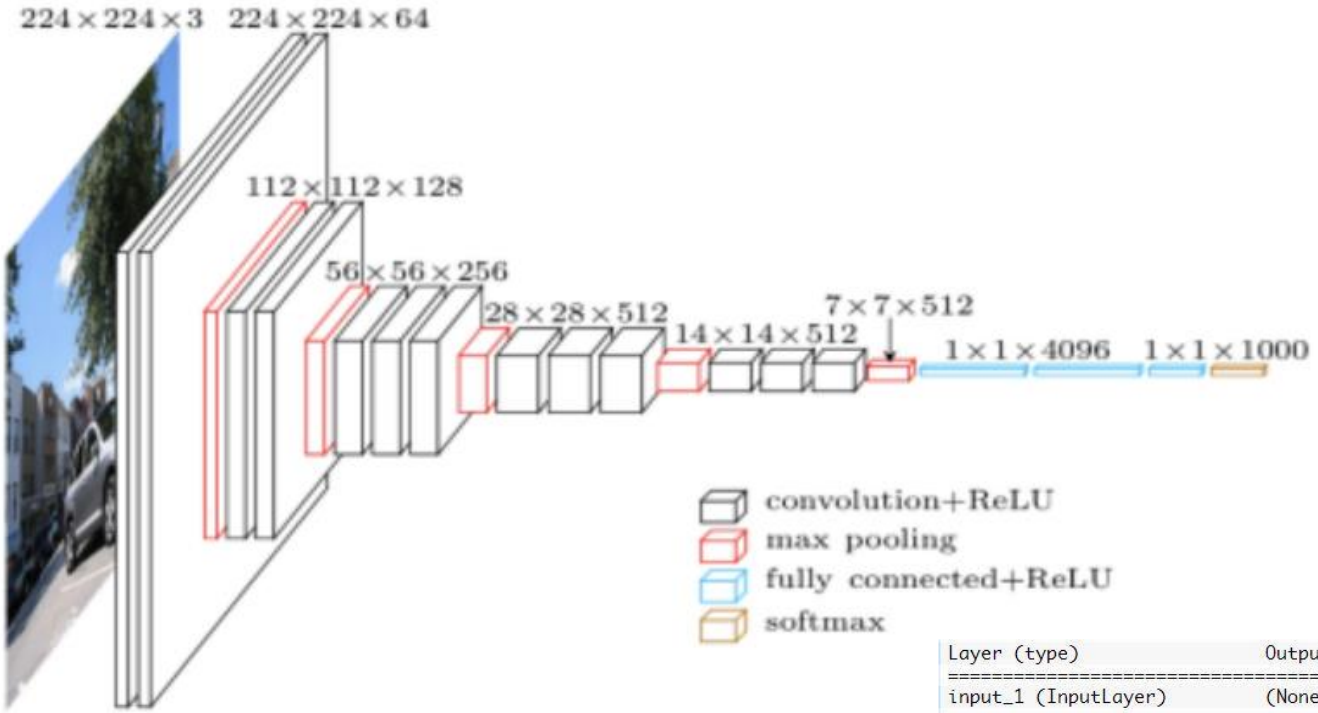


MLP CNN

Sous-échantillonnage : maxpooling



Architecture VGG (2014)



Description partielle …

Layer (type)	Output Shape	Param #
input_1 (InputLayer)	(None, 224, 224, 3)	0
block1_conv1 (Conv2D)	(None, 224, 224, 64)	1792
block1_conv2 (Conv2D)	(None, 224, 224, 64)	36928
block1_pool (MaxPooling2D)	(None, 112, 112, 64)	0
block2_conv1 (Conv2D)	(None, 112, 112, 128)	73856
block2_conv2 (Conv2D)	(None, 112, 112, 128)	147584
block2_pool (MaxPooling2D)	(None, 56, 56, 128)	0
block3_conv1 (Conv2D)	(None, 56, 56, 256)	295168
block3_conv2 (Conv2D)	(None, 56, 56, 256)	590080
block3_conv3 (Conv2D)	(None, 56, 56, 256)	590080

Projet classification : partie 2 CNN

- Etudier un petit réseau CNN type LeNet
  - Implémenter un petit réseau
  - Réaliser l'apprentissage et la validation
  - Comparer les performances avec les autres méthodes (SVM, MLP)

- Transfer learning
  - Adapter un réseau CNN VGG16 pré-entrainé sur une grande base d'images
  - Ré-entrainer seulement les couches spécifiques