WALC 2024
Applied AI

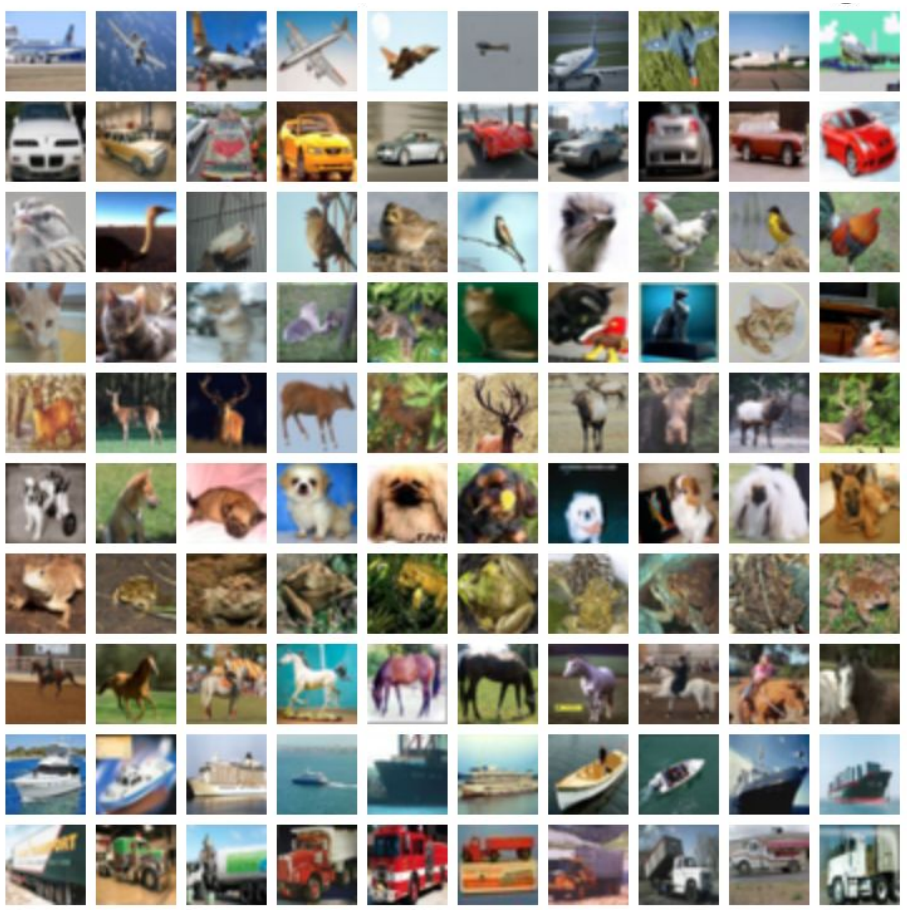
Image Classification using Convolutions (CNN)

Prof. Marcelo J. Rovai
rovai@unifei.edu.br

UNIFEI - Federal University of Itajuba, Brazil
TinyML4D Academic Network Co-Chair

Cifar-10

0 airplane
1 automobile
2 bird
3 cat
4 deer
5 dog
6 frog
7 horse
8 ship
9 truck



https://www.tensorflow.org/datasets/catalog/cifar10

So far …

We saw how to build Neural Networks (DNN) that classify images of digits (**MNIST**).

Now,

We will instead, recognize the 10 classes of **CIFAR** ('airplane', 'automobile', 'bird', 'cat', 'deer', 'dog', 'frog', 'horse', 'ship' and 'truck').

There are some key differences between these image datasets that we need to take into account:

- While MNIST has 28x28 monochrome images (1 color channel), CIFAR has 32x32 color images (3 color channels).
- Besides, MNIST images are simple, containing just the object centered in the image, with no background. Conversely, CIFAR ones are not centered and can have the object with a background, such as airplanes that might have a cloudy sky behind them!

Those differences are the main reason to use a CNN instead of a DNN.

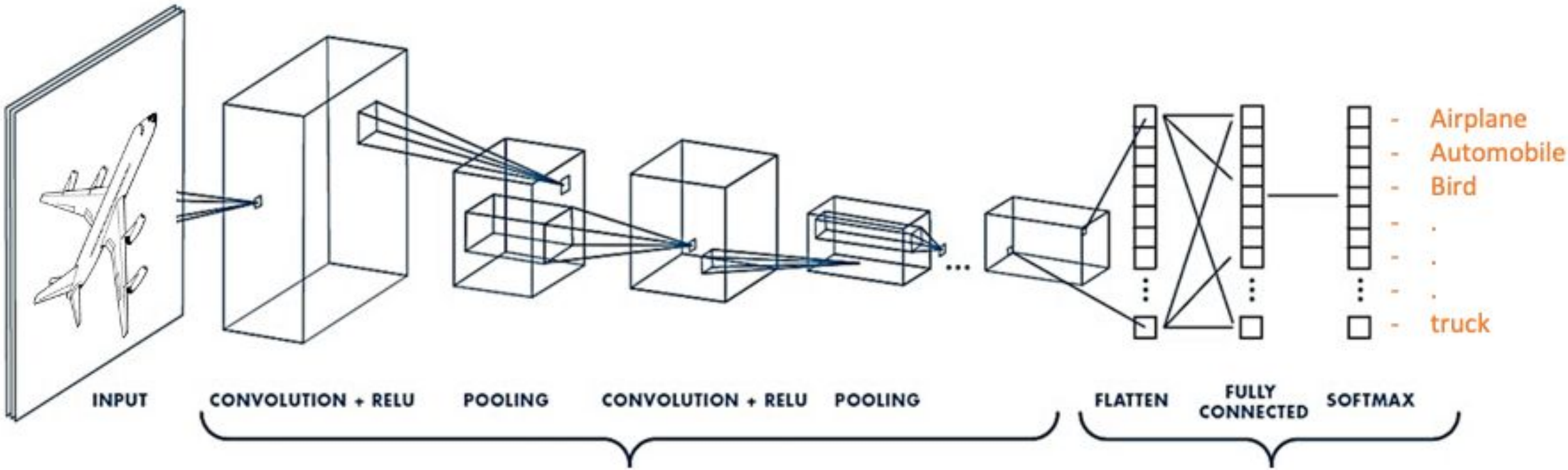

- Airplane
- Automobile
- Bird
- .
- .
- .
- truck
INPUT
CONVOLUTION + RELU
POOLING
CONVOLUTION + RELU
POOLING
FLATTEN
FULLY CONNECTED
SOFTMAX
Image
Feature Learning
Classification

Image Classification using CNN

Code Time!

CNN_Cifar-10.ipynb

Questions?


TINYML4D


WALC 2024
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